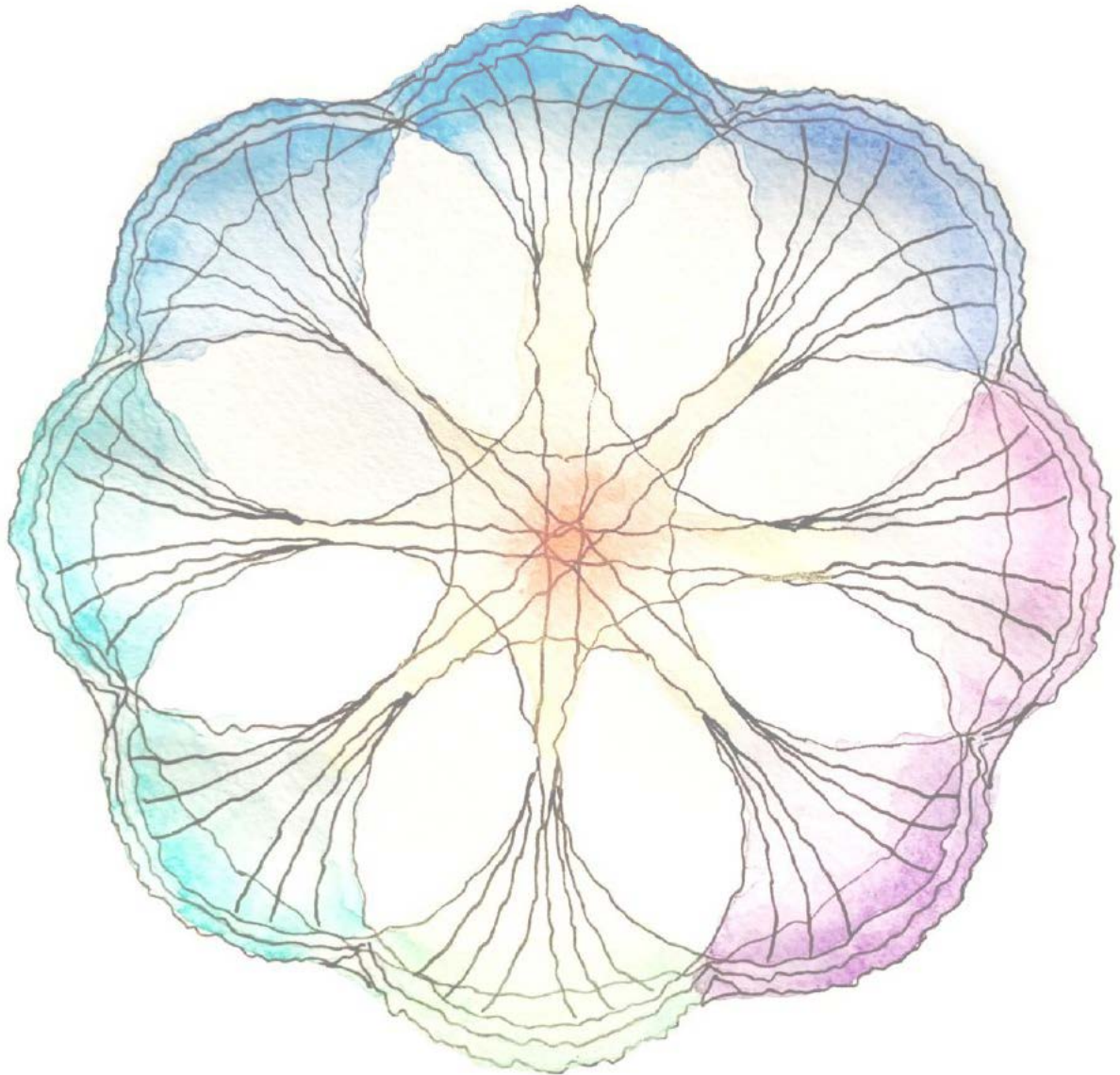


Transforming the ways we create change



Experiencing and cultivating
transformative sustainability learning

Transforming the ways we create change: experiencing and cultivating transformative sustainability learning

by Katie Elizabeth Ross

Thesis submitted in fulfilment of the requirements for
the degree of

PhD in Sustainable Futures

under the supervision of Cynthia Mitchell, Elizabeth Lange,
Richard Bawden

University of Technology Sydney
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July 2020

Certificate of original authorship

I, Katie Ross, declare that this thesis is submitted in fulfilment of the requirements for the award of Doctor of Philosophy in Sustainable Futures at the University of Technology Sydney.

This thesis is wholly my own work unless otherwise referenced or acknowledged. In addition, I certify that all information sources and literature used are indicated in the thesis.

This document has not been submitted for qualifications at any other academic institution.

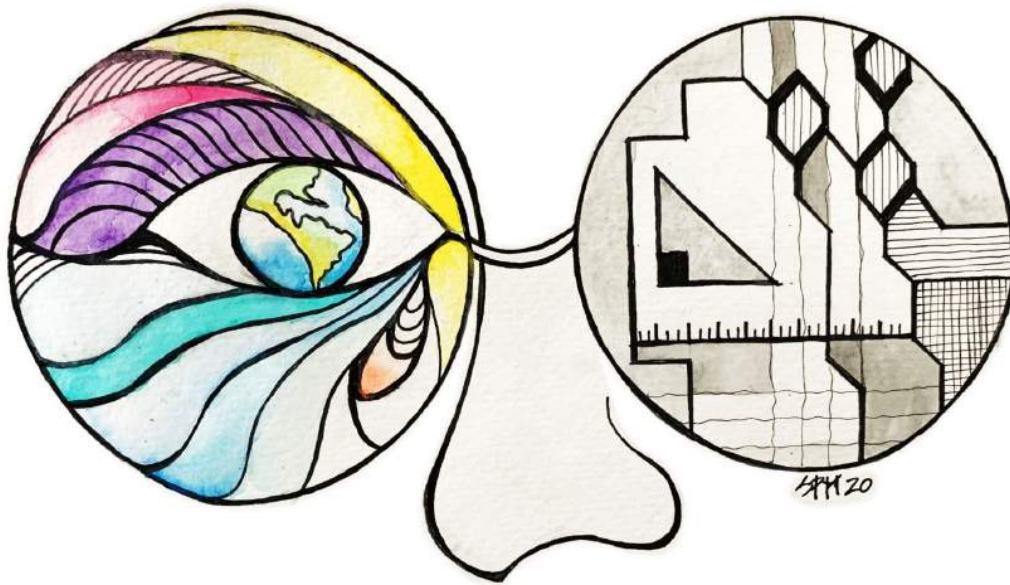
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Katie Ross

30 June 2020

“Today, a significant minority have abandoned the Newtonian-Cartesian belief system in favour of some elaboration of a systems theory worldview. But it may be that they, and certainly the majority of people, still see the world in Newtonian-Cartesian terms. It is a big shift for concepts to move from being simply beliefs held in the mind to beliefs that inform and transform the very act of perception” (Heron, 1992, p. 251).



“What happens in this space is a perception of relationality. It is a space of verbs, of action, of doing, of intertwining, of becoming. It complements the Western focus on nouns, certainty, stasis, Cartesian grids, Boolean truths, and binary ones and zeros” (Chapter 8).

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To all of those who have come before; to the philosophers, cultures and educators who had visions of people and nature living in more harmonious and equitable ways; whose creativity, bravery, and experimental nature meant they also acted on their hopeful visions; whose incredible ideas and work made this inquiry possible - I offer my deepest gratitude. As intrepid guides, you offered many diverse lessons from which to learn and this inquiry attempts to honour your hard work and beautiful creations. May this inquiry and interpretation be of use and inspiration to those who share a similar vision.

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make my computer stand and widen the breadth of my thoughts and perceptions, and Seth for his beautiful art collaborations and contributions (designated as 'Seth P. Morrison' within). Art helps us feel and perceive that which was previously disconnected, thank you for helping us to connect (and thank you to Evie and Luke for donating your striking profiles for Seth's Janus-head).

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Preface

Reading this document may feel different (or, it might not). This feeling could arise because of the language that I invoke. To explain and prepare the reader, I introduce in this preface what could be considered variations of typical 'linguaging' (Maturana, 1988).

The language we choose is reflective of the worlds we create (Lakoff & Johnson, 2003). In this inquiry, I attempt to bring my language into alignment with the beliefs I try to embody. That is, I try to language-into-being a stronger perception and respect of relationality; or what can be construed as a profound *evolving*, mysterious *interdependence*. So, how do I attempt to language relational perceptions and worlds into being in this document?

The reader may have already noticed, emotionally or cognitively, the use of '*present tense*' verbs. When I use present tensing in this inquiry, I am encouraging myself and you, the reader, to be mindful of reality as a process: that reality is not stagnate but a perpetual becoming. When we use nouns, we tend to be stuck in the perception of a changeless state and order of things, e.g. a preference for a materialist paradigm.

To recognise and honour all learning as a relational dialogue (Marti & Sala, 2019, p. 28), I also use both pronouns of '*I* and *we*'. I recognise that 'I' (whatever that may be) have done the writing, yet this inquiry is being put forward as a dialogue with you, the reader. Therefore, we are on this journey together. At times, I use the pronoun 'we' out of respect for your contributions to this journey; e.g. attempting to invoke a more relational experience.

To recognise learning as a relation between emotional, aesthetics and the rational in a static written document, I include many *visuals*; both my own creative analytical visuals, and work by other artists. Visuals offer a moment to pause, to contemplate what has been written, and to engage with transrational learning through the embodied processes invoked by visuals and in particular art. In this inquiry, I attempt to recognise how knowing transcends just rational cognition (Inayatullah, 2005, p. 7).

My visuals are deliberately *hand-drawn* as an intension¹ of a particular epistemological belief: knowledge as relational, creative and evolving. By using hand-drawn diagrams, I am

¹ E.g. the internal content of a concept.

attempting to invoke another 'subjective' integration of myself into the document. This also represents the process of knowing as meaning-seeking in addition to meaning-as-conclusion.

To further invoke the belief of 'knowing as dynamic', I often use the term *inquiry*, in addition to *thesis*. Etymologically speaking, in this document I am 'asking and seeking' (inquiry) in addition to 'putting down' (thesis). That is, I use the word 'thesis' primarily when I am referring to this actual document. I use the word inquiry when referring to my on-going dialogue with philosophers and educators. For me, 'inquiry' is more respectful and mindful of all of those whose work and learning has been enfolded into my inquiry, and whose learning is yet to come. And, 'asking and seeking' involves the kind of education that is the subject of this thesis.

Similarly, to embody 'truth as an ever-unfolding continuous process' (Hutchins, 2014, p. 99), part of my intention in this inquiry is to raise more questions relevant to transformative sustainability learning than I am able to answer. At the end of most chapters, I raise *generative questions*, as a form of 'revealing illuminations'.

In sum, my language might be described as soft and gentle. The intention is to bring humility and relationality into the process of academic writing. As I recently learned in India, humility is that stage of consciousness in which, whatever the realisation, you know the infinite is still in front of you. How do I interpret this within the context of my inquiry? I was raised within a Western paradigm, and I am sure I remain ignorant of how my complex worldview and its alchemic manifestations still results in reductionist, separatist perceptions. And this is my challenge throughout this inquiry: to strive to be aware of my unconscious worldview within the simultaneous becoming of me and this inquiry, even while knowing separatist tendencies still have diverse and spectacular manifestations that I might not perceive. So even though I maintain an intention for 'linguaging' a different world into being (Maturana, 1988), I am sure there are many moments where I fail. For that, please forgive this misalignment and help me/us expand my/our awareness.

My inquiry was born from experience and passion around the questions of: what type of learning could help us humans reciprocally co-create more ethical, life-affirming presents and futures? This has been an on-going quest for many years. And so, we must remember, there is no beginning and no end to inquiry. Inquiry, Learning, Change is the process of life. Therefore, this doctoral inquiry started before my official start date and will continue long after; this 'thesis' is but a proverbial page, albeit a very long page, in my/our book of continual learning.

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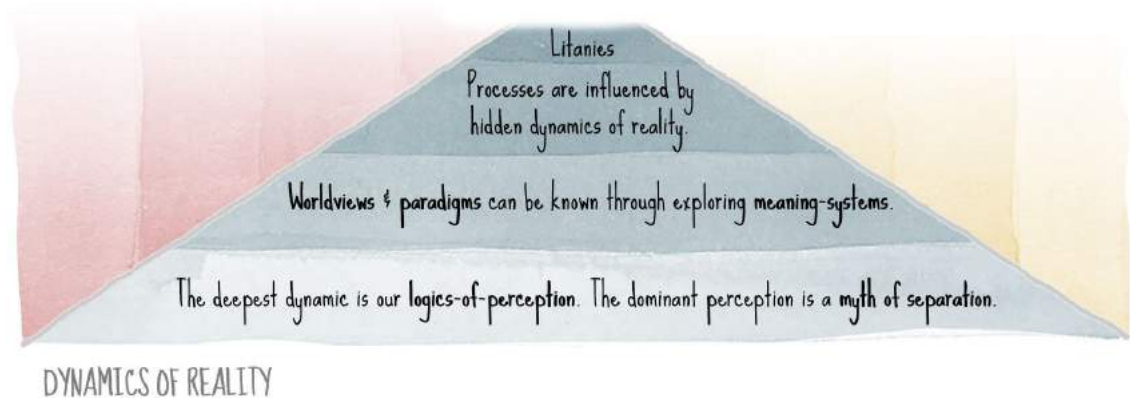
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Conceptual guide and glossary

There are two primary concepts used throughout this inquiry. The first concept is of 'dynamics of reality'. The second concept is of 'orders of learning'.

Here I present a visual summary for both of these concepts. Below each visual, I define the terms used to describe these concepts.

The first concept, 'dynamics of reality' is a heuristic for inquiry and change creation. The premises of this heuristic are firstly: reality is influenced by many dynamics, some visible and tangible, and some hidden and often unconscious. Secondly, in order to fully grasp a situation, and create more meaningful change, inquirers can delve into all of these dynamics of reality (e.g. the layers in *Visual 1*).



Visual 1. Concept of 'dynamics of reality'

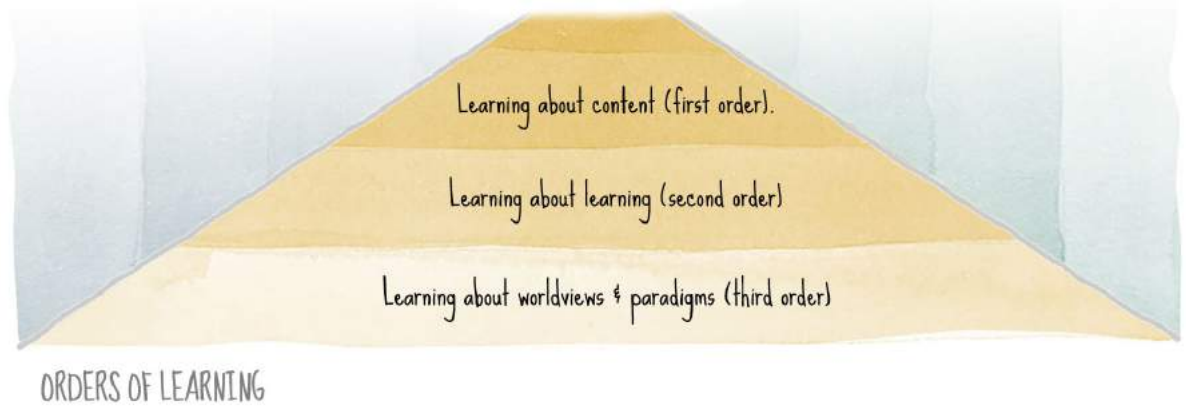
I use several terms in relation to the 'dynamics of reality' concept. Below, I define the primary terms of the 'hidden, or internal dynamics, e.g. the bottom two layers in *Visual 1*, in the order that the terms build on one another.²

² As the terms are so few, and it is arguably more beneficial to grasp these terms in relation to each other and their over-arching concept, I present them relationally, using visuals and a relational logic for presenting the terms (instead of in alphabetic order, for which the primary goal is efficient orientation).

| Term | Description |
|--|---|
| Worldview/paradigm dynamic of reality | |
| beliefs | A set of often unconscious assumptions or theories about oneself or the world that give meaning to our experience of the world around us. |
| meaning-system(s) | Categories or fields of belief 'types'. Examples of these 'systems for meaning' include beliefs in: reality (ontology); knowing (epistemology); what is good and valuable (axiology); the relationship between humans and nature (anthropology), etc. All of these meaning-systems mutually influence each other to create profound meaning through which reality is perceived and interpreted. In recognising the interdependence amongst these meaning-systems, I often link the meaning-systems in the text, i.e. onto-epi-axiology (which refers to beliefs that arise from one's interdependent beliefs about reality, knowing, and value). |
| worldview | An <i>individual's</i> constellation of meaning-systems; that is, a complex constellations of meaning and meaning-making that converge to dynamically organize <i>one's very own</i> synthetic apprehension of the world and thus inform how one uniquely interprets, enacts, and co-creates reality. A worldview develops in an individual (i.e. ontogeny). |
| paradigm | A <i>culturally-shared</i> constellation of meaning-systems; that is, an evolutionary and prevalent pattern of often unconscious beliefs <i>shared across a collective</i> or <i>culture</i> . Paradigms develop in a culture over time (i.e. phylogeny). |
| dominant-cultural-paradigm | A signifier representing the dominance of one particular paradigm. The meaning-systems of this dominant paradigm include: reality as material and static; knowing reality by reducing complexity (reductionism) to find the 'true' knowledge (positivism), in order that we humans can ascertain, plan out and control change (determinism) in the most efficient way (sequentialism). This paradigm is <i>dominant</i> in the sense that its impacts and consequences are globally ubiquitous. |
| Logic-of-perception dynamic of reality | |
| logic-of-perception | The mind's predominant habits of logic used to make unconscious inferences based on one's embodied perceptions. |
| myth of separation | The logic-of-perception within the dominant-cultural-paradigm is largely a disjunctive, exclusionary logic. This logic is also variously referred to as: binary, dualist, fragmenting, oppositional, etc. Using this logic to the exclusion of all other logics is following and enacting a 'myth of separation'. |
| <> | Symbols I use when recognising 'opposites' or 'distinctions' that can be perceived as in relation, inseparable play. |
| Integration of 'internal' dynamics of reality | |
| philosophical premise | When a person or a group of people consciously reflect on the influence of one's own unique worldview and culturally shared paradigms on their experience and creation of reality, and subsequently espouse desired <i>meaning-systems</i> and <i>logics-of-perception</i> , this articulation can become a personal or shared <i>philosophical premise</i> informing one's actions in the world. |

Table 1. Definitions of terms relevant for the 'dynamics of reality' concept

In addition to the ‘dynamics of reality’ concept, the other over-arching concept is one of ‘orders of learning’, presented below visually and in definitions.



Visual 2. Concept of ‘orders’ of learning

Many scholars have embraced and re-interpreted these dimensions of learning. Hence in the table below, I articulate my definitions for these terms in this inquiry.

| Term | Description |
|-----------------------|--|
| First-order learning | Learning about the content, or the matters at hand. |
| Second-order learning | Learning about how we learn; or learning about the ‘context’ of learning. |
| Third-order learning | Learning about how one’s own unique worldview and other shared paradigms influence how we learn about the matters at hand and how we learn about learning. In other words, learning about the context of ‘the context of learning’; or learning about the philosophical premises informing the learning process and content, and why that matters. |
| Threshold concepts | Concepts that might indicate an opportunity for third-order learning. These concepts are part of the philosophical premise informing the context of the learning experience. |
| Consciousness | The focus of our awareness or our attention. For example, one can bring one’s awareness to one’s own worldview-in-action, or the differences in experiencing contexts born from unusual premises. |
| Worldview change | When one becomes aware, or conscious of one’s worldview, and attempts to adjust their meaning-systems, be it a feeling of stretching, expanding, nuancing, complexifying, or transforming their worldview. In this inquiry, ‘complexify’ refers to transitions from less dualistic to more contextual worldviews. |

Abstract

The dominant cultural paradigm is reflected in language heavy with static, mechanistic nouns. The perceptions of paradigm disrupt the complex inter-relationality from which diverse life on this world emerges and evolves.

Most learning experiences in the dominant paradigm, even though well-intended, unconsciously perpetuate these static, mechanistic, anthropocentric, and hierarchical beliefs. This thesis is a deep and wide exploration of how else things might be.

A diverse group of educators have been experimenting with ways to bring more relational paradigms into being. The work of these educators can be described as transformative sustainability learning. The intention of transformative sustainability learning is to create the conditions for students to perceive, feel, think, and act in ways within and beyond the dominant paradigm. Helpful in creating these conditions for students are pedagogies born from more relational paradigms, such as transdisciplinary, critical, experiential, systems and complexity theories.

The thesis explores how each of the philosophers who created such relational pedagogies paused to reflect on the long arc of history, and as a result asserted that the dominant paradigm, and its views of reality, brings deleterious effects which seriously impede humanity's ability to be sustainable, let alone resilient and regenerative. As such, these philosophers created processes to help learners transcend these beliefs.

Even though the pedagogies associated with transformative sustainability learning were born from a more relational perception, with a focus on verbs, process, dynamism, not everyone who uses the term 'transformative sustainability learning' works from within these philosophical premises. Not everyone has an awareness of their own worldview or the influence of the dominant paradigm on their educational practices. Thus, these relational and complex pedagogies can be separated from their philosophical foundations and be practised within the beliefs of the dominant paradigm (i.e. static things organised by human superiority). Perhaps this inability to transcend the invisible beliefs of the dominant cultural paradigm explains in part why earlier sustainability pedagogies have not been as broadly impactful as hoped. *If so, how can we become more aware of our own worldviews and the paradigmatic implications of the concepts we engage?*

Relational pedagogies share a critique of the separatist perception infusing the dominant paradigm. Helpful in complexifying this perception is one's own transformative

experiences. This inquiry reveals and probes the stories of the philosophers who preceded transformative sustainability learning as well as transformative sustainability scholar-educators who have undergone such transformative experiences. Designing transformative sustainability learning is benefited by having transformative experiences of one's own.

As consciousness of their worldview and the surrounding paradigms strengthened, these educators developed an expanded set of relational beliefs to inform their learning design. They design experiential learning about content, process and experiences enabling new ways of perceiving and being, which create the condition for a more sustainable, regenerative world.

Weaving the whole together results in a rare, deep and wide exploration of diverse meaning-systems, and the subsequent distillation of threshold concepts for stretching and complexifying both learners' and teachers' ways of being towards sustainability.

In short, this is a story about an unusual cohort of worldview-aware educators who are helping others to become worldview-aware. This inquiry offers scholarship into the philosophical premises and processes of transformative sustainability learning, in support of educators and facilitators seeking learning experiences that will support a more sane, more just, ecologically alive world.

Introduction

Chapter 1:

Introduction

To begin, this chapter provides: the context of the inquiry, a short story of my experience of the inquiry, the inquiry's over-arching questions, and an introduction to the territory covered in each of the following chapters. Lastly, I explain and justify the atypical length of this thesis.

1.1 Context of this research

For decades, many philosophers and educators have recognised that the transition to a safe and just global community (Raworth, 2012; Rockström et al., 2009), requires a different, deeper type of learning experience than those commonly facilitated within formal education (Orr, 2011; Schumacher, 1997). These scholar-educators argue that the dominant education system replicates and perpetuates the very beliefs that contribute to the existential crises we face today as a global community (Dewey, 1933; Freire, 1970; O'Neil, 2018; Sterling, 2019).

This clarion call for deeper learning experiences has become a 'litany'³ within environmental education, education for sustainability and education for sustainable development. Janet Moore, a Canadian sustainability educator, summarises this repeating message as "quite simple – a paradigm shift needs to occur if we are going to stop

³ Litany as invoked by the work of Sohail Inayatullah's causal-layered analysis of reality creation. The litany is the top-most layer, defined as the most repeated 'headline statements' of the problem (2008).

increasing the global rates of human-caused environmental and social degradation” (Moore, 2005a). In response to this litany, the reflex seems to include jumping to new terminologies and processes for what we do.

While potentially an improvement, we must also attend to the deeper dynamics of reality. These dynamics include the often invisible and unconscious individual worldviews and shared cultural paradigms. Instead of jumping to new pedagogies alone, educators must also become aware and conscious of “the epistemic sets of values and ideas which fundamentally influence curriculum design, pedagogy, and all the other aspects of educational provision” (Sterling, Dawson, & Warwick, 2018). In support of brave and tenacious educators stepping into the unknown to collectively see the limits of our worldviews (and to learn how to perceive, understand, and create beyond them as Hasan Ozbekhan suggests we must, 1968), this inquiry engages in a deep and critical reflection on the worldviews and paradigms influencing ‘transformative sustainability learning’. If sanity is ‘knowing one’s own epistemology’, as Gregory Bateson (2010) suggests, how can we take the time to bring a bit more sanity into the world?

‘Transformative sustainability learning’ is a relatively new term, growing in use and interest, especially over the last 10 years. As a concept, transformative sustainability learning is conceived of and implemented in many diverse ways. This inquiry firstly explores the worldviews and paradigms contributing to the *premises* for transformative sustainability learning, and then secondly, how these diverse views manifest in differently designed and curated learning *processes*. In delving into the diverse *premises* and the *processes* of transformative sustainability learning, we gain complementary and provoking insights about what types of experiences might better enable all of us as learners to co-create more resilient, beautiful and ethical futures.

1.2 How has this inquiry unfolded and what questions does this inquiry explore?

In honouring the recognition that there is always a story that sits behind a final scholarly document, I now share a condensed story of how my inquiry unfolded, in the hope that sharing this story more openly might also provide helpful context and honesty to the inquiry itself.

I spent my first year exploring the philosophical origins of pedagogies relevant to transformative sustainability learning. Based on my previous time as an environmental

and sustainability educator, I 'knew' I'd have to start with John Dewey and Paulo Freire. And, as my experience as a sustainability researcher, I 'knew' this review would also have to include philosophers of transdisciplinary, systems and complexity theories. The work of Heather Burns justified my approach. Her conception of transformative sustainability learning includes the integration of these pedagogies: experiential, critical, systems, and transdisciplinarity (Burns, 2009, 2015).⁴

My original assumption was that the most helpful contribution for practitioners of transformative sustainability learning was an inquiry into courses that successfully integrate these pedagogies, and thus, before I could develop a rich understanding of these types of courses, I needed to explore their philosophical origins.

What began as an intuitional nudge to start with philosophy, justified as an intention of 'knowing the lineage and development of various educational theories', became a deep dive into a transdisciplinary collective who share resonant arguments about the ubiquitous yet often hidden beliefs of the dominant paradigm. Each argued the dominant-cultural-paradigm manifests our untenable, ruinous relationships with our shared Earth home. These philosophers from 'different' disciplinary backgrounds and theories, and perceived as 'elders' of the diverse pedagogies related to transformative sustainability learning, shared similar rhetoric about why humanity is creating uninhabitable conditions. In sum, each of the *pedagogies* arose from philosophical *premises* that included a profound critique of the dominant modernist paradigm.

Specifically, the philosophers attributed the profound existential crises of our human and natural ecologies to specific unconscious beliefs of the dominant paradigm: *beliefs* in reality (ontology), beliefs about knowing and wisdom (epistemology), beliefs in values and morals (axiology), etc. Moreover, each philosopher critiqued (using diverse discourse and examples) the core *myth* of the dominant paradigm – a belief in separation, which infuses one's perceptions and worldview.

In response to this critical engagement with deeper dynamics of reality, each philosopher put forward alternative, creative, expanded views for perceiving and engaging in the world. So, I began to pay attention to and map out the very specific critiques of the philosophers, and their clarion calls for perceptions and beliefs that could expand, shift, stretch, complexify, transform the dominant paradigm. In particular, I began to wonder if

⁴ Her work also includes pedagogies of place, but in my first year, I did not engage with these philosophers, as I had not discovered her framework yet.

this inability to transcend the manifestation of separation explains in part why earlier sustainability pedagogies have not been as broadly impactful as hoped (De Angelis, 2018; Sterling, 2003);, and if so, how could my inquiry support and amplify the philosophers' clarion calls to transcend the myth of separation?

A strong alignment exists between this initial process I undertook with the philosophers and post qualitative processes. Some post qualitative inquiries have been described as *rhizomatic* reading (i.e. creatively evolving to circumstances) for the creation of a *cartography* (tracing) of a '*plane of immanence*' (e.g. Lenz-Taguchi, 2016). A perception of a '*plane of immanence*' invokes the idea that everything collapses in to our worldviews (Lenz Taguchi, 2016). That is, our philosophical beliefs and our actions are inseparable, hence on the same plane. In this tracing process, I found circles of convergence that critiqued the Western plane of immanence (beliefs-as-they-manifest-in-actions). I gathered this 'chattering' together, synthesising the "multiplicity of voices that create 'a pattern, a field of forces'" (Colebrook, 2008, p. 16 in Lenz Taguchi, 2016, p. 42). I undertook this process initially without external justification, meaning, I did not expect to see this pattern emerging.

Even after discovering this *minoritarian* (existing outside the dominant paradigm) critique of the Western plane of immanence, I still insisted that these pedagogies – experiential, critical, systems, complexity, transdisciplinarity - were the place of focus, but my conception expanded slightly. My original assumption was that the most helpful contribution to practitioners of transformative sustainability learning was a study of *how* courses successfully integrate these pedagogies, but now I realised the value of these pedagogies lies in their inherent potential worldview and paradigm stretching capacity. My Stage 1-2 report details how the worldview 'stretching capacity' differs for each pedagogy, and thus together they are complementary.

Crucially, however, I began to wonder how other educators engaged with the philosophical depths of the pedagogies. If I had been working in environmental education and education for sustainability in schools, national parks, and also as a researcher, and had not yet walked up into these philosophical mountains, how were other practitioners traveling? I loosened my grasp on the pedagogies, and I embarked on a series of interviews with practitioners with a much more general discussion of how they became involved in transformative sustainability learning, why they do what they do, and how they do what they do. Before the interviews, I read and deeply considered as much of the

educators' writing as I could get my hands on. I hoped that this would help us 'get to the depth of things' during the interviews.

In the interviews and the readings, I noticed how some of the educators spoke or wrote at length about the importance of their own transformative learning experiences. This subset of educators reflected on the times when they became aware of the paradigmatic waters within which they were swimming, and how these waters infused their own personal worldview, and even how becoming an adult in the dominant paradigm shifted them away from relational perceptions and beliefs they had when they were younger. The educators then described these transformative and regenerative experiences (Lange, 2004) as central to how they conceived of and designed transformative sustainability learning experiences. What's more, their expanded and complexified worldviews resonated with premises of the philosophers.

The educators who shared their transformative learning experiences with me and who engaged with the philosophical critiques informing sustainability pedagogies tended to curate the learning experiences in qualitatively different ways. In essence, these aforementioned pedagogies (critical, experiential, systemic, etc.) could be taught from and within vastly different paradigmatic stances. For example, the delivery of 'systems thinking' in a sustainability course could be constructed from the typical dominant worldview of separation, with assumptions of predictability and control by experts. Alternatively, courses using 'systems thinking' could be developed from the paradigmatic perspective of emergence, criticality, and inseparability of the observer and observed. As we'll see in the case of the Hawkesbury Agricultural Bachelor program, educators can also incorporate both perspectives of systems (e.g. predictable and emergent) as a means of engaging the learners in developing awareness of their own worldview, and its implications.

By creating the context of the learning experiences from more relational, non-separatist beliefs, the educators believed they could better create the conditions for positive, meaningful learning. In another example from Heather Burns' vignette (which we'll explore on leadership for sustainability education), Heather encourages her students to focus on self-care and to develop a self-care plan. In the dominant paradigm, this could be typically conceived of as checklists of actions (who to spend time with and how to get exercise). However, Heather's philosophical premises of learning are steeped within the worldview beliefs of 'living systems' and a relational perception of 'interbeing'. As such, her learners developed self-care plans that envisioned not only what they should do, but

perhaps more powerfully, how they are in the world (Burns, 2016b). The self-care plans were more about the compassion, humility, curiosity that they enacted as a way of being. This notion of self-care, emanating from a living systems worldview, can be contrasted with other sustainability learning notions of self-care, in which time management; physical well-being; professional interaction; and organising work environment are taught.⁵

Similarly, Heather's notion of leadership as a deeply collaborative, distributed process with space and respect for emergence and dynamism, can be contrasted with other forms of leadership in sustainability education focusing on: preparedness for meetings and accountability.⁶ This is not to say that one approach is right or wrong; both interpretations of self-care offer valuable yet distinct lessons. Rather than perceiving these approaches hierarchically, we can perceive them as nested and inter-relating. That said, as this inquiry shows, Heather's conceptualisation and approach has likely greater potential to develop worldview awareness and offer paradigmatic stretching, thereby responding to the clarion calls of the philosophers.

In other words, my inquiry came to explore the 'plane of immanence', between educators' worldviews and practices. What were the philosophical premises underpinning their work? And how did philosophers and educators come to an awareness of how the dominant paradigm may have infused and in-formed their own worldviews? And subsequently, how did that awareness, and shift in educators' own worldview, influence how they designed and curated learning experiences? I used these questions to guide my meaning-making of the interviews, philosophical readings and to undertake a more thorough interpretation of transformative sustainability learning literature.

⁵ Reference withheld. At times in the inquiry, I make points which could be interpreted as critiquing someone's worldview-in-action, and I have made the ethical choice to withhold the reference. This decision is because either it was a person I had interviewed (but not profiled in a vignette), or a single journal article by an author who I hadn't engaged in a dialogue on their philosophical premises. By recognising that worldviews-in-action are so much larger and more complex than a single reference, I instead note 'reference withheld'. I believe that we can learn from each other as collective, without having to inflict potential harm.

⁶ Reference withheld.

1.3 Over-arching questions

The unfolding and responsive process over the last four years evolved into an inquiry of the following over-arching questions of premises and processes of transformative sustainability learning.

Premises of transformative sustainability learning

- What are the resonant critiques across philosophers preceding, and practitioners of, transformative sustainably learning regarding the dominant paradigm?
- What types of experiences, for philosophers and educators, transformed their perception and beliefs?
- What are the visions for how to stretch, expand, transform, complexify the dominant paradigm?

Processes of transformative sustainability learning

- If current experiences of transformative sustainability learning seek to stretch beyond the dominant paradigm, how are current practitioners designing their learning processes to enable these stretches and shifts? What unique interpretation does each vignette provide for curating ethical spaces of transformative learning?

Within and from this inquiry, I offer contributions for both content and process, as well as provocative questions for educators and facilitators, and collective groups of learners seeking a more regenerative world. These contributions are more fully articulated in the final chapter.

1.4 Lay of the land⁷

The communication of this inquiry is grouped in five over-arching segments:

- *Introduction* (two chapters)
- *Scholarly Process* (three chapters)
- *Premise* (eight chapters)
- *Process* (two chapters)
- *Synthesis* (concluding chapter).

Segment: Introduction

The Introduction segment is presented in two chapters:

- this chapter (cross-referenced as *Ch. 1, Introduction*) and
- the following *Spheres of Inquiry* chapter (*Ch. 2, Spheres of inquiry*).

The *Spheres of Inquiry* chapter sketches the key concepts to this inquiry. These concepts are sustainability, worldviews, cultural paradigms, dominant-cultural-paradigm, consciousness, transformative learning, and transformative sustainability learning. For each concept, I synthesise relevant literature and present my intended meaning of the concepts as used in the inquiry. I also visualise the interconnectivity of these concepts.

This chapter meets the needs of a more traditional literature review, in that it positions and justifies my inquiry. However, this chapter is distinct from a more traditional literature review, in that the entire segment of Premise represents a 'literature review' of transformative sustainability learning, interwoven with case studies and perspectives of philosophers.

⁷ Interesting, 'lay' is North American, 'lie' is British. But of relevance to this inquiry is that 'lay' refers to 'coming into a resting position', while 'lie' is already a state of being. Therefore I invoke lay, in the sense that this document is a temporary meaning-making, a pause, which should to be brought back into relation with our own continued engagements with the world.

Segment: Scholarly process

The Scholarly Process segment is divided into three chapters discussing:

- philosophical orientations (cross-referenced as *Ch. 3, Philosophical orientation*),
- structural and analytical framing of this inquiry (*Ch. 4, Analytical framing*), and
- perspectives interwoven within the analytical framing (*Ch. 5, Perspectives*).

In the chapter on the philosophical orientation (*Ch. 3*), I introduce post qualitative philosophies. Then, I explain the resonances between post qualitative philosophy, this inquiry, and my continued attempts to remain aware of how my worldview influences my own actions, including as a researcher. I do not suggest this inquiry sits squarely within the realm of post qualitative research, rather, I offer this thesis as an example of a Janus-head, looking simultaneously towards qualitative and post qualitative research.

The second chapter in the segment on Scholarly process, I explain the structure and analytical framing of this inquiry (*Ch. 4*). The structure is the concept of 'layered dynamics influencing reality'. If the litany is the most obvious dynamic of reality, beneath that, we can investigate the processes and systems influencing our lived experiences. Further still, lies our often hidden and unconscious individual worldviews and culturally-shared paradigms. Finally, the 'deepest', and potentially most powerful dynamic influencing reality is our logic-of-perception (as I term it in this inquiry).

In *Ch. 4, Analytical framing*, I clarify my interpretation of the concept logic-of-perception (which I conceive of as the myth of separation in the dominant paradigm), as well as the beliefs (or meaning-systems) comprising a shared paradigm or individual worldview. These meaning-systems, for example include beliefs about: the universe (cosmology), the sacred (spirituality), reality (ontology), knowing and wisdom (epistemology), values (axiology), views of humanity (anthropology), how society should be organised (societal vision), and more.

The last chapter in the Scholarly Process segment is an introduction to the perspectives drawn on in this inquiry (*Ch. 5, Perspectives*). These three sets of complementary perspectives include: philosophers preceding transformative sustainability learning pedagogies, current literature, and four in-depth vignettes of transformative sustainability learning. Hermeneutic in nature, I read broadly and slowly to interpret and make-meaning of the writing (and interviews), in terms of their perceptions, worldview beliefs and learning processes. In short, I looked for patterns and outliers within the 'dynamics of

reality' analytical frame across these three perspectives. In this chapter, I introduce the primary philosophers, four vignettes, and current literature entwined in this inquiry.

Segment: Premises of transformative sustainability learning

This *Premise segment* explores two 'hidden', or 'internal' dynamics of reality informing transformative sustainability learning. I journey through these internal dynamics in the form of *critiques* and *visions*.⁸ I also interpret the *transformative moments* which enabled philosophers' and educators' awareness of these hidden, internal dynamics.

Premise: Critique

To begin the pilgrimage of *Premise*, the critique is presented in two chapters, one for each 'often unconscious' dynamic of reality. The first chapter demonstrates the resonance between the philosophers, current literature and the vignettes in terms of their critiques of dominant paradigmatic beliefs (which I subsequently cross-reference as *Ch. 6, Premise: meaning-systems*). I present this chapter using a visual of meaning-systems (beliefs) comprising an individual worldview or shared paradigm. In the second critique chapter, I unearth the shared critique of the underlying separatist myth of the dominant paradigm (*Ch. 7, Premise: myth of separation*).

Premise: Transforming our premises

After traversing and critiquing two 'internal' dynamics of the dominant paradigm, we explore how to enable additional perceptions and beliefs. Firstly, I distil how the preceding-philosophers each sought to move beyond the myth of separatism (cross-referenced as *Ch. 8, Premise: philosophers' logic*). Next, I compare and contrast similarities in transformative moments that helped philosophers cultivate these beyond-separatist perceptions (*Ch. 9, Premise: philosophers' activating-events*). Then to gain insights into the variety of ways transformations have happened for educators, we explore the transformative learning experiences of the vignette-educators (*Ch. 10, Premise: educators' transformative learning*).

⁸ To help signpost and compare beliefs and perceptions, I visually emphasise the language of *critiques in red*, and *visions in blue*.

Premise: Vision

In the vision, we return again to the two internal dynamics of reality. This time, we begin with the deepest dynamic, the logic-of-perception. I interpret the vignettes to demonstrate how educators sought to incorporate beyond-separatist (relational, holistic, intra-active) perceptions within their philosophical premise. In a playful thought experiment, I then integrate the beyond-separatist logics-of-perceptions of the philosophers and the vignette educators to create a symbolic image that includes and transcends the myth of separation. Through play with these symbols, new insights and resonances might emerge in learning, inquiry, and perception (*Ch. 11, Premise: relational perceptions*).

Next, I synthesise the worldview meaning-systems of those contributing to transformative sustainability learning. I entwine the three sets of perspectives and summarise these insights into potential threshold concepts for transformative sustainability learning (*Ch. 12, Premise: meaning-systems*).

Premise: Synthesis

Finally, in an interim **Synthesis** chapter (*Ch. 13, Premise: premise synthesis*) I reiterate how all of these movements (**critiques**, transformative learnings, and **visions**) can be conceived of as crucial to the premises of transformative sustainability learning.

Segment: Process of transformative sustainability learning

This segment traverses two chapters:

- the models and learning processes of the vignettes (*Ch. 14, Process: models*), and
- the engagement with the vignettes along three orders of learning (*Ch. 15, Process: three-orders*).

In *Ch. 14*, I reveal how each educator creates a unique approach to transformative sustainability learning, based on their philosophical premises and unique transformative learning moments (discussed in *Premise chapters 6-13*). I summarise each vignette visually which teases apart, distinguishes, and reveals the multiple dynamics of learning processes designed and facilitated by the educators within each vignette.

In *Ch. 15*, I compare how each vignette engaged with nested processes of first, second, and third-order learning in order to gain insights on diverse approaches and develop questions for further inquiries.

Segment: Synthesis

Within this final chapter, I weave the strands of this inquiry together in the form of concluding insights, reflections, and unique contributions. I also suggest what we as educators and learners might consider going forward.

1.5 An explanation of this thesis length

This document is longer than the typical thesis. Below I articulate the reasons for this extended length including: the context of the inquiry; the attempted authenticity and alignment with my content and 'process'; the depth of the inquiry; and the breadth of perspectives I interweave.

The context

My thesis reveals *philosophical premises* and *processes* of a relatively new field of learning as it manifests within university settings – transformative sustainability learning. As this is a recent 'signifier', this thesis builds up the premises and diverse practices from a fresh base. This inquiry requires an extended stay within the complexity of philosophical premises, as it relates to practices. I attempt to emulate a model for deep scholarly inquiry.

Intended alignment between content and process

Within this inquiry, I seek to develop alignment and authenticity between the content of the inquiry and the process of the inquiry. The content of the inquiry is about learning experiences that contribute to worldview change from a mechanical paradigm towards inclusivity of a relational paradigm. Thus, in my inquiry process and thesis, I also seek to manifest similar types of paradigmatic change sought by the content.

Experimenting with worldview change in my own thesis requires greater length for several reasons. Firstly, it requires a longer explication of postmodern philosophy, and how my research aligns with this philosophical orientation (*Ch. 3, Philosophical orientation*). Secondly, in alignment with post qualitative philosophy, I did not set out to use a pre-existing method or theory, but created one as it emerged from deep philosophical engagement. This intention also requires an extended word length to both explain and justify the spheres of inquiry within which this thesis is situated (*Ch. 2, Spheres of inquiry*). I also invoke visual ways of making meaning, to include emotional and

aesthetic ways of knowing, as well as rational ways of knowing. These visuals require additional explanation and justification in this scholarly work.

Ursula le Guin also sought a similar paradigmatic change, from linearity to process. She suggests that too often, our forms of meaning-making in the dominant culture, like modern science, have been dominated by the linear 'spear' metaphor to sharing knowledge (le Guin, 1996, p. 153). In this linear form of meaning-making, the hero tells a compelling story, reduced of its complexity, getting straight from Point A to Point B, where the knowledge is presented as a trophy conquering all, ending at a point of secure and comfortable stasis. Much of academia also tends to honour linearity and certainty.

Instead of a linear and straight thesis, another metaphor to guide our meaning-making of "what is in fact going on" (le Guin, 1996, p. 154), is Ursula le Guin's carrier bag metaphor. In this metaphor, meaning-making is a slow process, born of the collection of ideas, exploring their relationality, and allowing for emergence. Whereas the linear approach implies efficiency and hierarchy, the carrier bag metaphor requires a slowness and willingness to hold many parts of interest in the inquiry.⁹

Where possible I try to remain in the complexity of context. This approach means rather than domination, there is thought-exploration and provocations within the complexity of the content. My purpose is not "stasis, but continuing process" (le Guin, 1996). In other words, this thesis is more a *carrier bag thesis* than a *hero thesis*.¹⁰ It is a long and necessary pilgrimage to new perceptions to help improve the way we (or I) create knowledge.

An additional metaphor for this inquiry is the notion of a pilgrimage (that is, a pilgrimage with a carrier bag). At points, when I describe this inquiry as a 'pilgrimage', I refer to more of a metaphorical, philosophical pilgrimage (Gidley, 2008, p. 449; Tisdell, 2017), where I see a pilgrimage as an open journeying into discovery and gaining a transformed meaning about our selves, nature, others, and the sacred, which the pilgrim then integrates into daily life.

⁹ The corollary to the 'carrier bag of knowing' is that it is not as compelling as a linear journey: "*The only problem is that a carrier bag story isn't, at first glance, very exciting. "It is hard to tell", writes Le Guin, "a really gripping tale of how I wrested a wild-oat seed from its husk, and then another, and then another, and then another, and then another, and then I scratched my gnat bites, and Ool said something funny, and we went to the creek and got a drink and watched newts for a while, and then I found another patch of oats..."*" (Leddy, 2019).

¹⁰ Although, given more time, perhaps it could have become an integration of the best of both processes.

The depth of the analytical frame

More pragmatically, in order to comprehensively probe and reveal the philosophical *critiques* and *visions*, I sought to explore many meaning-systems and logics-of-perception. This explication requires greater length, and is born of a fundamental question underlying this inquiry: does awareness of more worldview and paradigmatic beliefs make reflection on one's worldview qualitatively different from when awareness is developed of only a few meaning-systems?

Breadth of perspectives

Finally, the extended word length is an artefact of the large breadth of perspectives required in this inquiry. Transformative sustainability learning emerged from a synthesis of unique philosophies. Thus, a holistic understanding of its philosophical intention required a transdisciplinary engagement with philosophers across diverse fields: learning systems, complexity, transdisciplinary and critical pedagogy.

In addition, a common tendency among scholarly work is to include mainly philosophical work or more pragmatic action-research inquiry, but less common is an integration of both. In attempting to bridge this perceived gap between philosophy and practice, I engaged two sets of perspectives on current practice to entwine with the philosophers. The first set, the current literature of this new field, has not yet been synthesised, so my inquiry had to make significant headway in this regard, requiring more explanation.

I also included in-depth vignettes from educators facilitating these learning experiences to more meaningfully reveal the interconnections between philosophy and practice. Throughout the thesis, I interweave short vignettes (or insights) from the educators, in a form that seeks to balance a lushness in description, deep respect for their work, a profound 'alongside-ness', *and* a 'scholarly' approach. This intent contributes to the length, but hopefully, as well, the impact and value of the inquiry.

1.6 Suggestions for considering the quality of this thesis

This inquiry can be described as transdisciplinary, in the sense of its integration of different philosophies, and its relevance to areas outside of 'transformative sustainability learning'. Transdisciplinary doctoral inquiries have been conducted for over 50 years (Mahan, 1970), and yet change is slow, and transdisciplinary research often remains on the fringe. Examination of transdisciplinary theses is still a new event for many (Willett &

Mitchell, 2017). Therefore, I briefly introduce and describe where I demonstrate (embody) these quality criteria for transdisciplinary inquiry (Willetts & Mitchell, 2017).

Criterion 1: Substantial research that makes an original contribution to knowledge and other broader societal outcomes.

My contributions to knowledge and intentions for broader social outcomes are summarised in the final *Synthesis chapter (16)* and in *Appendix 1 (Written, spoken, dialogic and workshops contributions of this inquiry)*.

Criterion 2: Demonstrated reflexivity and responsiveness.

Throughout each chapter, I demonstrate my reflexivity on the process (its strengths and limitations), content (the insights, complexities, and uncertainties), and my chosen perspective (relative to other perspectives, and the implications of this choice). At times, I also respond to the specifics of each chapter by providing additional suggestions for considering 'quality'. I suggest this demonstrates an ability to respond to the context of each chapter, by identifying the qualities of reflection well-suited to these various contexts.

Criterion 3: Research integrity as demonstrated by credibility, legitimacy, alignment

In terms of credibility, I have spent many years in various learning and education scenarios, which I brought into this inquiry. Also in terms of credibility, I strive to be authentic and transparent in explaining the decisions around why I do what I do in the inquiry (as indicated already by the story of this inquiry's evolution in *section 1.2*). In regards to legitimacy, the feedback from collaborators and participants in the inquiry find the thesis to be creative, persuasive, robust, impressive and articulate. In particular, the vignette-educators felt the interpretations of their courses were "accurate" and "analysed with considerable insight". The participants also found the inquiry to be useable and acceptable.¹¹

¹¹ In particular, one participant reflected on the thesis: "I think you've done a lovely job of representing my work and what we do. It was interesting and very affirming to see my work reflected here and deeply woven into this inquiry on TSL. Thank you for your care-full and thoughtful attention to this representation! It's really valuable for me to see this bigger picture and continuing threads of my work over time.",

Alignment is also very important to me. This intention for alignment is indicated in the Preface, and I also explain how I attempt to embody alignment in the *Scholarly Process* segment.

Criterion 4: Appropriate breadth and depth of engagement

In terms of appropriate breadth, in the following *Ch. 2, Spheres of inquiry* and the segment on *Scholarly Process*, I demonstrate the necessary “broad preparation” (Willettts and Mitchell, 2017) I undertook for this inquiry. I also demonstrate my ability to orient myself in relevant literature and contexts in order to make informed choices, and justify inevitable boundaries. My thesis is of a longer length, and I have justified why this length is beneficial and appropriate in this circumstance.

Criterion 5: Coherent argument across diverse conceptual and methodological approaches and perspectives

To ensure appropriate levels of ‘readability’ of my longer thesis, it is imperative for me to demonstrate the systematic and coherent way in which each chapter is recognised as a necessary, and enriching component in my ‘meta’ level “argument”. For this, I have included written and visual ‘orienting’ guides for the reader. To embrace the complexity, paradoxes, and nuances born from synthesising across multiple perspectives and philosophies, I often add descriptive and nuancing footnotes.

I offer these five criteria for examiners and readers of this thesis to support their judgment of the quality of this work and their reflections on their own experience of reading this work.

So concludes this first *Ch. 1, Introduction* in which I have outlined the intention and contents of this inquiry, as well as how to judge the transdisciplinary quality of this work. We next proceed to *Ch. 2, Spheres of inquiry*, where I introduce the conceptual ‘spaces’ integrated in this inquiry.

Chapter 2:

Spheres of inquiry

This chapter introduces the essential concepts of this inquiry. The first concept - *sustainability* - is relayed in a story which demonstrates the interdependence of all of the concepts essential to the inquiry (2.1).

Many of these concepts are conceived of as 'layered' or 'tiered' phenomena. This type of 'layered' conceptualisation continuously patterns (e.g. occurs frequently) across scholarly abstractions. As the metaphor of a layer is so prominent in concepts relevant to this inquiry, I next articulate my interpretation of 'layers' as nested meaning-structures, or holarchies (2.2).¹²

I then propose working descriptions for the holarchical concepts in this inquiry. I begin with individual worldviews (2.3) and cultural paradigms (2.4). We then pause to explore various ways of conceiving the relationship between worldviews and paradigms, including their relationship to other 'dynamics of reality' (2.5). Next, I present the term dominant-cultural-paradigm (2.6) and then contextualise this term within other evolutions of the Western paradigm (2.7).

Finally, I introduce conceptions of transformative learning (2.8), consciousness (2.9) and transformative sustainability learning (2.10). These holarchies form the conceptual play

¹² A holarchy can be crudely described as, a connection between 'systems' and 'sub-systems', in which all dimensions are both embedded within other processes, and contains its own processes (Koestler, 1967). I use the metaphor of 'holarchy' to illustrate the interdependent, nested, and mutually-influencing relationship of the essential concepts of this inquiry.

space (or theoretical canvas) of this thesis.

In essence, I link the concept of ‘sustainability’ to four main dimensions: evolution of the dominant paradigm; dynamics of reality; orders of learning; and, evolution of individual consciousness. I explore, integrate and reflect on wide fields of experience and inquiry contributing to each dimension, and then synthesise these fields into my own frame of reference. I do not adopt a single field or person’s approach to these dimensions of knowing and doing. This broad integration and unique synthesis is a scholarly contribution to initiatives of transformation, beyond ‘transformative sustainability learning’ (2.10).

2.1 To what does ‘sustainability’ refer in this inquiry?

The definition of ‘sustainability’ emerges from its oft described trajectory, which - as this section explores - is typically imbued with unhelpful paradigmatic beliefs. A common approach of defining sustainability usually entails describing the 1972 UN Conference on the Human Environment, the 1987 Brundtland Commission, the 1992 UN Conference on Environment and Development, and the other subsequent World Summits and Conferences on Sustainable Development. However, this particular interpretation of sustainability is often synonymous with ‘reducing unsustainability’ (Ehrenfeld, 2008 in Byrne, 2016). The precursor to ‘sustainability’, the German concept of “Nachhaltigkeit”, literally translated as to keep the ‘old speed’, was coined in the late 18th century by Hans Carl von Carlowitz in relation to forestry management (Byrne, 2016). His intention was arguably to ensure people only “cut as many trees as you can replant” and to “use the resources as efficiently as possible” to advance Nachhaltigkeit for economic and military reasons (Muraca & Döring, 2018).

Nachhaltigkeit’s philosophical premises have remained within current definitions and enactments of sustainability. These definitions tend to imbue a **reductionist**¹³ worldview, conception and enactment of ‘sustainability’; where sustainability is a **‘thing’**, definable outside of context and process (Ison et al., 2007; Maggs & Robinson, 2016). Hidden within these notions are the worldview beliefs that **nature is a commodity** and humans, **as the separate and superior species**, must use appropriate levels of resources to meet current

¹³ I will introduce the terms ‘reductionist’ and ‘modernist’ more thoroughly in *Introduction 2.4: To what does ‘dominant-cultural-paradigm’ refer?*. Generally, however I use ‘reductionist’ to refer to the tendency to describe complex phenomena in terms of smaller, constituent parts.

and future *human* demands. In other words, humans are *minimising destruction*, rather than co-generating creative evolutions. While 'Nachhaltigkeit', on one level - the level of the modernist paradigm - is not wrong per se, in light of the goal of resilient and equitable futures (for all *humans, more-than-humans*, and *processes* which enable life and creative evolution) within a radically relational universe, it is undeniably not helpful (Ison et al., 2007, pp. xxii - xxiii; Mang & Haggard, 2016). Yet, 'sustainability' is a key term in the phenomena of interest for this inquiry, e.g. transformative *sustainability* learning, *sustainability* education, education as *sustainability*.

To reframe sustainability, as implied in this inquiry, this section presents a definition of 'sustainability' using a storied approach, as stories more powerfully integrate content and morals (Bartunek & Moch, 1994). This story intertwines the concept of sustainability with the processes of 'deep cultural and individual learning', or learning which creates the conditions for people to see hidden modernist beliefs manifesting in, for example, the definition and enactment of sustainability (Byrne, 2016). In this story, we learn about the importance of taking time to delve into the worldviews and paradigms that influence how we define sustainability.

The story I recount to illustrate the concept of 'sustainability' as defined in this inquiry emerges from the Club of Rome origin story. The Club of Rome is an international organisation of luminaries and leaders who collectively seek to promote at a global scale the shift towards a sustainable world.¹⁴ Truth be told, I did not know of the Club of Rome before I started my PhD, even though I had been studying and working in and for 'sustainability' and sustainability education for 15 years. Perhaps my blind spot is representative of deeper issues in the dominant style of learning, where the concepts we engage with are separated from their historical development. Or perhaps my ignorance did not matter until I was ready to 'perceive' and learn about the Club of Rome from a different philosophical perspective, e.g. how the Club of Rome story embodies an integrated lesson on the challenges of meaningful, transformative inquiry and action in creating more resilient futures.

The early discussions, personal debates, and ultimate trajectories of the Club of Rome arguably continue to influence the way we think of and work towards 'sustainability' today (Flanagan & Bausch, 2011). To my knowledge, this story is not a common point of reflection within the 'sustainability field', yet, this story provides a significant space for

¹⁴ About the Club of Rome, accessed 26 March 2020: <https://clubofrome.org/about-us/>

deep *reflection* on what we would actually like to mean when we say ‘sustainability’, and thus transformation towards more life-affirming worldviews. Hence, the story is told in detail to honour the profound lessons it has to offer.

The origin story of the Club of Rome

Prologue

In the 1960’s Aurelio Peccei travelled the world to ‘persuade leaders of our impending, unprecedented global crises’ (Flanagan & Bausch, 2011, p. 4). As a successful Italian scholar and industrialist, Aurelio Peccei was deeply concerned about the sheer pace and magnitude of environmental degradation and socio-economic development (Christakis, 2006). In 1968, Aurelio Peccei and Alexander King, a Scottish scientist and a director at the Organisation for Economic Co-operation and Development (OECD), invited over 30 European leaders in academia, business and government to Rome to discuss these global trends. This group was gathered, because of the perceived lack of any significant international body that could take action to alleviate significant global dangers (Schmelzer, 2017).

Act 1: The opportunity and the setback

To frame and feed into the discussion, Aurelio Peccei invited Erich Jantsch, an Austrian astrophysicist and futures studies scholar, to write a thought-piece for his colleagues on the state of humankind.¹⁵ Erich Jantsch agreed and arguably took the opportunity to dream big. His thought piece sketched out a process for ultimately developing a world-wide, systemic process for planning ethical quality of life, or ‘Project 1968’. His initial proposal, “A Tentative Framework for Initiating System-Wide Planning of World Scope”, offered both a deep *critique* of the dominant-cultural-paradigm as well as a *vision* for a more ethical cultural paradigm (Jantsch, 1968).¹⁶ Erich Jantsch critiqued the ‘inadequate philosophical’ of ‘traditional’ beliefs in *determinism*, *sequentialism*, and *extrapolation*

¹⁵ Previously in academic writing, there was a cultural change to not include first names in order to avoid gender bias. While very important, this tendency in academic writing (to refer to people by only their last names) has often meant that we are able to separate their last name (as scholars) from the idea of them as a human, a person, just like us. To heal this divide, I attempt to use full names when writing about scholars in a continued way, to help us re-member to their humanity. I also recognise this technique can raise various emotions and responses, and offer it as an opportunity to reflect on the beliefs behind those emotions.

¹⁶ In this thesis, I present many perspectives and discussions on critiques and visions for cultural paradigms and individual worldviews. To assist myself and the reader in the flow of the prose, I will occasionally use the red to highlight the critique and blue to highlight the vision.

which create and maintain societal systems that in turn birthed the ‘serious instabilities’ faced by mankind as a whole (1968, p. 4): “The task of actively “shaping the future” cannot be undertaken with the inadequate philosophy and tools of the traditional deterministic planning concepts, which assume linearity and sequentiality of events, and processes of extrapolation”.¹⁷

Erich Jantsch offered as an alternative vision: a process embedded within a different paradigm that would better direct the “complex system dynamics of human society *in the context of its environment*” (1968, p. 3). He suggested ways to collaboratively ‘shape and invent’ the future, based on a ‘firm biological basis’. The tentative framework outlined a reflexive, iterative, continual process of inquiry, infused with the philosophical concept of *non-linear non-determinism*, to potentially “herald mankind’s¹⁸ entry into a new phase of psychosocial evolution” and human values (1968, p. 3).

While arguably Aurelio Peccei did well to choose Erich Jantsch, in terms of finding someone who had recognised the deep, unquestioned assumptions embedded in the dominant paradigm (and their deleterious implications), Erich Jantsch was also a challenging selection. His writing is dense and requires a committed reader to enter his world through his particular ‘linguaging’ (Maturana, 1988). According to the Club of Rome, what Erich Jantsch submitted was too complicated for his colleagues (Blanchard, 2010), and the first meeting was determined a resounding failure: “*The meeting was a monumental flop...It was a brilliant essay, but too abstract, complicated and controversial*”.¹⁹

Intermission

Now 50 years down the road, who can say what happened at that initial meeting? Perhaps, it wasn’t Erich Jantsch’s writing style and striking intellect alone that made the essay “a flop”. Perhaps his deep criticism of the worldviews of those in attendance triggered emotional responses creating a ‘controversy’? For others, perhaps his analysis was so far

¹⁷ These ‘isms’ will be explained more fully in *Spheres of Inquiry 2.4: To what does ‘dominant-cultural-paradigm’ refer?*. Generally, however these terms refer to the tendencies to believe that outcomes can be entirely described by previously existing causes (*determinism*), the belief that humans can plan out and arrive at pre-determined events through sequential planning (*sequentialism*), and extrapolating current trends.

¹⁸ At times in this thesis, I will attempt to update the language in the quotes, from the more reductionist, exclusive perspective from man, to human, to more-than-human, but I keep Erich Jantsch’s original language here to remind us that even though he was pushing the dominant paradigm, he still included aspects of anthropological reductionism in his writing. It is unclear whether this represented his actual beliefs, or if in his writing he could only push his readers so far outside of their comfort zone.

¹⁹ Club of Rome, Creation of the Club of Rome. Accessed 27 September 2019 (cached by 26 March 2020): [www.clubofrome.org › news › first-meeting-of-the-club-of-rome](http://www.clubofrome.org/news/first-meeting-of-the-club-of-rome)

removed from the epistemic frame of their own worldview, that they did not have a foundation upon which to make meaning of his proposal or grasp the significance of it? For one who hasn't gone through deep reflections of their existing worldview beliefs and transformations into other ontological and epistemological ways of being, arguably the concepts and their significance offered by Erich Jantsch had nowhere to land.

Act 2: Trying again

Despite this setback at the first meeting, not all of the group members gave up. Several decided to continue meeting and learning about how they might better understand and respond to these concerning global issues threatening the ability of humanity to live resiliently. Two years later, Aurelio Peccei, now president of the Club of Rome, commissioned Hasan Ozbekhan, with the support of other leading philosophical systemicists (such as Alexander Christakis, Erich Jantsch, Charles West Churchman), to submit another proposal to the Club of Rome.

Aurelio Peccei reportedly chose Hasan Ozbekhan to deliver the next proposal, because of Hasan's reputation as one of the most prominent planning theoreticians, and his status of a leader within Systems Development Corporation (Christakis, 2006).²⁰ In addition, Aurelio Peccei saw Hasan Ozbekhan present his "General Theory of Planning" in 1968, and believed Hasan's proposal of a systemic paradigm, and emergent methodologies, were better suited approach to dealing with 'the chasm ahead' (Peccei, 1969).

Flashback to 1968

What was so special about Hasan Ozbekhan's 1968 presentation that inspired Aurelio Peccei to entrust Hasan with the next report to the Club of Rome? Perhaps, it was Hasan Ozbekhan's profound reflection and insight on the deleterious effects of the dominant paradigm, coupled with his engaging language to present his critique. In the "General Theory of Planning" presentation, Hasan Ozbekhan blatantly and assertively called for the planning community to deeply reflect on the beliefs of the dominant paradigm and transform into additional²¹ (e.g. more complex and relational) philosophies, if we were to

²⁰ The Systems Development Corporation was an offshoot of the RAND corporation in California, and the epicentre of systems thinking at that time (Christakis, 2006). Many early systems thinkers were in the California radius at that time, e.g. Charles West Churchman, Erich Jantsch, Fritjof Capra, Geoffrey Chew, Stanislov Grof and their associations with Esalen Institute, etc.

²¹ Additional, meaning beyond but inclusive of the dominant paradigm.

‘wilfully’ plan and create conditions for sustainable futures (Ozbekhan, 1968).

Before diving more deeply into Hasan Ozbekhan’s philosophical call-to-action, we must bring ourselves back to the context of 1968. In the waning decades of the 20th century, planning, or *ekistics* (visioning of human settlements) as it was then referred to, did not have a theory or philosophy to guide their actions and decisions. Most of the work recreated ‘planning’ within the framework of physics (Christakis, 2014). Hasan Ozbekhan passionately sought to fill this philosophical hole, and he felt the survival of humans and the continued complex dynamics of evolution depended on it. Perhaps Aurelio Peccei saw the resonance between Erich Jantsch’s (1968) and Hasan Ozbekhan’s (1968) proposals, and felt that Ozbekhan might be able to ‘deliver the message’ in a medium more accessible and more likely to land within the existing philosophical frames of the Club of Rome?

So, what was Hasan Ozbekhan’s argument for ‘sustainability’? In order to develop a philosophy that would lead to betterment of the *whole of society*, as opposed to **fragmented progress** with devastating social and environmental destruction, he argued ‘we’ must engage in deeply transformative learning about our worldviews. He described this necessary transformative learning as the need to:

*question the attitudes and mental habits that our **technological worldview** has imposed on our minds. And we must do this...in terms of our tone of thinking. We must put to question the very concepts that govern our vision and help us form our mental constructs. What I am suggesting is obviously very difficult...All of us - including this writer - have minds conditioned by **techno-scientific outlooks**, which makes it a formidable effort to conceive of other, alternative ways of being right (Ozbekhan, 1968, p. 67).*

This “techno-scientific mythology”, he argued, knowingly or unknowingly, guides, shapes, directs “our outlook, our attitudes, our manner of perceiving reality, our way of establishing priorities” (Ozbekhan, 1968, p. 68).

Why did Hasan Ozbekhan argue that we must engage in the very hard and formidable task of transformative learning for worldview transformation? His premise is that the present situation of unsettling change and disruption in societies can ‘no longer be rationalised by means of the intellectual constructs we currently possess, and which we have largely inherited from the nineteenth century’ (1968, p. 50). The massive change and rates of change across many societies are not only ‘disquieting’ and ‘stressful’, but they “put to question the validity of many general concepts, that for a long time, have provided muscle to our

worldview” (Ozbekhan, 1968, p. 50).

Part of this formidable task of evolving beyond our existing, constraining worldview, Hasan Ozbekhan argued, involves recognising the destructive consequences of the perception of *fragmentation* and *separatism* at the root of the scientific-technical worldview, e.g. the ‘profoundly *divisive* and *dualistic* attitude’ that ‘pervades the Western outlook on reality’ (1968, p. 58). He argues that much of the “increasing social and psychological disquietude, which marks and mars our age can be traced to the many-levelled *fragmentation*” (1968, p. 65). In particular, he explains at great depth how, for those imbued with the ‘Western worldview’²², the ‘existence of *deep cleavages* within the mind, emotions, and soul’ actually make us highly *un-rational* and inept at creating sustainable futures for society and nature as a whole (1968, p. 74).

Arising from, and arguably only conceivable within, our fragmented perceptions, is the dominant “*mythodology*” (Ozbekhan, 1968) of the Western worldview, e.g. a blind faith in scientific truth, techno-material progress, and an axiological focus on utility as a means of economic growth. Hasan Ozbekhan argues this *mythodology* blinds us to other ways of perceiving and creating reality, in part because this *mythodology* has led to success beyond our wildest dreams in some areas of human development (such as making utilitarian goods for economic progress), and so this same approach is used to ‘solve’ all ‘problems’ (1968, p. 63).

On one hand, Hasan Ozbekhan is *reflecting back* and bringing awareness to his peers on how they rush to save the world with technical, objective, linear, calculated knowing and projections towards an expected future. He tempers his critique by acknowledging that these approaches have their role, and can be fruitful to model predictions, and simulate the future. But we must not let this inhibit our ability to perceive and know in different ways, for this approach doesn’t help us integrate and ask questions of ethics (1968, p. 123), of what ‘ought’ we do (Churchman, 1968).

On the other hand, Hasan Ozbekhan is *diffracting outwards* to demonstrate new patterns that could be developed by experimenting with additional and alternative worldviews and logics-of-perception.²³ Somewhat jokingly, he references the new ‘litanies’ that could

²² I use Western here, as this is the language invoked by Hasan Ozbekhan, e.g. he makes reference ‘Western’: outlook, mind, peoples, man, thought, mankind, humanity, value system.

²³ In this inquiry, diffract (inspired by the work of Karen Barad) means to be able to recognise the meaningful differences created by perceiving and acting from different worldviews; and will be further defined in the

replace the outdated worldview - 'make love, not war', 'flower power', 'see reality as it is', 'be with it'. But as he rightly recognises, new litanies do not land without the other layers of reality to support the litanies, e.g. the social processes, worldviews and paradigms, and myths (Inayatullah, 2005). An alternative *mythodology*, he argues, must perceive in terms of **wholes - that all dynamics and relationships in the natural and social realms form one single system-wide ecological reality** (1968, p. 145). And within this logic of wholism (e.g. one single system-wide ecological reality), we must change the metaphor from humanity as '**fighting**', '**conquering**' and '**separate**' from nature to one of '**nurturing ourselves and it as one entity**' (1968, p. 75). In essence, he is asking how we can bring the ecology of the world into '**nurturing**', '**regenerative**', **ecological balance**; and suggesting an improved *mythodology* to meet this challenge.

Hasan Ozbekhan describes, in great detail, the opportunities and possibilities of planning if we are able to engender a perspective of complex and interdependent system dynamics. Integral to this effort is the (beyond-dualist) perception and integration of a **relational, holistic** logic into all aspects of our worldviews. For example, he suggests he and his peers must reintegrate: values with rational thought; individual rights with social goods; short-term decision-making with long-term invention and imaginary (1968, p. 72-75). As hinted at above, Hasan implores his field to collectively evolve their value beyond objective-utility towards love and social bonding, and the planet as a whole (1968, p. 147). But love in itself is not the desired norm; it is **love in relation** to the whole of other planetary humans, life and nature, for love in a **fragmented form**, only replicates our ultimate onto-epistemological error: "Love as social bond can no longer provide a rationale for the **world-fragmenting entity called the nation-state**; it makes sense only if it provides the rationale of the **planetized society**" (1968, p. 149).

Hasan Ozbekhan ends this incredible piece with an obvious headline statement: there are limits to humankind's growth. This conclusion is obvious to him because he has been able to 'look around' and perceive that the future's current trajectory is "a new and dangerous reality created by population growth, changing and accelerating technology, a reversal of economic-metabolic relationships between man and nature" (1968, p. 154-155). And what he is calling for is for those who are brave and tenacious enough to step into the unknown to learn how to collectively see the limits of our worldviews, and to learn how to perceive, understand, and create beyond them (1968, p. 152).

Act 3: The big reveal

Two years after his General Theory of Planning speech, Hasan Ozbekhan, Alexander Christakis, Erich Jantsch and Aurelio Peccei introduced the next proposal to the Club of Rome: 'Predicament of Mankind' (1970). This proposal again puts forth a vision from those who perceive the world from a beyond-dominant perspective, e.g. from a **radically relational and complex** worldview. Their introduction sets this scene clearly: they acknowledge the global community is going through a 'period of tumultuous and ever accelerating change', with increasingly "violent clashes" amongst events (Ozbekhan et al., 1970, p. 4). And they are brave enough to suggest that the "forces of these events that hold us in their grip" arise precisely from the dominant, **positivist** paradigm²⁴, e.g. 'the very source of power and achievement' in the countries with the 'industrial mode' of life (Ozbekhan et al., 1970, p. 4-5).

Similar to the General Theory of Planning, the authors suggest that one of the key contributors to these wicked problems is our "**fragmentation of reality**" caused by errors in our perceptions, linguistics, and thus conception and apprehensions. They also suggest other various worldview beliefs²⁵ contributing to this dire global situation:

*It could be due, for instance, to the magnification of the problems we must grapple with --that is, to the fact that almost all of them are global in scope, whereas the socio-political arrangements we have created are **ill-equipped for dealing with issues that fall outside their strictly established jurisdictions** [societal vision]. It could be due to heightened yet **often obscure interactivity among phenomena**, whereas our manner of solving problems owes its strength and **efficiency** to the identification of rather **clear and direct lines of causality** [ontology, epistemology, axiology, causality].*

*It may be due to rapid rates of change, especially in the **technological sector**, whereas our institutions, outlooks and minds are geared by long-time habit to beliefs in **slow unfolding and permanence** —beliefs which have*

²⁴ Positivism will be explained more in section 2.4 below, but generally refers to the belief in knowledge as either true (positive) or false, based on experience, reason and logic.

²⁵ I add these implicated worldview meaning-systems (beliefs) in brackets in the quote. I do so not only to illustrate the breadth of meaning-systems the authors critique, but also to illustrate my approach to interpreting the works of other philosophers and educators in the *Premise segment*. In other words, there were the types of rhetorical clues I was looking for in mapping and tracing philosophical beliefs.

sustained certain **relatively stable concepts of polity, of social order and of intellectual orderliness** [ontology, axiology, epistemology, societal vision].

*In brief, whatever it is due to, the conjuncture of events that surrounds us is to all evidence worldwide, complex, dynamic, and dangerous. Moreover such a situation can be seen as a new, or novel, experience, for in our long commitment to **stability** and **continuity** we have hitherto succeeded more or less, in **steering our social evolution toward the known** and in avoiding that which, for being unknown, was also uncertain and, therefore, frightening [axiology, societal vision]' (Ozbekhan et al., 1970, p. 5-6).*

Within the Predicament of Mankind document (1970), Hasan Ozbekhan and his co-authors once again attempt to communicate to a group of their peers, that transformative learning (or deep reflection on our own worldviews as a means towards other ways of perceiving and being), is desperately needed. Their proposal outlines processes for deep, integrated learning within the Club of Rome and beyond, e.g. collectively enlarging and deepening their sensibilities, attitudes, beliefs beyond **separatist, positivist** perceptions and *mythologies* towards complex interdependence. These transformed perceptions, they argue, afford new insights into humankind's predicament, and thus support better institutions and responses. The authors suggest that this perception of systemic interdependency has allowed '*people in many different walks of life...to apprehend the nature of this situation*' (Ozbekhan et al., 1970, p. 4).

Hasan Ozbekhan and his co-authors introduced several concepts - such as '*value-base*' and '*problematique*' - to help the Club of Rome transition and transform beyond these dominant ways of perception (Flanagan and Bausch, 2011). For the purposes of this story, I will briefly explore only the latter term. Recognising the '**fragmentation of reality**' (Ozbekhan et al., 1970, p. 13) creates problems, and yet the English language is utterly deficient in perceiving and describing relationality, Hasan Ozbekhan and his co-authors introduce the concept of '*problematique*'.

The intension of the authors in developing the concept of *problematique* is to create language to 'see' what was previously hidden and make it *impossible* to see problems as siloed or believe myopic 'solutions' are appropriate. As opposed to separated crises-related events such as "overpopulation, malnutrition, poverty, pollution, etc." (p. 11), the notion of a *problematique* acknowledges how these crises-events, or disparate headlines statements, are actually all part of a totality, "a dynamic, interconnected, and

interdependent whole that operates together in such a way as to produce some characteristic total effect" (Ozbekhan et al., 1970, p. 17).²⁶

If our ontology transforms through new perceptions enabled by the word/concept 'problematiques', how must our epistemology (concepts of knowledge and processes of knowing) mutually transform? Hasan Ozbekhan and colleagues proposed to *systemically examine* the global problematique of humanity's, "for want of a better word,²⁷ unbalanced ecological evolution". They envisioned that a systemic exploration of these questions could then be used in *global dialogue* towards developing better responses to our shared predicament.²⁸

Hasan Ozbekhan and colleagues' methodology was vague, and rightly so. They were concerned that "*a priori decisions about methodology might prejudice the outlook of the Work Group to a degree that would reduce its effort to an arbitrarily slanted, academic exercise*" (Ozbekhan et al., 1970, p. 20). And in effect, such a result would be another microcosm of traditional, positivistic methods perpetuating the same cycle of misidentifying complex consequence patterns, leading to mass problematiques in the first place. Instead, the consultants proposed to proceed "*mainly, through heuristic, inventive approaches, using almost any technique in the hope that we might sufficiently disarrange what is obvious so as to be able to penetrate a little further into what might be real*" (1970, p. 16). Through preserving 'freedom of action and flexibility', the group was confident the appropriate approaches would arise from the work as it dictated.

This is not to say that the group would be inquiring without guidance of intellectual constructs. They primarily sought to be guided by values (ecological balance), and were ready to draw upon a host of approaches they felt would be relevant. They were ready to and expected to interactively conceive, create, and experiment with methodological techniques '*constantly*'. But importantly, they argue that "*the present feeling is that no*

²⁶ Other scholars also attempt to 'language' this perception into ways of being, i.e. 'wicked problems' (Rittel & Webber, 1973), messiness, and complex messes (Ackoff, 1974) or 'messy situations' (Armson, 2011).

²⁷ We still struggle today to find the most helpful terms to describe what is a felt experience, yet also recognise that the words that we use to describe this are entirely born of our own unique worldview, and no doubt significant paradigmatic programming.

²⁸ The authors acknowledge and welcome the global efforts attempting to deepen such understanding, such as the upcoming UN world conference "on the problems of the "Environment" in 1972". Yet, they warn that the worldview afflictions creating these 'problems' are interwoven into these conferences for sharing and dialoguing about these problems, e.g. siloed, separatist views within an ontological belief of permanence, as opposed to an onto-epistemology of holism, interdependencies, and its implication for how we design society.

single method or technique will suffice for the purpose before us” (1970, p. 23).

In a genuine spirit of Albert Einstein’s oft invoked sentiment, that we can’t solve our problems with the same type of thinking or consciousness that created them, Hasan Ozbekhan and his colleagues were attempting to embody their own critique of the ‘Western worldview’, and develop new methodologies commensurate with improved, relational, systemic ways of knowing and acting. Unfortunately, for their Club of Rome peers, this would prove to be a diversion from what is known, what is comfortable, what is predictable, what is planned - or in other words, qualities that are highly valued in the ‘Western’ paradigmatic beliefs.

Act 4: Staying the course

After review by 60 members and numerous philanthropic organisations, the Club of Rome dismissed Hasan Ozbekhan’s \$900,000 and 15 month-long prospectus. According to the Club of Rome, “*concerned that it would take too long and cost too much to develop the model, the audience dismissed the proposition*”.²⁹ Another scholar present, MIT professor Jay Forrester, then offered a ‘solution’; or others might call a ‘puzzle approach’ (Kuhn, 1996), or a complicated approach (Snowden & Boone, 2007).

Jay Forrester was ‘becoming increasingly convinced that the techniques of “Industrial Dynamics” which he successfully applied to complicated industrial problems, could be adapted to model the dynamics of the world. To this end, he renamed it “Systems Dynamics” (Flanagan and Bausch, 2011, p. 6). Convinced by the potential of Jay Forrester’s computer models, the Club of Rome instead commissioned MIT researchers to develop the “World3 Model” and produce the first Report to the Club of Rome. And so came forth the quantitative analysis (inspired by complicated engineering situations), embedded within the notion of experts being able to *predict* our future as a means of creating our way towards a global regenerative society; in other words, everything that Erich Jantsch, Hasan Ozbekhan and other worldview-aware, systemic, relational, process-oriented philosophers had been urging the Club of Rome *not* to do, or, at least to undertake as a sub-component, within the context of a much larger, paradigmatically different process of inquiry, learning, and meaning-making.

²⁹ Club of Rome, Creation of the Club of Rome. Accessed 27 September 2019 (cached by 26 March 2020): www.clubofrome.org/news/first-meeting-of-the-club-of-rome

Epilogue

Translated into over 30 languages and with over 30 million copies sold, *The Limits to Growth* report (Meadows, Meadows, Randers, & Behrens, 1972) arguably took on a life of its own (Nørgård, 2010). This report contained insights that were profound for some. For example, one of the authors, Donella Meadows, suggests that the key insight was finding a clear, 'non-intuitive' leverage point: population and economic growth. Whereas most governments addressed poverty with economic growth, this analytical modelling demonstrated that economic growth often had the opposite social effect; and this is an insight many governments still have not digested today. The model also clearly demonstrated the environmental 'costs' to growth (Meadows, 1999). Yet, while this complicated form of 'inquiry' and 'learning' may have 'popularised' a sense of humanity's collective impact on our global society and contributed to the emerging environmental movement (Nørgård, 2010), the underlying dynamics contributing to the global 'problematique' (and created by the dominant paradigm) have over the last 50 years intensified, let alone abated (Sterling, 2019).

Another perspective is that Limits to Growth produced primarily 'obvious content'. Sohail Inayatullah describes this type of content – such as that produced by reductive analysis as in Limits to Growth - as contributing to the existing litany, or obvious level of understanding of a situation (2009, p. 15; 2005, p. 7). Hasan Ozbekhan and Erich Jantsch would agree; the results of the Limits to Growth report were 'self-evident' (Jantsch, 1976a, p. 38), and by and large reiterated Hasan's concluding comments in his General Theory of Planning address (1968). The Limits to Growth methodology was critiqued as nothing that couldn't be established with 'hard simple thinking' (Nørgård, 2010). And the medium of the message, delivered by experts from on high, likely contributed to the feelings of helplessness and fear (Inayatullah, 2005, p. 21; 2009, p. 47).

Instead of pausing to respond with curiosity to what Erich Jantsch and Hasan Ozbekhan attempted to communicate - let alone absorb the profundity into the depths of one's worldview - the 'problematique' had been and continues to be reinterpreted as "interconnected challenges",³⁰ as "if they were related but separate problems that can be solved" (Jantsch, 1976a, p. 37-38). As post qualitative scholars would say, the concept of 'problematique' is often 'reterritorialised' within the dominant, mechanistic paradigm. The

³⁰ Club of Rome, Definition, accessed 17 September 2019, cached by 26 March 2020: <https://www.clubofrome.org/news/aurelio-peccei-appointed-president/>

implicit premises (philosophical or worldview beliefs) infused in the *Limits to Growth* are the same premises causing these global issues.

The founding of the Club of Rome missed an incredible opportunity to move beyond content towards demonstrating entirely new processes for making-meaning, emerging from different philosophical or worldview premises, that arguably can create more meaningful insights for understanding reality. Instead of only seeing variables to control, Hasan Ozbekhan and Erich Jantsch's approaches could have helped the world perceive how 'seeing variables' is precisely what contributes to these problems. Imagine if 30 million people had been exposed to profound insights from an investigation into the global problematique from a *relational, process-oriented, systemic* worldview. And what if the message could have been delivered in a way that allowed the profundity of this philosophical difference to land? How could this opportunity have also been a prompt for triggering fundamental change in perception, worldview and thus the process, of how we create change? Even knowing that everyone subscribes to particular worldview beliefs would have been a more useful start.

In this story, a more hierarchical, linear approach was adopted over a holistic, integrated perspective and method. Upon reflection, Alexander Christakis recognised that what Erich Jantsch, Hasan Ozbekhan and his team were attempting was a "paradigm shift" (2014). And it was sufficiently 'iconoclastic' (and therefore repugnant) for those preferring (or unknowingly needing) an analytical, engineering blueprint that sat comfortably within their worldview, as opposed to a systemic architectural design, that sat well outside their comfort zone (Christakis, 2014). After this dismissal, Hasan Ozbekhan and Alexander Christakis left the Club of Rome due to the "profound philosophical disagreements about the hierarchical nature of the global planning process that the Club of Rome chose to adopt" (Flanagan & Christakis, 2010, p. 210). They both felt that "the system dynamics methodology... compromised the original intent of the Club of Rome proposal" by "perpetuating a paradigm of scientific elitism and social engineering" (Flanagan & Christakis, 2010, p. 210).

Moral of the story

The origin story about the Club of Rome is not intended to be about heroes and villains, right and wrong, good and bad (Flanagan and Bausch, 2011, p. 14). This is a story about the challenges of meaningful and deep change. This is a story about how seeing one's own worldview is incredibly challenging. This is a story about how helping others see their own worldview, particularly in relation to 'sustainability' is even more challenging. This is

a story about the sheer gravitational power of the modernist worldview, yet the equally as significant need to be able to 'see' its influence.

More specifically, this is a story about a worldview-aware cohort (a group of 'minoritarians', in post qualitative lingo) who are trying their hardest to help others to become worldview aware. Within this story, this cohort is integrally engaged: in their hearts, they have grave concerns about the ability of life on earth to continue as we know it and want change towards improved planetary social and ecological balance. In their minds, they develop worldview awareness by reflecting deeply on how the dominant paradigm creates these wicked problematques. In their hands, they are experimenting with other ways of learning and living ethically and relationally consistent in worldview and inquiry. They collectively propose a bold inquiry to co-learn more appropriate ways of making meaning and thus transform through the process, all towards improved social and ecological "balance".³¹ Importantly, they recognise themselves as work in progress.

In times when many people are genuinely concerned about the fate of the world and trying to do their best, we are most likely to revert to what is most comfortable and what is known. In the rush to make change towards resilient futures, most sustainability initiatives end up 'emanating from and cohering with' the dominant paradigm (Byrne, 2016), and thus not addressing the more profound worldview and paradigmatic questions. Hence, they may potentially and unintentionally create more empirical, existential issues – and the worse the situation becomes.

The changing litany in our headlines reflects these trends: our litanies now swirl around emergency, extinction, survival, and crises. Even though we feel we are running short of time, must we take the expedient, reliable approach? And, paradoxically, as Nora Bateson often asks, do we have time *to* act quickly (Bateson, 2019)? The Club of Rome thought we did in 1970, but as this inquiry explores, more people are realising we must *walk from* the valley of the shared dominant paradigm to the philosophical high country, and *breathe in* the fresh air of individual worldview expansiveness.³²

In conclusion, as we saw in the story above, 'sustainability' is not a state of the world, nor just a pathway to a specific state. In this inquiry, 'sustainability' has more to do with the

³¹ A word they used hesitantly, "for want of a better word" (Ozbekhan, et al., 1970, p. 5). Perhaps a terms such as reciprocal, harmonising, mutually-supportive, ethical evolution could be used today.

³² Metaphor inspired by Robert Pirsig's 1974 *Zen and the Art of Motorcycle Maintenance: an inquiry into values*, and in particular his walks in the high country as a metaphor for philosophical introspection.

ability to recognise the paradigmatic premises of the pathway that we are creating, and recognise the implications of these premises in order that we may create more regenerative, reciprocal, systemic, inter-relational, evolutionary, beautiful worlds. As such, in this inquiry, *sustainability*, *individual worldviews* and *consciousness*, *cultural paradigms* and *transformative learning* are conceived of holarchically: to inquire into one, you must have an awareness of the dynamics and inter-actions between all.

In the following sections, I further introduce the concepts of this inquiry, as well as the idea of the 'holarchical' relationing within these concepts. I begin with an articulation of holarchy.

2.2 Hierarchies and holarchies as a form of making meaning

The conceptual tool of tiers, layers, orders, and levels is a dominant feature in this inquiry. The conceptions of 'inquiry for change', 'paradigms', 'learning', and 'individual modes of consciousness' are all presented in 'layers'. Thus, it is important for me to articulate my philosophical premises for interpreting these 'layers'. Ethically, if I am arguing that *we need to be aware* of our own worldview-in-action (this is where the ethical obligations lay), then I should also demonstrate my attempts to do so.

The concept of layering is so often taken-for-granted, it is easy to forget that the 'hierarchy' is a construct that in itself does not represent reality. It is a pragmatic tool for simplifying our inquiries into, and meaning-making of, reality. The relevant question, in the context of this discussion is then: do I perceive these layers as based within a perception of mechanistic, rigid structure (such as those critiqued in the Club of Rome story), or a perception of interacting processes? *In other words, am I aware of the paradigmatic implications of the concepts I engage?*

Typically in the Western paradigm, layers were conceived of hierarchically.³³ However,

³³ In the Western context, the concept of hierarchy dates back to the Greek concepts and discussions of hierarkhēs, or sacred (hieros) rulers (arkhēs) (Whyte, 1969 in Stamps, 1980, p. 33). As seen in the previous example of Aristotle's hierarchy (e.g. husband rules over wife), we can assume the axiomatic (self-evident or unquestioned) logic, or relationship, between these levels is one in which the sacred ruler is *separate from* and *superior to* those over whom he rules. Western theologians adopted this hierarchical logic in the late 17th century in their writing to denote the religious orders (distinctions) of: God, angels, priests, sinners - in other words, most important and powerful to least (Whyte, 1969 in Stamps, 1980, p. 33).

The scientific revolution was in part responding to and rejecting this notion of theological hierarchy as it related to our epistemology (Garrison, Neubert, & Reich, 2012, pp. 41-42). Even though the birth of science was rejecting a hierarchy, perhaps ironically and tragically, Western culture *would not see the patterning of*

the General Systems Theory (1940s) reconceptualised this human construct. Instead of each level being perceived as *separate from* and *superior to* the previous, as in the hierarchical authority of churches and armies (Macy, 1991), the structural ordering was re-perceived as nested relationships, or interdependent and integrated levels, in which processes and exchange happen. Thus, *each level is perceived as playing a vital, inseparable role.*

Arthur Koestler (Koestler, 1967) labelled this interpretation of levelled thinking as *holonarchy*, now (sometimes shortened to *holarchy*, i.e. Manuel-Navarrete, Kay, & Dolderman, 2004). The holons (levels) have the quality of a Janus-face in that they simultaneously look outward (being a part of something greater, e.g. intrasystemic) and a look inward (being a whole comprised of other parts, e.g. intersystemic) (Koestler, 1978; Macy, 1991, p. 177).

Why does this conversation of hierarchy and holarchy matter? As I mentioned, within this inquiry, the concept of 'levels' and 'orders' kept re-appearing in broad swaths of literature, and proved quite helpful as meaning-making and communication tools, in terms of explaining the situation of this inquiry. The philosophical interpretation matters, if we believe maintaining relationality is imperative in creating more resilient futures. The interpretation of layered concepts as *separate structures of 'unidirectional agency'* (*hierarchy*) or *interdependent processes* (*holarchy*) depends on the onto-epistemological views³⁴ of the inquirer, their worldview awareness, and the context and content of their inquiry. My intention in this inquiry is to perceive nested relationality, or holarchies of these dynamics, rather than static 'layers'.

Even though the discussion in the *Premise segment* may feel hierarchical, I will attempt to reiterate that the critiques are not a vilification of the whole dominant-cultural-paradigm, but rather aspects of it that alone, without other paradigmatic perspectives, are unhelpful

'hierarchical' meaning-making (imbued with the logic of separate from and superior to) throughout their worldviews, and thus would continue to replicate destructive orders of hierarchy that still influence us today. Without transformative learning of how this *disjunctive logic* influences all areas of perception, we've continued to perpetuate this myth in unhelpful and destructive ways, i.e. 'hard' sciences are superior to 'soft' sciences, and Western ways of knowing are superior to all others, etc.

Jeffrey Stamps, who studied the patterning of the hierarchical concept through history and academia, as a means to developing a Human Systems Theory, argues that the hierarchical concept has only recently permeated the Western scholarly landscape (or mindscape), relative to the rise of the European institution of academia in the 12th and 13th century (Stamps, 1980, p. 33). By the 1960's, the concept of structural hierarchy became commonplace in most scientific disciplines, for example, Abraham Maslow's hierarchy of needs; Bertrand Russell's mathematical Theory of Logical Types, and Jean Piaget's levels of knowledge.

³⁴ That is, the views that arise from one's interdependent beliefs about reality and knowing.

in creating change towards sustainability.

2.3 To what does 'worldview' refer in this inquiry?

The notion of worldview and consciousness are often used interchangeably. This section outlines the concept of worldview in this inquiry.

The term *Weltanschauung* ['world view' or 'world intuition'] was coined in 1790, by Immanuel Kant (1724 - 1804) in his Critiques of Judgement (Kant, 1952). Similar to Adam Smith's invisible hand, Immanuel Kant apparently only ever used this term once, and for whom it was of minor significance. Yet 'worldview' has grown to become a concept of profound academic and intellectual, as well as human and cultural, significance (Naugle, 1998, pp. 3-4, 59). Immanuel Kant arguably invoked the word and concept of 'Weltanschauung' to accentuate the powers of human *perception* and *intuition*, similar to the significant import placed on our senses by Johann Wilhelm von Goethe (Naugle, 2002, pp. 58-59). Our senses, perceptions, and intuitions, Immanuel Kant and Johann Goethe imply, influence what humans are able to 'see', 'conceive', 'make as meaning' and thus our creation of phenomenal reality (De Witt & Hedlund, 2017, p. 332).

Following Immanuel Kant, many philosophers integrated the concept of *Weltanschauung* into their own work, making it an idea indispensable to philosophy and scholarly inquiry (Naugle, 2002, p. 59-61). For example, Georg Wilhelm Friedrich Hegel (1770 - 1831), who we'll return to in *Ch. 9*, subsequently picked up the term 'Weltanschauung' throughout his opus. Georg Hegel's use of the term has been interpreted as a more personal and practical way of living and looking at the universe, which is utterly unique and diverse for each person. This diversity in worldviews arises from the infinite integration of personal experiences, qualities of consciousness and moral attitudes.³⁵ Georg Hegel believed "everyone may have his/her/their particular way of viewing things generally [Weltanschauung], so s/he may also have a religion particular to hxxself" (Hegel, 1952, p. 193 in Nagle, 2002, p. 70).³⁶ Yet, in other parts of his philosophy, he invokes worldview to speak to the view of the cosmos of an entire nation (Nagle, 1998, p. 62).

³⁵ E.g. sensuous and intellectual, emotional and reflective, practical and theoretical, mystic and philistine, sceptical and dogmatic, empirical and speculative, conservative and radical, selfish and social, religious and secular" in J. Loewenberg 1929 in Naugle, 1998, p. 59-62.

³⁶ I've updated the language for gender inclusivity.

The phenomena of worldviews is resonant with many other concepts, from the more recognisable 'belief system' and 'mind-set' (Bawden, 2011a) to the more fringe 'cosmic egg' (Pearce, 1988). The concept of worldviews is also often used interchangeably with: discourse, ideology, paradigm, metaphysics, each with their own more or less desirable and appropriate connotative meanings (Calderon, 2008; De Witt & Hedlund, 2017). For example, Dolores Calderon uses 'metaphysics' over 'worldview' because of cultural anthropology's use of the term 'worldview' to study the Other (2008, p. 83).³⁷

Transformative Learning Theory also has its own continually evolving language to describe this concept (Kitchenham, 2008; Mezirow, 2012). The term '*habits of mind*' refers to the "web of assumptions and beliefs that act as a lens³⁸ through which we see ourselves and the world around us", and to some in transformative sustainability learning, this term 'habits of mind' is synonymous with worldviews (Hathaway, 2017). Yet the term 'worldview' in transformative learning literature can also be invoked as one of the six 'habits of mind', referring to one's personal philosophy (Cranton, 2016, p. 28-29). That is, at times Transformative Learning Theory can describe 'worldview' as on a similar order or level to what I consider the beliefs (or meaning-systems) constituting a worldview: ontology, epistemology, axiology, aesthetics, etc. (e.g. Cranton, 2016, pp. 28-29; Hoggan, 2016).

Based on my transdisciplinary reading on worldviews and philosophy in general, I construe worldview as the often unconscious, overarching complex constellations of meaning and meaning-making - i.e. epistemic, ontological, ethical, aesthetic, etc. beliefs - that 'converge to dynamically organize a synthetic apprehension of the world and thus inform how humans interpret, enact, and co-create reality' (de la Sienna, Smith, & Mitchell, 2017; De Witt, 2018; Hedlund de Witt, 2014; Hedlund-de Witt, 2013; Hedlund-de Witt, de

³⁷ A concern noticed within anthropological communities (Jones, 1972).

³⁸ A quick note about metaphors, and the various perspectives of invoking metaphors in our language. Specifically, are metaphors a form of reification, or a process of putting language around the ineffable? The metaphor of a 'lens', invoked in this reference, could be an example of a reifying metaphor to convey an abstract concept. In other words, by using a material object as a metaphor for scholarly abstractions, e.g. a type of 'structural inference' (Lakoff & Johnson, 2003, p. 259), we turn the abstraction into a static, objective, material, nouns to control (which could be another indication of perpetuating the dominant paradigmatic tendencies).

Another perspective is that metaphors can offer a method for contesting false precision in academia, and to encourage readers to take pause and consider the relationship between metaphor and abstraction from their own unique experience.

To engage in the complementarity offered by these two perspectives, I attempt to draw upon *metaphors of process*, or 'enactment inferences' (Lakoff & Johnson, 2003, p. 259) in this inquiry. This intention also helps me in my quest to encourage, through language, perceptions dynamic, relationality (*Preface*).

Boer, & Boersema, 2014). Instead of using worldview as a tool to look at Others, in this ethically oriented inquiry, worldview is offered as a prompt for each of us to look at ourselves. Reflective questions can bring awareness to our often-unconscious beliefs (meaning-systems):³⁹

What is ultimate reality? (*ontology*)

What are standards of right and wrong? (*axiology*)

What is the nature and purpose of beauty? (*aesthetics*)

What is the meaning of history? (*anthropology, cosmology*)

What will happen at death? (*ontology, spirituality, cosmology*)

What is the nature and purpose of humanity? (*anthropology*)

What is the basis or source of one's knowledge, knowing, and wisdom? (*epistemology*)

What are the sources or reasons for the human predicament? (*sociology/spirituality*)

What are potential responses or answers to the human predicament?
(*sociology/spirituality*)

The reflections, intuitions, impulses, feelings, and responses prompted by these questions tend to indicate an individual's unique worldview. A worldview provides a personal foundation, creates a basic orientation, establishes a feeling of security, and supplies a sense of unity and coherence in life. As David Naugle states, "worldviews are ground zero for human beings" (1998, p. 5).

How do our individual worldviews develop? Arguably, from before we are born and throughout our lives, a profound mutual co-arising and intermeshing exists within experience, perception, and meaning-making (Dewey, 1896), through which one acquires a worldview. We can conceive of a personal worldview as forming and expressing through complex interactions. Our nervous systems, embodied minds, mental states, decision-making processes and behaviour constantly interact (de la Sienna, 2018). In other words, each of our unique worldviews express as complex dynamics between our: internal mental and body activity; habits and impulses which code and construct ways that we interpret our world; feelings and perceptions; cognitions; and ego-consciousness (Macy, 1991, pp. 66-68, 79). Because worldviews are formed in-part from the unconscious

³⁹ Questions from Naugle, 1998, p. 5.

patterning of all we experience, our unique worldview perceptions and beliefs are often preconscious or subconscious, but yet are always mediating all of our experiences (de la Sierra, 2018; Dewey, 1933; Macy, 1991), as conceptualised in *Figure 1*.

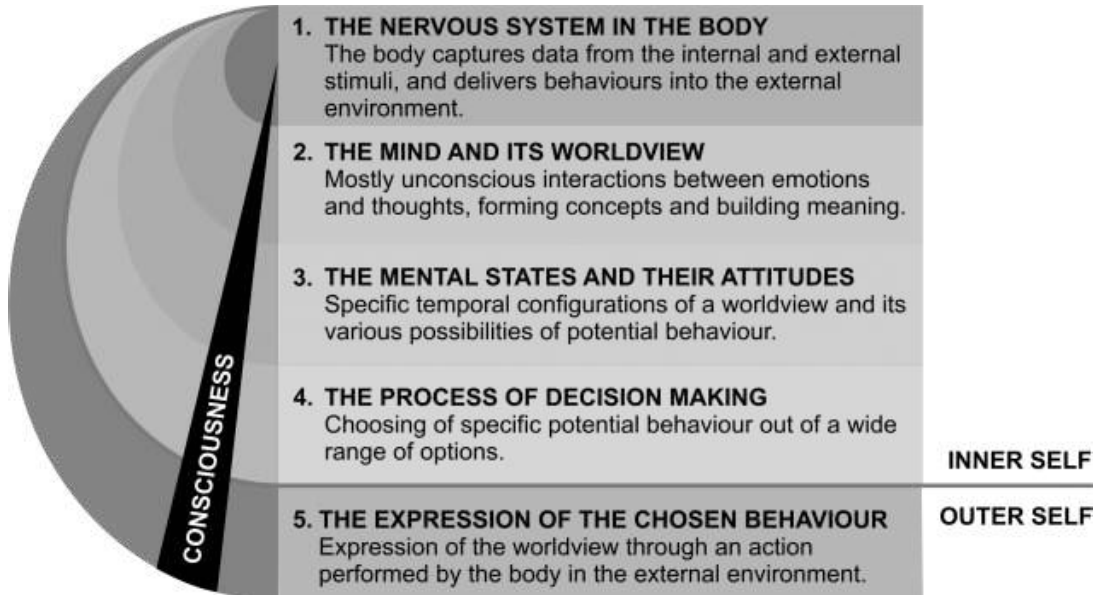


Figure 1. Influence of perceptions and worldviews on behaviour (in de la Sierra, 2017).

In this inquiry, our consciousness is loosely defined as what we are aware of (*section 2.9* below). As shown in *Figure 1*, we are more consciously aware of our external behaviours than our internal behaviours (and we are not always even fully conscious of our external behaviours). And, most of us are even less conscious of our worldviews than we are of the decisions we make based on our expressing our worldviews. Over time and with practice, and intention, we can develop an awareness of how our perceptions, worldview beliefs, emotions and mental states influence our action and behaviours. Through these processes we can experience a complexification of our consciousness.

The relevance of worldviews for learning and change creation has been recognised by scholars in the learning and inquiry fields. Those seeking our awareness of our worldviews as a means of realising an evolution in consciousness include, for example, John Dewey, Rodolph Steiner, Maria Montessori, Sri Aurobindo, Paulo Freire (Gidley, 2016, pp. 72, 130-137). Similarly, fields of inquiry that often explicitly include a consideration of worldviews as part of the inquiry include systemic, integral, and postmodern inquiry (Gidley, 2016, pp. 21-22, 138-140).

Unfortunately, the concept of worldviews has not been included to a large extent in areas of environmental or sustainability education (de la Sierra, 2018; Fiori, 2012). But there have been and are pockets of recognition. Charles West Churchman (part of the

minoritarians in the Club of Rome Story) draws on Immanuel Kant and Georg Hegel, to explore how *Weltanschauungen* influence our *justifying* and *designing* of learning systems (Churchman, 1970, 1971). Following C. W. Churchman, Peter Checkland realised the multiplicity of worldviews in any change creation process and thus the necessity of articulating these as part of collaborative inquiry for change (Checkland & Poulter, 2010; Ramage & Shipp, 2009, p. 151). Richard Bawden, influenced by both Charles W. Churchman and Peter Checkland, co-designed a transformative learning system at Hawkesbury Agricultural College in New South Wales seeking to transform worldviews towards perceptions more supportive of resilient, ethical futures. Richard's work is one of four learning vignettes in this inquiry, which explores how the concept of worldviews are engaged in transformative and sustainability learning.

So ends the discussion of worldviews, as a key 'concept' of this inquiry. The main point is that I interpret worldviews as a uniquely individual phenomenon and explore how they are integral to transformative sustainability learning. Next, I introduce and distinguish the concept of 'cultural paradigm'.

2.4 To what does 'cultural paradigm' refer in this inquiry?

Thomas Kuhn, American philosopher of science, is often credited as identifying and popularising the notion of paradigm and paradigm shift, particularly as it relates to the field of Western science (Hedlund-de Witt, 2013, p. 20). During his sabbatical from teaching science, in which he explored the historical evolution of the scientific process, Thomas Kuhn perceived a repeating pattern of revolutions in beliefs, or the foundational assumptions of science changing over time, as societies and their stories change. In other words, he noticed the interdependencies between cultural paradigms (the patterns of how societies do things) and scientific beliefs. Thomas Kuhn's definition of the pattern of transformations can be summarised as a "revolutionary view of successive incommensurable paradigms which tends to be reflected in social science discourse" (Kuhn, 1996; Sterling, 2003, p. 9).

Thomas Kuhn's (1996) insight, *The Structure of Scientific Revolutions*, reportedly rocked the academic scientific establishment by challenging the beliefs of science as purely objective. Unsurprisingly, his observations were met with a 'hostile' reception (Bird, 2018; Kaplan, Gimbel, & Harris, 2016). After publication of the book, Thomas Kuhn's assertions about paradigmatic change agitated quite significant worldview shifts within scholars, and thus change in how 'science' is collectively conducted. In addition to Thomas Kuhn, many

philosophers from a wide range of 'disciplines' - education, critical, systems theories - have perceived this similar historical pattern of paradigmatic change (Foucault, 1970; Friedman, 2010; Midgley & Rajagopalan, 2019).

In terms of the working definition of 'paradigms' in this inquiry, I follow the lead of Stephen Sterling, a leader in transformative sustainability learning, who explored the role of paradigms in his doctoral thesis (2003). Stephen Sterling's definition of paradigm extends beyond science to 'an emergent, evolutionary, and prevalent pattern of *culture* (2003, p. 9). For example, from a wider perspective, we can perceive how *cultures* evolve over long periods, continually developing, embedding, and maintaining rules and norms as expressed in action in many societal institutions (Dewey, 1933; Gidley, 2016). These cultural rules and norms for the way things are done become unquestioned, unconscious, hegemonic social commonsense (Gramsci, 1971). Euro-Western cultural paradigms have been shaped over *thousands of years*, and others, such as Aboriginal Australian culture, over *tens of thousands* of years.

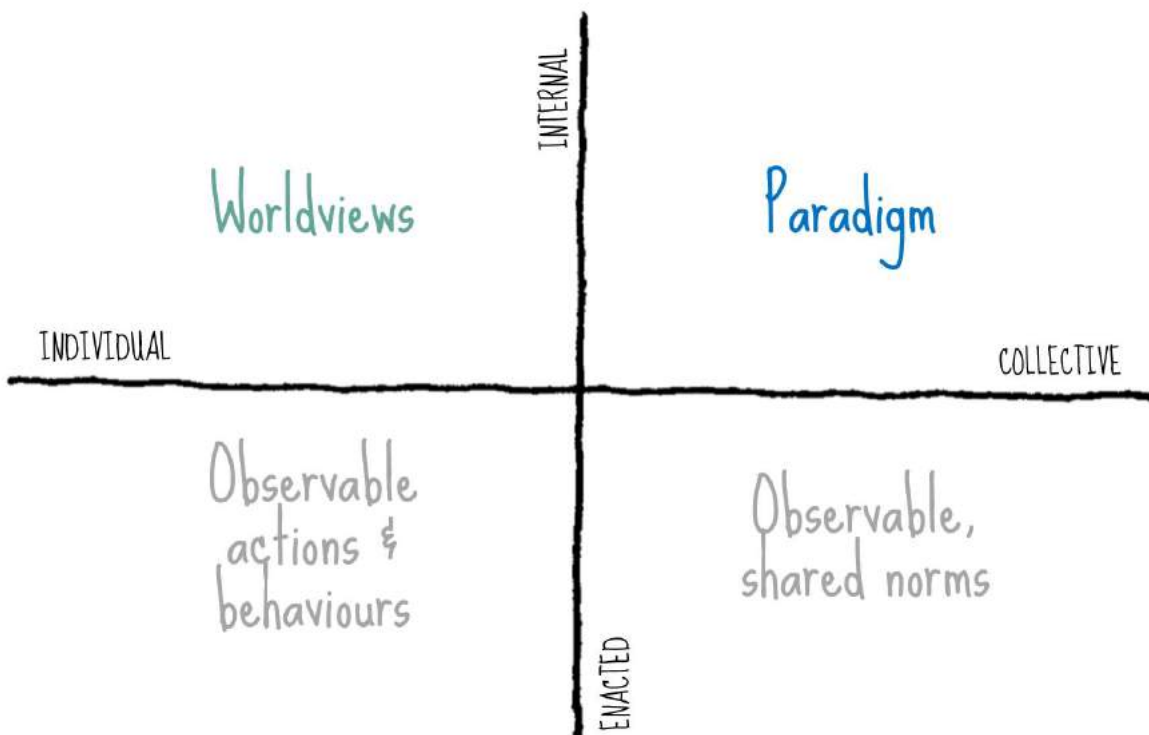
2.5 Multiple ways of interpreting worldviews and paradigms

In this section, I demonstrate the relationality between individual worldviews and cultural paradigms, as defined in this inquiry. I use the terminology of worldviews and paradigms quite often, and I want to demonstrate that I am not using them interchangeably. I am invoking a holistic description, recognising their profound complementarity and mutual co-arising.

Herein, I present a unique synthesis of the concepts of individual worldviews and cultural-paradigms. The first interpretation uses a disjunctive and static logic, where meaning is made by setting-boundaries. The second interpretation is formed from a relational and dynamic logic. And finally, the third presentation is contextual, presenting worldviews and paradigms within a layered conceptualisation of reality.

First interpretation: Distinctive

For the purposes of this inquiry, an important distinction exists between the conceptions of worldviews and paradigms. Whereas the worldview is an individual, internal phenomenon, paradigms are *shared worldviews* amongst a group of, what Thomas Kuhn calls (1996) 'adherents', be they scientists or nations (*Visual 3*).



Visual 3. Conceptual distinctions between worldviews and paradigms within this inquiry

The primary intention of maintaining this distinction between individual worldviews and shared paradigms is ethical: by committing to perceiving worldviews as unique for each individual human (and each more-than-human), we can recognise that no two worldviews are the same, and therefore we do not perpetuate reductive assumptions of people. In other words, at least 7.8 billion worldviews exist on this planet, or in this 'pluriverse'. Our worldviews are the total of every unique experience we have had, and our own unique genetics, biology, and personality. This interpretation implicitly recognises the importance of diversity, and importantly in learning spaces, this interpretation reminds us that we cannot presume to 'know' someone else's worldview (even though we might be tempted to predict shared belief traits, based on where they are from, their gender, age, culture they grew up in, etc.).

Second interpretation: Profound and symmetrical co-arising

In this second interpretation, relational logic (in)forms the meaning. Cultural paradigms (*collective phylogeny*) and worldviews (*individual ontogeny*) can be conceived of as deeply co-constituting and evolving phenomena (Gidley, 2016). Cultural paradigms, which form over millennia, centuries, and decades, shape our individual experiences. An individual's sub-consciousness absorbs and embodies this collective historical consciousness via

exposure to assumptions embedded in our contexts (Bateson, 2000), and cultural expectations, social norms (gender, race age perspectives), religious and spiritual beliefs (Aluli Meyer, 2013; Cranton, 2016; Dewey, 1933; Dewey, 1938; Freire, 1974).

Different to my ethical stance of defining worldviews as individual and paradigms as a collective, the mimicry and mutual-constitution between development of cultural paradigms and individual worldviews is re-iterated by those who use the same terms to signify both individual worldviews and epochs of Western beliefs (*Table 2*). This conception of a shared trajectory has been articulated in various ways. Annick DeWitt mapped the ‘general thrust of the historical-developmental trajectory of cultural epochs in the West’ and has labelled these epochs as individual worldview typologies; Richard Bawden describes ‘windows on the world’ as both individual worldviews and shared beliefs across society; Jennifer Gidley tracks the recursion between cultural development (‘phylogeny’) and individual development (‘ontogeny’), in her work 21st century learning (2010, 2016).

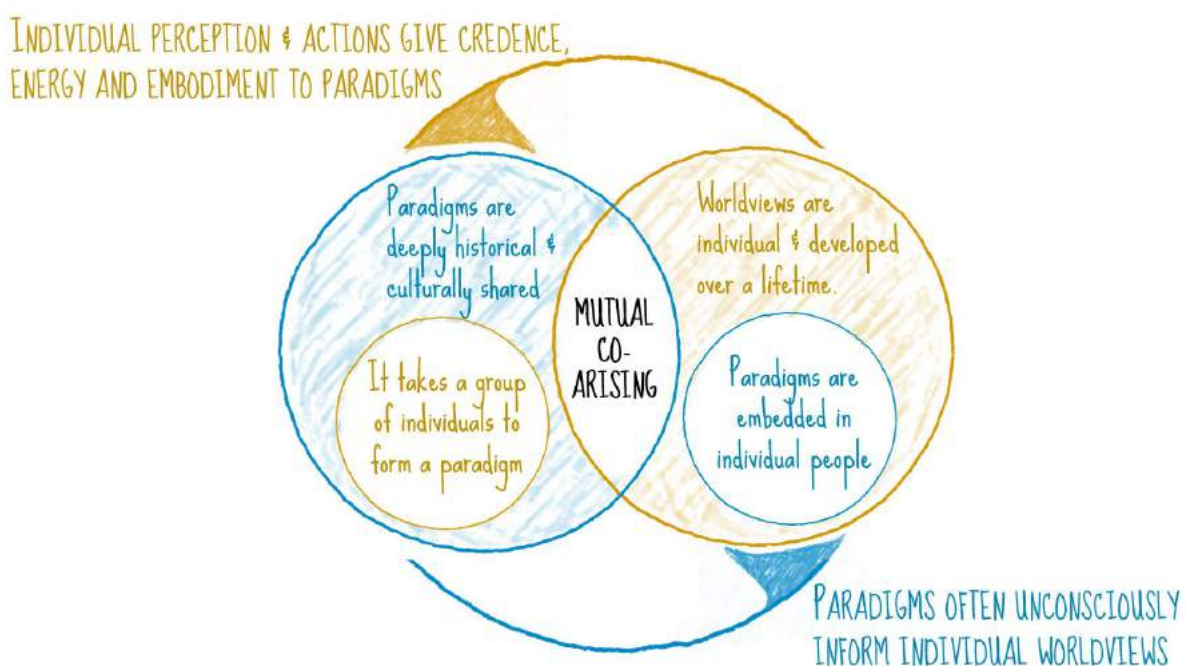
| Thrust of cultural epochs & worldviews ^a | Windows on the world for individuals & society ^b | Evolution of Western culture & individuals ^c |
|---|---|---|
| Traditional (authorities give knowledge) | Techno-centric (objective, reductionist) | |
| Modern (reality as objectively knowable) | Eco-centric (objective, holistic) | Modern (positivist, binary categories) |
| Postmodern (pluralist reality, subjective knowing) | Ego-centric (contextual, reductive) | Deconstructive (critical of modernist assumptions) |
| Integral (‘knowing’ as integrative and pragmatic) | Holo-centric (contextual knowing with perception of emergence and interdependence) | Integral (acceptance of contradiction; thinking with spirituality, imagination, intuition) |

a) (Hedlund-de Witt, 2013); b) (Bawden, 2010a); c) (Gidley, 2016);

Table 2. Descriptors of individual worldviews as epochs of the Western paradigm

This perception of a shared trajectory between individuals and Western cultural epochs suggests that the large majority of students, who have grown up within the dominant-cultural-paradigm presumably enter university with a separatist, materialist worldview. Arguably this recapitulation (individual development following cultural development, Gidley, 2016) reflects the strength of the ‘modern’ paradigm. Assumptions and beliefs from the dominant way of being are infused in modern ways of: birthing children into the world; the noun and individual-focused languages; the way we build our houses and our

cities; the way we entertain children; the way adults reward and grade children; and create competitions; how media grooms youth for acceptable ways of acting; the ‘food’ we eat; the way we travel; the way we dispose of waste; that ‘waste’ is a concept youth are taught; the way children see their societies rely primarily on technology and biomedical approaches; that we teach youth to see ‘problems to solve’; the way youth observe our leaders ‘problem solve’ and (not) relate to each other; how success is defined, etc., etc., etc. By the time students get to university, they are the total of all they’ve experienced and the dominant cultural premises can be deeply rooted and infused within students in varying ways and varying degrees (*Visual 4*).⁴⁰



Visual 4. Complex interdependencies between paradigms and worldviews ⁴¹

University education is one of many experiences in which students may be exposed to paradigmatic beliefs different from their life experiences (West, 2004). Perhaps their

⁴⁰ But not every ‘Western’ child is unconsciously submerged into the dominant-cultural-paradigm. Nora Bateson tells the story of how her son, with nightmares about zombies, eventually came to realise this was his internal struggle of fitting into a mechanistic system, while being raised in a family with a deep appreciation of interdependence. And many students are involved to change paradigms of hierarchies, such as men/women (e.g. the vote, abortion, reclaim the night) and white privilege (e.g. deaths in custody, land rights).

⁴¹ If ‘the medium is the message’, this medium of my visuals attempts to bring alignment between the actual message (content of work) and the connotative message (how to deliver the content in line with the worldview of the inquirer). In terms of a ‘medium’, the visuals seek to highlight several onto-epistemological perspectives: a personal artefact as a reminder of the inquirer in this inquiry; the continual evolution of knowledge (hence the feel of ‘incompleteness’), the value of creativity and the imperfectness of ‘science’, or the subjective nature of the conceptualisations. The intention of these visuals is explained more within the *Ch. 3, Philosophical orientation*.

disciplinary field of study might contain an onto-epistemological relational shift, as observed within neuroscience, consciousness studies, psychology, archaeology, philosophy, social change, theology, organisational development, feminism (Lange, 2018b). Or, conversely students may experience a university education as seamless extension of the dominant paradigm. Or a mix of both (or something entirely different). This inquiry explores intentionally designed learning experiences with the aim of opening up consciousness and stretching worldview beyond the dominant-cultural-paradigm within learners.

Bringing together the distinctive and the relational interpretations of individual worldviews and cultural paradigms presents a paradox. Shared or cultural paradigms are distinct from individual worldviews. Paradigms are patterns of beliefs within a culture, arising from groups who share similar worldviews. Worldviews are unique to each individual. Worldviews can be similar but never exactly the same. Yet, we unconsciously absorb paradigms into our own personal worldviews, so everything that has (in)formed you and I and the other 7.8 billion humans on Earth has come from our contexts unique to particular cultures. And yet again, you, I and everyone else are totally and utterly unique in our worldview sense making (Bateson, 2019).

Third interpretation: Worldviews and paradigms as dynamics of reality

We can conceive of situations being influenced by multiple, interacting dynamics of reality. Within these dynamics, we can conceive of individual worldviews and shared paradigms as the largely unconscious, subterranean bedrocks underpinning more observable and perceivable dynamics of reality (Sterling, et al. 2018).

Western pursuits towards change creation, as explored through the Club of Rome story, also conceive of these layers-of-reality (*Table 3*). Layered conceptualisations of reality often suggest that individuals and societies are mainly conscious of the 'observable' dynamics. For example, individuals are commonly more aware of their behaviours and decisions, as opposed to being conscious of their mental states, worldviews, perceptions (de la Sierra, 2018, *Figure 1*). Similarly, Western societies have a tendency to operate within the awareness of the headline statements or simple facts, rather than awareness of paradigmatic beliefs of guiding myths (Inayatullah, 2005).

These conceptions of *qualitatively different dynamics of reality* (*Table 3*) seek to bring awareness, consciousness and critical reflection to the internal, hidden, deeper dynamics. They offer guidance for exploring reality beyond only a materialist, empirical view of what

we can touch, see, count and measure. These layered-methods suggest our experiences are profoundly influenced by dynamics of reality less obvious than external empirical perceptions alone. Some of these layered-methods push inquirers to move beyond separatist thinking towards recognising and experimenting with the images and beliefs that produce thought and being itself (Inayatullah, 2009; Jantsch, 1980c, p. 273-274).

Ultimately, these layered-methods seek to *transform our perceiving, experiencing and creating of reality*. By engaging with each dynamic to deconstruct the situation ‘as it is’ and re-imagining ‘what could be’, these layered-methods empower inquirers in creating something new. *Table 3* presents the main characteristics of these layered methods, from which I synthesise ‘archetypal qualities’ (Jantsch, 1976a) in the left-hand column.

| Archetypes of reality dynamics | Transdisciplinary learning ^a | Soft systems ^b | Leverage points ^c | Casual layered analysis ^d | Transformative sustainability learning ^e |
|--------------------------------|---|---------------------------|------------------------------|---|---|
| Litanies | Empirical (scientific method, logic) | How does the system work? | Parameters | Litany (headlines; trends) | Action |
| Processes | Pragmatic (hard systems) | What does it do? | Feedbacks | Processes and Systems (social, technological, economic, environmental, political, historical factors) | Praxis |
| Systems | Normative (planning of cities) | Why is it necessary? | Design | | Purpose, policy |
| Worldview / paradigm | Purposive (guiding philosophy) | Individual worldviews | Intent | Worldview/paradigms Metaphors^ unconscious stories | Ontology Epistemology |
| Logics-of-perception | Separation | | Transcendence | Core myth (unconscious patterns of difference, binaries) | Separation |

a) (Jantsch, 1970, 1972b, 1979); b) (Checkland & Poulter, 2010); c) (Abson et al., 2017; Meadows, 1999); d) (Inayatullah, 2004, 2005, 2008, 2009)⁴²; e) (Sterling, 2003)⁴³

Table 3. Comparison of layered interpretations of reality

⁴² Sohail Inayatullah conceives of metaphors as on the same ‘layer’ as myth, but for the purposes of this inquiry, I demonstrate in *Scholarly Process Ch. 4* why I perceive metaphors to be more closely related to worldviews, and for myth to rather be described as what he once conceived of as the ‘core myth’, e.g. the basic binary patterns (2009).

⁴³ Stephen Sterling’s paradigmatic system was visualised in a Venn diagram, but ironically simplified here for the purposes of comparison.

As the above compilation suggests in the bottom two rows, engaging with our worldviews and cultural paradigms is significant in terms of not just *creating change*, but *changing the way we create change*. To change for the better, we need to be able to recognise, stretch, and complexify our own worldviews. If you are Peter Checkland, this process is about developing awareness of and respect for everyone’s worldview, including your own. If you are Sohail Inayatullah, this process is for creating the space for change at all layers of reality as the collective decides, not for manifesting a specific worldview or paradigm. If you are Erich Jantsch and Stephen Sterling, this process is a significant and deep change across many dynamics of reality towards a *relational* way of being. And, if you are Donella Meadows, this means, ultimately, the ability to let go of all paradigms.

So completes my exploration the interpretation of worldviews and paradigms, as they relate to each other and to other dynamics of reality. I interpret these ‘dynamics’ of reality not as separate, but rather as ‘inter-relating, with each dynamic influencing and resulting from the other. In the figure below, I summarise the ‘archetypal qualities’ of the dynamics of reality that are the analytical framing and structure of my inquiry (*Visual 5, Table 3*).



Visual 5. Archetypes of dynamics of reality

Next, I introduce the concept of ‘*dominant*’ cultural paradigm.

2.6 To what does 'dominant-cultural-paradigm' refer in this inquiry?

"There is a difference between nouns and verbs. Money measures something real and has real meaning (therefore people who are paid less are literally worth less). Growth is good. Nature is a stock of resources to be converted to human purposes. Evolution stopped with the emergence of Homo sapiens. One can "own" land" (Meadows, 1999).

Many philosophers and educators, concerned about the broader trends of affairs, have paused to review the long arc of cultural history. Based on their deep reflexivity, they assert that the dominant paradigm, and its beliefs - such as those so astutely summarised by Donella Meadows (above) - bring deleterious, planet-wide, socio-ecological effects which seriously impede humanity's ability to live (let alone live ethically and healthy).

Writers invoke a plethora of terms to describe the dominant paradigm in their critiques: *bifurcationist* (Whitehead, 1920), *Western* (Christie, 2012; Dewey, 1930; Ozbekhan, 1968; Sterling, 2019), *rational ego-consciousness* (Gebser, 1986), *static Weltanschauung* (de Chardin, 1959); *mechanistic* (Jantsch, 1976a); *Cartesian-Newtonian* (Capra, 1982); *techno-scientific* (Bawden, 2004a), *modern scientism* (Nicolescu, 2006), *Cartesian-atomistic* (Barad, 2007), *empiricist* (Latour, 2008), *paradigm of simplification* (Morin, 2008), *fragmented, modernist, industrial, static mechanistic paradigm* (Gidley, 2010), *modernist, Cartesian mechanistic* (Gunnlaugson, 2004, 2010), *foundationalist, modernist, machine worldview* (Lange, 2018b), *industrialist* (Loring, 2019). The list could go on.

Within this inquiry, the term 'Western paradigm' refers to those beliefs, assumptions and perceptions influenced primarily by interpretations of Greek philosophy, Enlightenment positivism, and Abrahamic religions. But primarily, I invoke the descriptor of 'dominant-cultural-paradigm' (unless quoting the language of others) for two reasons. Firstly, this paradigm does not belong solely to the 'West'. There are many countries that have adopted this patterning of beliefs, or have developed beliefs resonant with the Western paradigm.

Secondly, this signifier of 'dominant-cultural-paradigm' reminds us of the current *inequitable power of the Western paradigm over the thousands of other cultural paradigms* across the globe (following Burns, 2018; Hedlund-de Witt, 2013; Sterling et al., 2018, p. 7). Even the initial report to the Club of Rome recognised the Western paradigm as the *dominant* paradigm, in that "our positivistic outlooks are global in their impacts, their

consequences, their endless profusion” (Ozbekhan et al., 1970, p. 5).⁴⁴

The critiques of the dominant-cultural-paradigm invoked by the plethora of terms above are similar, and involve what I construe as two main types of critiques. The first critique of the dominant-cultural-paradigm is the tendency of those steeped in the dominant paradigm to perceive reality with *separatist* logic of perception (variously described by Hasan Ozbekhan and others as *fragmented, dualistic, mutually exclusive, binary, opposites, exclusionary, disjunctive, divisive, deep cleavages*). The second type of critique is of the meaning-system beliefs comprising the dominant-cultural-paradigm. This inquiry explores these two critiques from the perspective of transformative sustainability learning. Because of the destructive and harmful tendencies of the dominant-cultural-paradigm (touched upon in the Club of Rome story and explored more fully in the *Premise segment*), awareness of this dominant-cultural-paradigm is integral to transformative sustainability learning.

From a sustainability perspective, the ability to recognise and transcend the tendencies of the dominant-cultural-paradigm is important for at least two reasons. Firstly, this is our most profound opportunity to create change (Meadows, 1999; Mezirow, 2012). From this space, entirely new futures – regenerative futures – can be collectively imagined and become possible. Secondly, the philosophers reviewed in this inquiry collectively suggest that tendencies of the dominant-cultural-paradigm have created much of the wicked, messy, complex, global social, environmental and economic situations that we experience and which sustainability education seeks to redress. While no doubt, Indigenous peoples, artists, dreamers and relational, systemic and integral thinkers have been pointing out the harm and violence in this dominant-cultural-paradigm for the past 400 years, it is arguably primarily in the last century that the need for paradigmatic and worldview awareness became more accepted in the academic world (Naugle, 2002). There is growing recognition that this dominant mode of thinking, being, doing, must change, if we are to “survive in a tolerable form” (Blackburn, 1971).

Next, I introduce the concept of *evolution* of the dominant-cultural-paradigm, in order to contextualise its various epochs.

⁴⁴ Perhaps then, recognising that the Anthropocene concept (and the phenomena it seeks to describe) is spawned from the dominant paradigm, and not of equitable cause nor equitable impact across humanity, might it be more appropriately conceived of as the White-Supremacy-Scene (Mirzoeff, 2018)?

2.7 Evolution of the Western paradigm

This inquiry attempts to characterise the aspects of dominant-cultural-paradigm contributing to our unsustainable, global problematiques. Yet this process also runs the risk of essentialising the dominant-cultural-paradigm. Hardly a stagnant, single, unchanging paradigm, Western modes of consciousness can be viewed as deeply historical processes of complexification. Many authors with an interest in resilient futures have attempted to describe the evolution (historical-developmental trajectory) of the Western paradigm as a means of illustrating its transmutability. In *Table 4* I present my synthesis of descriptions of evolution of the Western paradigm.

In order to make sense of this deeply historical and complex evolution, Western writer-researchers often employ a technique of categorising typical 'movements'. A 'staged' model simplifies the cultural trajectory of the West yet also reiterates that there is no single 'Western paradigm'. These cultural movements are also reflected in the evolution of Western inquiry and philosophy. This perceived relationality between the cultural movements and science should be unsurprising as the scholarly community is an inextricable part of culture. The 'dominant-cultural-paradigm' (*as defined in the section 2.6*) aligns with what others describe as the 'modern, formal or foundational' variation of the Western paradigm (third row in *Table 4*).

I have summarised these historical, movements of the Western paradigm in a matrix recognising that simplifying this process into 'stages' undermines the chaos and complexity within paradigmatic change. It is possible that the matrix comparison replicates unhelpful dualisms and 'Othering', in which we seek to find 'the box' we fit within and justify our boundaries as inherently superior to the others (Gidley, 2016; Sterling, 2003, pp. 141 - 179).

| Archetypal metaphors | Evolving paradigms ^a | Journey of Western culture ^b | Evolution of science ^c | Philosophies of inquiry ^d |
|----------------------|---|---|---|---|
| Machine | Rational (subject separate from object) | Modern (scientific revolution; values and facts are unrelated) | Foundationalism (theories deduced from observable data) | Quantitative, disciplinarity |
| Web | Mythological (inter-acting subject and object) | Deconstructive postmodernism (questions certainty of modernism; power and knowledge as inseparable) | Relativism (tolerate conflict of paradigms) | Qualitative, deconstructive, critical; mixed methods; inter-disciplinarity |
| Integration | Unifying (subject/object as aspects of unfolding wholeness) | Postmodern ecological (matter & consciousness co-arise) | Contextualism (knowledge is contextual) | New Sciences (quantum, systems, Eastern philosophies; strong transdisciplinarity; post qualitative) |

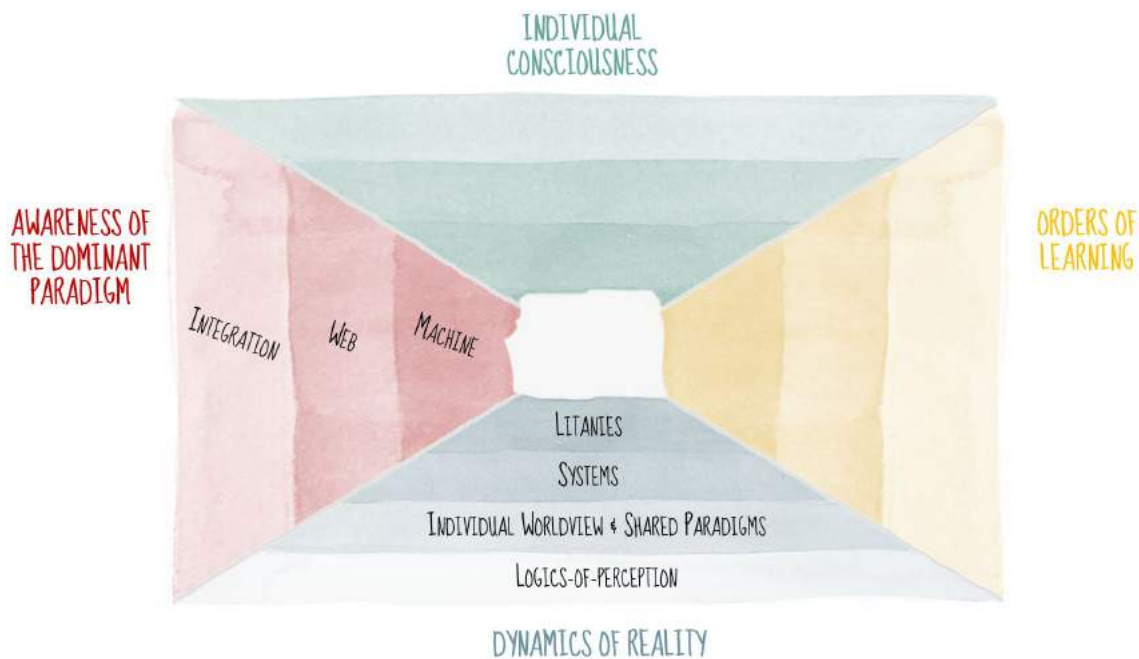
a) (Jantsch, 1975b); b) (Sterling, 2003); c) (Salner, 1986); d) (Brinkmann, 2018)

Table 4. Comparison of perspectives on the evolution of the Western paradigm⁴⁵

A holarchical interpretation of the layered comparison is to see the co-existence between the various paradigmatic Western ‘movements’. It is conceivable for individuals, communities and societies to exist across all modes of ‘Western consciousness’ (and beyond), depending on the day, context, mood, tasks at hand, etc. Instead of asking, which one is right or wrong, we can ask what are the strengths of each movement and how does an ethical engagement with the distinctions lead to increased wisdom, rather than distrust and misunderstanding? How does a diffractive reading of a situation through all of these lenses create the conditions for something new to emerge?

Visual 6 presents a synthesis of the evolution and complexification of the Western paradigm, using metaphors representative of each epoch. Within this inquiry, ‘dominant-cultural-paradigm’ and ‘Western paradigm’ refer to the ‘machine’ epoch. And at times, I will refer to the ‘web’ and the ‘dance’ epochs of the Western paradigm.

⁴⁵ And there are others I did not include such as Fredrick Laloux’s evolutionary break-throughs in Western consciousness (Laloux, 2014).



Visual 6. Archetypes of various evolutions of the Western paradigm

As suggested by the Club of Rome story, a question of this thesis is how transformative sustainability learning (for both educators and learners) is supported by a personal and embodied exploration of how the various phases of the dominant-cultural-paradigm influence one's self and the world around them.

Rather than seeing separateness, we can perceive these descriptions of the epochs of the western paradigm as tendencies which variously are in flux and influence our decision-making. Previous movements are not abandoned, but rather learners recognise achievements *and* limits of preceding paradigms, and transcend them by bringing each into relation with each other (Sterling, 2003). This change in perception from '*matrices*' to *relationalities*, is in itself is a paradigmatic shift, which Stephen Sterling calls re-perceiving our models of order towards '*healthy holarchies*', rather than '*pathological hierarchies*' (2003, p. 170).

Next, we move on to descriptions of transformative learning in this inquiry.

Transformative learning is a specific process to engage with individual worldviews and shared paradigms.

2.8 To what does transformative learning refer?

In this section, I explain my interpretation of *transformative learning* in this inquiry. Herein, I refer to transformative learning as learning experiences and processes (both positive

and challenging) which foster an awareness of our culturally and experientially pre-programmed ways of perceiving and making meaning across many types of beliefs. *With greater awareness, recognition of and reflexivity on our beliefs-in-action, we can begin perceiving, thinking, being, doing into more, for example, critical, emancipatory and/or integrative consciousness (Table 6).*

Transformative Learning Theory is one of the main adult education theories that attempts to conceive and explore these phenomena of deeper learning. Towards the end of the 20th century, John (Jack) Mezirow coined the name of Transformative Learning Theory based on his synthesis of John Dewey, Jürgen Habermas, Paulo Freire, Thomas Kuhn and observations of his wife's deeply disorienting experiences returning to school as an adult (Marsick & Finger, 1994). Leading scholars of Transformative Learning Theory recognise tendencies for the field to stay within 'the house that Jack built', and they actively invite scholars and practitioners to explore their own conceptions of this theory beyond John Mezirow's vision (Marsick, 2018).

And expand, scholars have. The theory comprises an ecology (Lange, 2015) of many perspectives and theories, including Jungian, critical theory, planetary theory, complexity theory, Deep Sustainability and New Science, existentialism, and cultural-spiritual views (Cranton & Taylor, 2012). The theory appears to be a flexible canvas for blending one's philosophical standpoint with the notion of transformative adult education, creating the conditions for rich insights to emerge when these variations diffract together. For example, Jack Mezirow's initial work is often critiqued for focusing largely on rational and linear (10-step) processes (Lange, 2015), 10 steps which I suggest follow David Kolb's Experiential Learning cycle of observe, reflect, plan and act. But, as awareness has grown of the limiting dominant beliefs within theories, so too have efforts to extend the Transformative Learning Theory towards recognising the dynamics between individual, social *and* material transformations, involving rational *and* transrational⁴⁶, conscious *and* subconscious processes (Tisdell, 2012).

These various interpretations share several muses, most of whom engaged within the realm of paradigmatic change (Kuhn, Bateson, Churchman, Freire, Dewey). Another shared quality, is that each of these descriptions have, at various points in their literature, suggested that 'third-order' reflection and change (defined below) is required for

⁴⁶ Such as emotional, embodied, intuitional, animistic, spiritual, creative, aesthetic, moral, etc. knowing.

improving and ensuring well-being of people, planet and nature.

Before continuing with a comparison of these various theories, I'll briefly explore Gregory Bateson's logical levels of learning for two reasons. Within Gregory's descriptions of logical levels of learning, he uses the terminology of 'third-order' and 'contexts-of-contexts', which I draw on throughout the inquiry. Secondly, Gregory Bateson influenced many of these subsequent interpretations of transformative learning (*Table 5*) and from these various interpretations, interesting tensions and provocations emerge, which are also relevant to this inquiry.

Gregory Bateson was interested in the world around him from the broad questions of learning, evolution and change. His complex philosophies developed through transdisciplinary inquiries ranging from dolphin training to working with schizophrenics, to learning from other cultures, to aiding the US government in WWII. Based on his diverse experiences, Gregory defined qualitatively different types of learning he observed in distinct situations. I interpret his different orders of learning below.

First-order learning is creating a response to a set of fairly similar and re-occurring contexts, without abstracting for improvement (Bateson, 2000). For example, in the 20th century, most university students, in courses created from dominant paradigmatic beliefs, experienced a fairly standard set of contexts: teacher at the front of the room, chairs in rows, assessments in a written form, individually assessed. Because of their repeated exposure to these contexts, learners have developed in turn their own standard responses for where to sit, how to act, without necessarily questioning the philosophical assumptions, or pedagogical premises embedded in, these contexts.

Second-order learning in this inquiry is learning to respond differently in different contexts. We learn context A means we interpret, respond, act a certain way, and in context B we interpret, respond and act another way; in other words, we respond to various patterns that we recognise (Bateson, 2000). By experiencing patterns of *contextual* differences, insights arise for alternative responses and preferences.

Differences in context (or the medium of the experience) arise from differences in beliefs (worldviews, paradigms, philosophies) that form these contexts. Yet Gregory Bateson suggests second-order learning, based on experiences of different premises, is mostly unconscious (2000, p. 297, 298, 299, 300, 307). In fact, he suggests the purpose of learning these premises unconsciously saves the individual from having to examine the "abstract, philosophical, aesthetic, and ethical aspects of many sequences of life" (2000, p. 309). It is

a mode of 'saving energy' by unconsciously processing what is possible and preferred, according to the worldview and paradigmatic assumptions infusing the contexts of our life experiences.

In university settings, a 'change in medium', might happen when students take another course that offers different contexts informed by different philosophical premises.⁴⁷ For example, instead of a lecture course, the learners might take a course that is highly experiential off campus, and invites in emotions, and feelings of learners. These are very different contexts to learning. Instead of experiencing the lecture (based on the premise of intellectual learning as superior), learners experience many 'real-world' locations (based on the premise of learning as inseparable from experiences of life). Instead of experiencing the 'teacher' as an instructor (based on the premise of expert knowledge as superior), learners may experience the 'teacher' as many practitioners, government, business, Indigenous perspectives, and as well as themselves and other learners (based on the premise of valuing many types of knowledge).

The main point is that based on experiences of different contexts (because of different philosophical premises), learners are prompted to see alternatives for 'learning' and are even able to change their preferences for types of learning contexts. *However*, they may change their preferences without necessarily a conscious replacement of the philosophical premises underpinning these contexts, e.g. without third-order learning.

Consequently, it is often only by going to **third-order learning**, where we can recognise what we have unconsciously acquired in second-order learning. We throw unexamined premises open to question and change. We learn about the philosophical premises underpinning both context A and context B, to gain a "*freedom from their [paradigmatic] bondage*" (Bateson, 2000). In essence, second-order learning for Gregory Bateson is the often-unconscious absorption of new premises and third-order learning is being able to see outside of and beyond the paradigm in which second-order and first-order learning are embedded. *Table 5* presents my interpretations of Gregory Bateson's orders of learning compared to other approaches.

⁴⁷ I would also like to clarify the conceived relationship between individual *worldviews*, shared *paradigms*, and *philosophies* in this inquiry. When individual worldviews or cultural paradigms are deeply considered, they can form a personal or collective philosophy (Naugle, 1998, p. 4), e.g. an articulated worldview as opposed to an unconscious worldview. In this inquiry, when I use the term 'philosophical premises' of transformative sustainability learning, I am referring to a considered and espoused worldview (or set of deep beliefs). The philosophical premises in this inquiry come from educators who have arrived at similar worldview beliefs after their own transformative learning.

| Archetypal dimensions of learning | Logical levels of learning ^{48, a} | Transformative learning theory ^b | Systemic dimensions of learning ^c | Transformative sustainability learning ^d |
|-----------------------------------|---|--|---|--|
| Content (first-order) | Change in response | Transmissive (theoretical, rote learning) | Learning about the matters at hand | Learning about sustainability (paradigm maintained) |
| Process (second-order) | Change in alternatives for responding | Transactional (social co-emergence of knowledge) | Learning about learning | Learning for sustainability (changing assumptions within paradigm) |
| Premise (third-order) | Change in sets of alternatives for responding | Transformative (deep shifts in perspective) | Learning about worldview and paradigmatic beliefs, implications | Learning as sustainability (conscious worldview change) |

a) (Bateson, 2000; Bredo, 1989; Tosey, Visser, & Saunders, 2011);

b) (Cranton, 2016; Kitchenham, 2008; Mezirow, 1994; 2012)

c) (Bawden, 2010c; Sriskandarajah, Bawden, Blackmore, Tidball, & Wals, 2010)

d) (Sterling, 2003, 2010)

Table 5. Comparison of tiered dimensions of learning

By comparing these various conceptualisations of transformative learning, provocative divergences and questions, relevant to this inquiry, emerge.

Question of relevance to this inquiry: How profound is the change resulting from transformative learning, third-order learning?

For Gregory Bateson, transformation at this level is rare in humans, and potentially risky, and therefore not inherently a 'good thing' (2000). Learning about the premises of our actions, or the contexts of our contexts, can lead to a radical reorientation of the sense of Self, perhaps leading to a sense of identity which "*merges into all the processes of relationship in some vast ecology or aesthetics of cosmic interaction*" (2000; see also *Artwork 1*). For Bateson, third-order change is the space of the spiritual and sacred. His description of merging into vast aesthetics of cosmic interaction resonates with the types of experiences described by those on psychedelics (see for example Pollan, 2018 and Aliume's Artwork). Bateson cautions third-order learning could be deeply unsettling, and he discusses processes of third-order learning largely within the context of a therapist

⁴⁸ Gregory Bateson's levels of learning also referred to a Level 0 (habitual responding without learning) and Level 4 which refers to a change learning Level 3. While probably not occurring in any 'adult living organism on this earth', the intention of this level is to paradigmatically remind us to remain open in our constructs to the 'beyond' both what we know and learning as relevant to nature beyond just humans (Rollo May, 1977 in Stamps, 1980, p. 34)

offering various processes for developing awareness of one's premises (2000).



Artwork 1. *Pure Consciousness*, Alex Aliume (2019).

Alex Aliume, a self-described Russian mystic visionary artist (Aliume, 2019), tries to communicate a radical interconnectedness and unity, infusing reality. Learned by looking at himself and at nature, Alex describes his art as "his way of showing us the **sacred geometry** of "how everything works," where each part of a fractal is both unique and a copy of the previous one" (McDonald, 2019). By "sacred geometry," Alex is referring to those "shapes and proportions that are universal, and the metaphysical principle of the inseparable relationship of the part to the whole" (McDonald, 2019). The experience of psychedelics and Alex's art are strikingly similar, both can "**open a door in front of you. They send a signal from our planet, from the higher consciousness, that you are a spiritual being, part of one energy, the quantum structures of the universe, connected through different levels and different realities**" (Aliume in McDonald, 2019).

For other theorists, the outcome of third-order learning, while recognised as disorienting, challenging, disruptive, is more of this world, less cosmic. Instead of a Zen, Mystic or perhaps psychedelic experience, the more pragmatic description of transformative, third-order learning, is one where we can access a higher (or deeper) level of awareness, where we see our worldviews and the cultural paradigms within and surrounding us, and their implications. This inquiry explores how the insights from these reflections create the space for additional premises and beliefs to emerge and manifest in our ways of being.

Even though the process of this 'less cosmic' transformative learning may also be disorienting and unsettling, creating the conditions for transformative learning in educational and workplace settings, is considered valuable and even ethical in the context of needing greater worldview and cultural paradigmatic awareness for achieving freedom from ingrained ways of being (Bawden, 2018a). This inquiry questions processes for both the 'cosmic' and the Earth-bound transformative learning.

Question of relevance to this inquiry: what processes enable transformative learning?

The distinct perspectives about the magnitude of transformative learning (mystical experience of oneness with the cosmos, and/or more intellectual awareness of one's worldview and the power of the dominant paradigm) tend to be associated with particular meaning-making processes. For example, conceiving third-order learning as a profound spiritual, peak experience is linked to trans-lingual intelligence (such as embodied, aesthetic) (Tosey, 2011), symbolic, mandalic or paradoxical language (Hawkins, 1991), as well as a mix of unconscious and conscious processing (Lange, 2012); whereas more intellectual transformative learning is associated with experiences based on macro, societal reality. This inquiry explores a range of processes employed by transformative sustainability educators within various interpretations of transformative learning and raises questions about their convergences and divergences in the *Process chapters (14 and 15)*.

Question of relevance to this inquiry: How are the orders of learning related?

Another relevant space of convergence and divergence among these interpretations of transformative learning is the paradigmatic perspective through which these learning dimensions are interpreted (and thus enacted). Gregory Bateson conceived of the orders of learning as 'holarchical', non-linear and non-hierarchical (Bateson, 2000; Tosey, et al., 2011). For instance, his *third-order* learning is not superior to *first-order* learning. Rather,

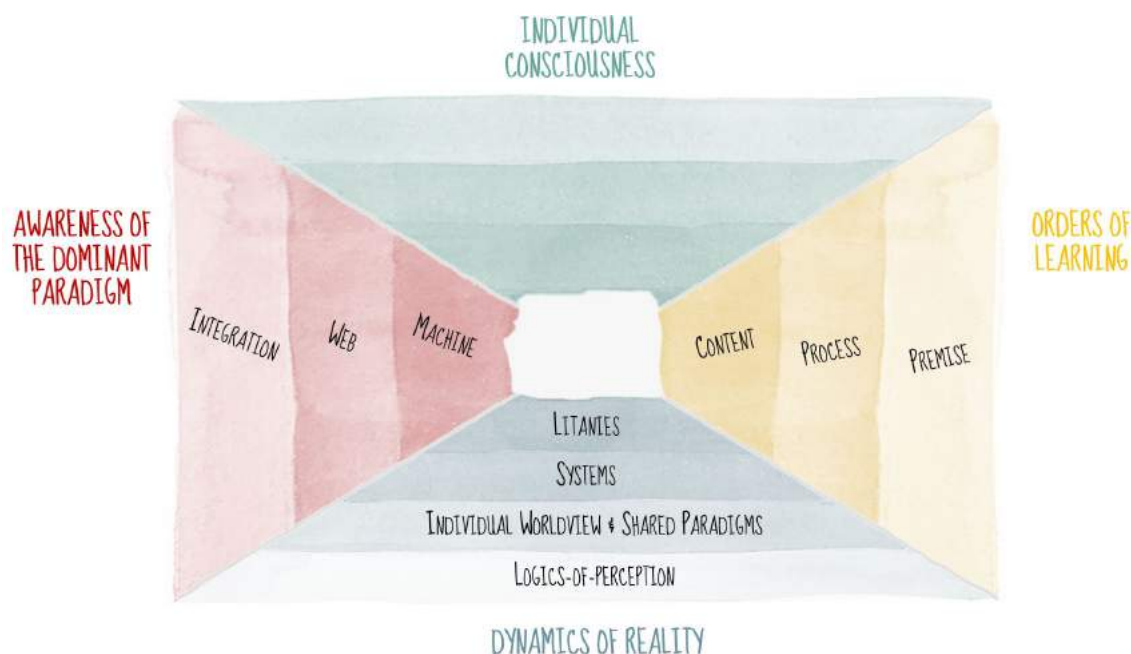
he understood them relationally, believing that more complex orders of learning could not exist without first and second orders of learning (Bateson, 2000). Within his recursive conception of learning, changes in any of the higher orders lead to fundamental restructuring within the other orders. Transformative Learning Theory and Triple Loop learning have been interpreted in both hierarchical and holarchical ways, depending on the paradigmatic stance of the particular authors (Tosey, et al., 2011). Relevant to transformative sustainability learning, Richard Bawden and Stephen Sterling interpret these dimensions holarchically (and this inquiry explores their interpretations in greater detail).

Why does this discussion on paradigmatic stance matter? When dimensions of learning are interpreted as hierarchical, the tendency is to prioritise the 'transformative dimension' as the most important. Prioritising only the 'transformative dimension' can mean that the vital role of the other orders (e.g. providing the *essential experience* through which third-order can be accessed) are 'separated'. Instead of a relational process embedded in experience, 'transformative learning' becomes a presentation of 'information' about how to be transformed. This leads to, for example, being taught *about* worldviews (first order processes) (e.g. equating rational knowledge or abstraction as third-order learning), and separate from any of the situations or concerns of life. When individual worldviews and cultural paradigms are taught only as content, isolated from the context of experience, we run the risk of perpetuating the belief of the intellectual (or content) as being superior, and perhaps create the conditions for people who know how to critique academically but for whom the concepts are not embedded into the fibre of their being or practical use in daily life.

In comparison, a more relational and complex approach to transformative learning, recognises each dimension has an important role to play in the phenomenon, and each dimension is profoundly influenced by the other. The 'deeper' dimensions of learning increase in abstraction and complexity, and are qualitatively different, yet all of the dimensions are holographic of each other, and act as both cause and effect for each other. To create meaningful change, or differences that make a difference at first-order or second-order, we have to be aware of and make change at third-order, in relation with the first and second-order (Hawkins, 1991). For these reasons, I invoke a holarchical interpretation of the orders (dimensions) of learning in this inquiry (e.g. within *Ch. 15, Process: three-orders*).

Which conceptualisation of transformative learning do I invoke in this inquiry?

To guide the meaning-making in the inquiry, I integrate these various dimensions of transformative learning summarised in *Visual 7* below. Within this inquiry, I explore the paradox of transformative learning as deeply personal and unpredictable process which facilitators cannot plan for any student, with the intention for transformative sustainability learning to create the conditions for more relational experiences of consciousness.



Visual 7. Archetypes of various conceptions of orders of learning

A note on terminology

A variety of terms (verbs, conceptions, metaphors) describe the envisioned process of third-order change within our worldviews and consciousness: *transforming* (Cranton & Kasl, 2012), *revising* (Cranton, 2016, p. 15), *shifting* (Barrett et al., 2016; Burns, 2018; Lange, 2018a), *stretching* (Harmin, Barrett, & Hoessler, 2017), *transcending* (Williams, 2018; Sterling, 2010), *evolving* (Gidley, 2016), *escaping* and *nesting* (Bawden & Packham, 1993), *upgrading* (Clark, 2019), *contesting*, *resisting*, *reformulating* (Lange, personal communication, May 20, 2018). Even though each of these terms bring their own embedded theoretical assumptions, they all invoke a similar phenomenon of worldview awareness and change.

Within this inquiry, I often describe third-order processes as worldview awareness, complexifying, stretching, transcending, transforming and regenerating (after Erich

Jantsch, M.J. Barrett, Stephen Sterling, Richard Bawden and Elizabeth Lange, respectively). I argue that using multiple terms helps our thinking remain enriched from many metaphors and theories, rather than entrenched in any single metaphor. Yet the similarity amongst these processes is that they signify a change in worldview which contextualises previously held beliefs (rather than abandoning them altogether). For example, in expanding our worldviews towards more relational ways of being, we can still draw upon the dominant techno-determinist ways of knowing within the relevant contexts.

I would also like to highlight two complementary processes in third-order learning. The qualities of reflection and diffraction can be powerful metaphors in describing the process of transformative learning (Bozalek & Zembylas, 2016).

Transforming our worldviews is a process of creating something entirely new (albeit integrated with the previous). As Karen Barad (2007) points out, reflection and reflexivity is a metaphor of sameness, whereas diffraction is a metaphor of interference, resulting in intensification and annulment, rather than one of replication or reproduction. For example, reflexivity might allow us to see how our own worldviews are mirrored throughout our actions and interpretations, perhaps reinforced by cultural paradigms. Reflexivity might help us see how the cultural paradigm which surrounds us is reflected, or is mirrored throughout, for example, the way we learn and what we learn. But how do we develop the perceptive skills to heighten our awareness of *distinctions* in beliefs-in-action that might make an important difference?

Diffraction, in this inquiry, is the process of perceiving not just paradigmatic differences but relevant differences created in their enactments, or the effects of differences (Bozalek & Zembylas, 2016).⁴⁹ In this metaphor then, 'difference' is not seen through a separatist lens, but one of creativity:

Diffraction can then be regarded as an ethical and socially just practice, in that it does not do epistemological damage, pitting one theory/position/stance against another, but carefully and attentively doing justice to a detailed reading of the intra-actions of different viewpoints and how they build upon or differ from each other to make new and creative visions"
(Bozalek & Zembylas, 2016).

⁴⁹ Richard Bawden, an educator in this inquiry, integrates these two ideas of reflection and diffraction in the notion of 'critical reflexivity' (Bawden, 2008), recognising the reflexivity doesn't have to invoke a 'mirror' metaphor.

So ends the discussion of transformative learning, as a key 'concept' of this inquiry. The main point is that I draw on my unique synthesise of a variety of interpretations, exploring both cosmic and Earth-bound interpretations. Next, I discuss the concept of 'complexifying our consciousness'.

2.9 To what does complexifying our consciousness refer?

The concepts of 'worldviews' and 'consciousness' can often be used interchangeably.⁵⁰ But for the purposes of this inquiry, I attempt to briefly articulate the relationality between worldviews and consciousness. The key point in this inquiry is that consciousness is distinct from, but closely intertwined with the idea of a worldview. Whereas a worldview is interpreted as a set of often deeply unconscious beliefs - until transformative learning experiences - consciousness is the quality, mode, form, process, modalities or area of focus of our awareness or our attention (Hathaway, 2017).

As sentient beings, we have the ability to bring our awareness to our awareness. In this process, we can make ourselves more conscious of processes, dimensions, or beings previously hidden to us.⁵¹ Importantly, overtime, we start to realise the implication of being in these different states of consciousness, or awareness (Marti & Sala, 2019; Sterling et al., 2018). We can improve or change our consciousness, like strengthening muscles, to develop an expanded awareness or 'heightened states of consciousness' (Tisdell & Riley, 2019).

As we expand, strengthen and complexify our consciousness or awareness, we are more likely to be able to operate within and stay for longer time periods within these heightened states of consciousness, described in *Table 6*. Based on my interpretation, each of these descriptions assumes learners' consciousness begins as less complex and are guided by unquestioned premises (or ideological forces, if you come from a critical perspective). As life progresses, learners stretch and complexify their consciousness to

⁵⁰ For example, when needing to quickly communicate the goals for transformative sustainability learning (see Sterling, 2019).

⁵¹ We can heighten our consciousness of internal processes, such as our subconscious perceptions- and worldviews-in-expression (de la Sienna, 2018). We can also heighten our awareness of the many parts of ourselves in relation to the quality of our consciousness, e.g. our energetic, physical, emotional selves (Marti & Sala, 2019, pp. 100-126). We can also expand our consciousness of the mutual shaping of our world and ourselves (O'Neil, 2018), or we can even become conscious of the rise of more relational worldviews (Burns, 2018). We can have a more complex consciousness which is aware of a sentient consciousness across all matter and life-beings, as perceived in the Indigenous Lifeworld (Williams, 2018).

transcend their initial paradigmatic infusion (indoctrination), in terms of how we perceive, engage, learn, and relate.⁵² In essence, they suggest that transformative learning is a natural part of development.

| Archetypes of consciousness | Development psychology ^a | Systems theory ^b | Experiential learning theory ^c | Critical theory ^d | Consciousness theory ^e |
|-------------------------------|---|--|--|--|--|
| Guided by simple explanations | Psychological (socialised to be conscious of us/them, right/wrong) | Functional (simple perception of environment) | Registrative (guided by societal rules) | Intransitive (lives passively to 'facts') | Third person (objectively conscious of the outside world) |
| Expanding boundaries | Self-authoring (we start to challenge ideologies) | Conscious (apprehension and self-reflective consciousness) | Interpretive (resolution of opposing modes) | Semi-transitive (capacity to dialogue with others) | First person, subjective (conscious of one's subjective experiences) |
| Removing boundaries | Self-transforming (recognise boundaries are self-constructed; transcend and invite disparities) | Superconscious (complex self-reflective consciousness; understanding of wholeness in which human life is embedded) | Integrative (holistic; a transcendental consciousness described by Buddhists, mystics) | Critical (ability to act to change the world) | Second person, intersubjective (conscious of entanglement or unifying experiences with others) |

a) (Taylor & Elias, 2012, p. 158); b) (Jantsch, 1976a); c) (Kolb, 2015, pp. 207-236); d) (Darder, 2015; Freire, 1970, 1974; Grande, 2013, p. 187); e) (Combs, 2016)⁵³

Table 6. Comparison of conceptions of increasingly complex consciousness

Presenting these 'levels of consciousness' within a table again creates potential interpretive bias towards hierarchical conceptualisation (Hochachka, 2019). For example, each 'level' is portrayed as a stable, linear 'stage' that individuals progress through and exhibit regardless of the specific context of each particular experience. David Kolb acknowledged this critique, and changed his terminology from *stages* to *states* (2015),

⁵² If time permitted in this thesis, this assumption of earlier stages of consciousness as less complex, could itself be complexified with research demonstrate that the consciousness of children is actually more complex, until it is trained out of us through immersion in the dominant paradigm, or Jung's collective consciousness (see Pollan, 2018).

⁵³ Paulo Freire and Erich Jantsch both include a precursor dynamic that speaks to a consciousness required for times of survival.

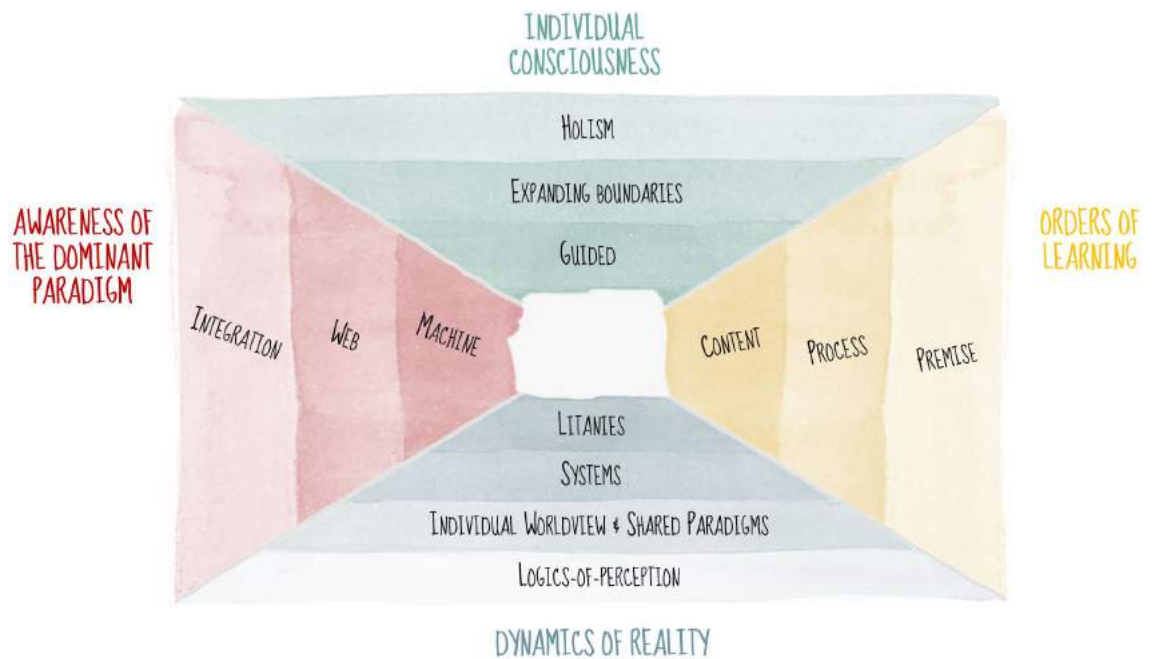
recognising that one might exhibit certain levels of consciousness in different situations.⁵⁴

Layered articulations of consciousness can also be applied from an elitist perspective, in which the facilitator plays a 'superior' role in 'raising the consciousness of' their participants. Paulo Freire foresaw this interpretation of his work, and thus spoke of the need for the facilitator to embody humility, love and recognition of learners as teachers (Darder, 2015).

My main point here is to draw the attention to consciousness as a means to access worldviews. By that I mean, in the experiences of transformative sustainability learning, new contexts are curated for learners; contexts based on non-dominant premises (*2.8 transformative learning*). These contexts create the conditions for learners to have an awareness of consciousness of new paradigmatic beliefs. It is upon reflecting on this awareness or consciousness of these differences that students are able to 'see' their own worldviews and the influence of the dominant-cultural-paradigm. In particular, transformative sustainability learning creates experiences *supporting the development of superconsciousness, transpersonal awareness, the broader Self, or a unity.*

Visual 8 synthesises the qualitatively different states of consciousness that have been conceived by those in relation to experiential, transformative development of consciousness.

⁵⁴ But does a change in terminology alone lead to a deep change in onto-epistemological perception, or paradigmatic evolution? Perhaps not, but recognising the inappropriateness and the power of our language is a step.



Visual 8. Archetypes of various conceptualisations of individual consciousness

To sum up the preceding sections, *Visual 8* weaves together the holarchical concepts of this inquiry. This thesis is primarily about inquiring into *dynamics of reality* as a means of transforming the way we create change towards more just and sustainable futures. Demonstrated by the Club of Rome story, crucial in this endeavour is the transformation of *individual consciousness* and *cultural paradigms* beyond the *dominant-cultural-paradigm* through *transformative learning experiences*. As *Visual 8* implies, with every expanding layer, there is a sense of continual complexification and evolution of our *inner* and *outer* worlds. As we *inquire* and engage in *third-order learning*, our *individual* and *cultural* consciousness, and thus ways of being and creating in the world, evolve more purposively (Jantsch, 1976a).

Often, learning and change is divided into *individual* or *collective*, or *short-term* and *long-term* change, which hides processes of their relationing. Hence, another benefit of my holarchical conception is its reminder of the relationality between these distinctions, and thus the benefits of including all of these processes in our spheres of awareness when we work *towards (and as)* change creation.

That said, *Visual 8* might illustrate the situation of today. If the white centre represents the 'being' in an actual experience (be it in a university setting or any daily experience), then often for people steeped in the dominant-cultural-paradigm, our awareness of the dynamics of reality influencing this experience extends only to the *headlines*, or the *empirical studies*. Similarly, our experiences of learning often focus on the *content*, and

much less why we are learning or experiencing the way we are, and what philosophical, worldview, and paradigmatic premises underpin this experience. In this quality of consciousness, we might be guided by *unquestioned explanations* infused within the premises of the *dominant paradigm*. The more expansive dynamics towards the edge of the holarchy are often left unexplored (*Visual 9*).

However, these tendencies of focusing on the shallow dynamics are not the case in processes of transformative sustainability learning. Transformative sustainability learning engages more expansively across these dynamics, and these processes start in a different place, which I will explain next.

2.10 To what does ‘transformative sustainability learning’ refer?

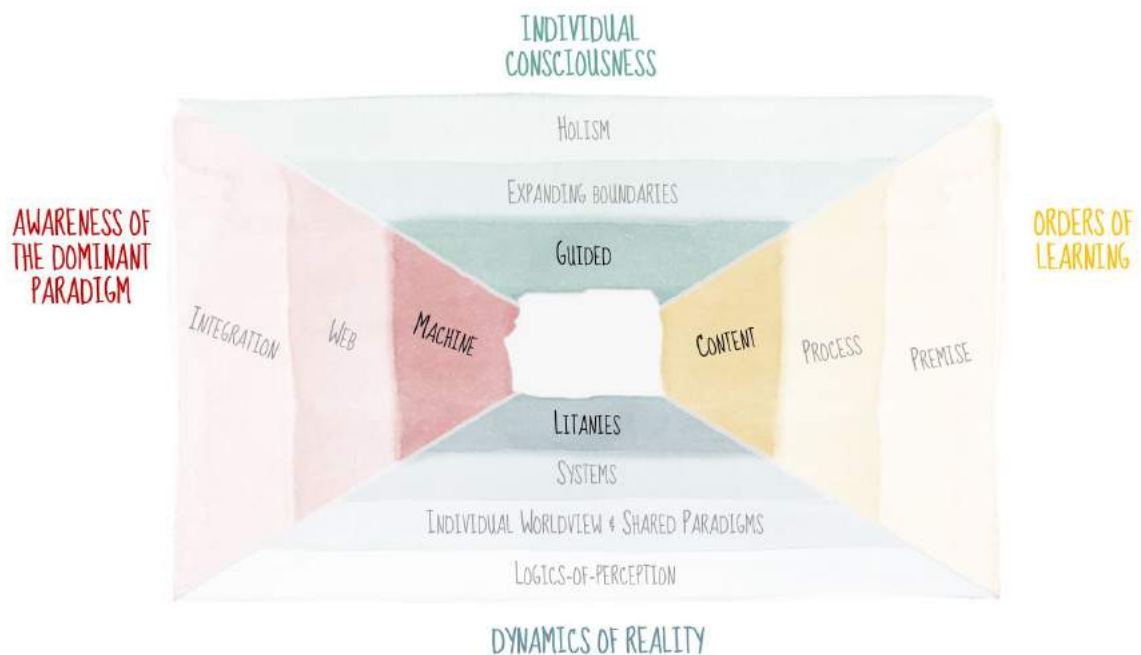
This section introduces the relatively recent signifier of ‘transformative sustainability learning’. I introduce the justifications for using this term, outline the initial steps of cohering the premises of transformative sustainability learning, and then explain how the holarchical concepts of this inquiry enable a relevant and full exploration of transformative sustainability learning premises and processes. As this entire inquiry is an exploration of transformative sustainability learning, this section is brief.

Why are some educators invoking the terms ‘transformative sustainability learning’?

The Club of Rome story introduced the belief that ‘sustainability, resilience, and regeneration’ are inextricably interconnected with the need for transformative learning of worldviews and paradigms to be *inclusive of and beyond the* dominant-cultural-paradigm. Educators who have at some point used the term ‘transformative sustainability learning’, are attempting to signal *an evolution* (or a ‘line of flight’ if you are of the post qualitative ilk) towards embodying this aim espoused by Hasan Ozbekhan, Erich Jantsch, and others.

As such, the types of learning experiences envisioned by transformative sustainability educators are paradigmatically different in relation to previous swaths of environmental education or sustainability education, or education in general (Bawden, 2016a; Lange, 2018a). More specifically, these learning experiences attempt to refer to a qualitatively *deeper* type of learning beyond the ‘problem and science-focused’ environmental education

of the 1970s and 80s (including *conservation, nature education*); or education for sustainability of the 90s or 00s (including *education for sustainable development, sustainability education*) (Jickling & Wals, 2017). These types of learning, even though passionately concerned about the environment, tended to stay within the shallower dynamics (*Visual 9*).



Visual 9. Shallower tendencies of education in the dominant-cultural-paradigm

What are the premises of transformative sustainability learning?

The visions within transformative sustainability learning are to enable consciousness and worldviews better suited to addressing the increasing challenges of our society (Lange, 2018a; O’Sullivan, 1999). These worldviews are described in a multitude of ways:

*our perception and ways of life are **decolonized*** (Williams, 2018),

*our consciousness shifts towards **planetary boundaries, radical holism, wisdom of Indigenous and women, the sacred, and quality of life*** (O’Sullivan, 2012, p. 166),

*we develop a “cosmodern” consciousness involving a **relinquishment of our separateness**, in which **entities are defined by relationships**, and **levels of***

*reality*⁵⁵ *are integrated* (Nicolescu, 2014b).

Mark Hathaway's in-depth research into ecological, transformative learning, defines these types of worldview shifts as involving: *a perception of relationality, belief in the intrinsic value of all life and the value of diversity, harmony, justice, equity, fulfilment and purpose* (Hathaway, 2017, pp. 140-142).

A step towards cohering and converging these broad premises of transformative sustainability learning was the first special issue on transformative sustainability education and learning. This special issue, curated and published within the *Journal of Transformative Education*, maps the "fascinating edge where transformative learning and sustainability education meet" (Burns, 2018). Comprised of articles by Elizabeth Lange, Joy O'Neil, David Selby et al., Stephen Sterling et al., and Lewis Williams, this issue suggests that transformative sustainability education and learning seeks to *stretch* beyond or *transcend* the dominant *separatist* and *mechanistic* paradigm, particularly via "ontological, epistemological, and ethical *shifts*" towards *relational reciprocal, entangled, systemic* and *holistic* ways of being (Burns, 2018). In other words, shifts resonant with those espoused by Erich Jantsch and Hasan Ozbekhan in their proposals to the Club of Rome.

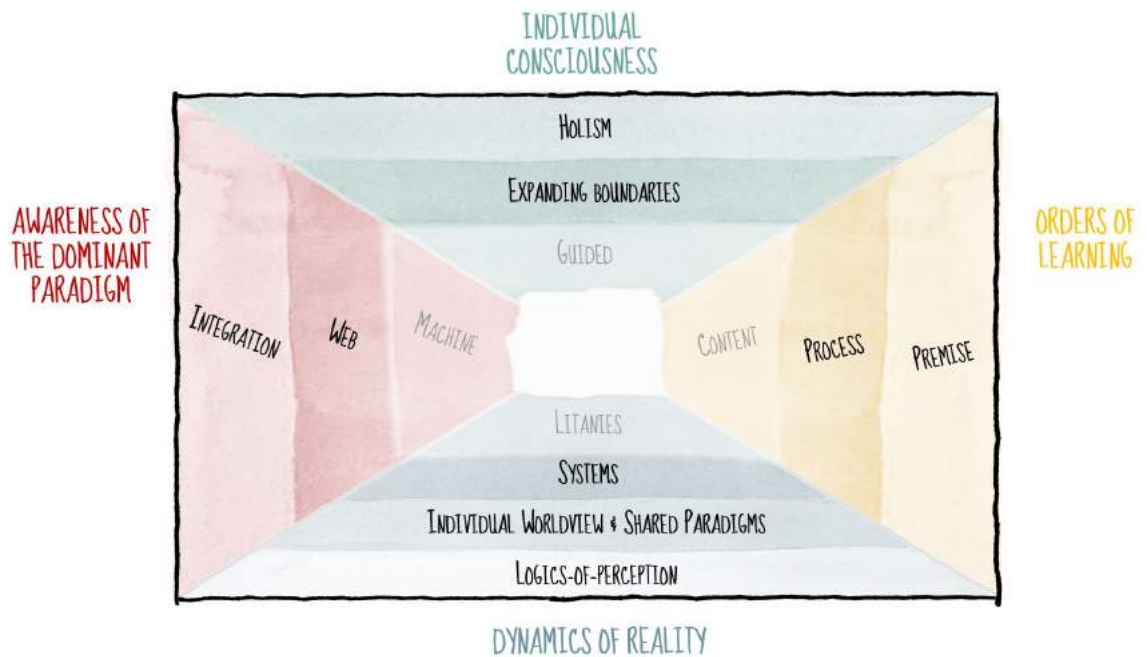
Interpretations through the holarchical concepts of this inquiry

In this inquiry, I attempt to take another step towards cohering and converging the vast premises and processes of transformative sustainability learning. This exploration is enabled by the holarchical spheres of inquiry discussed in this section.

Educators within transformative sustainability learning are seeking get to the depth of things in order to change the breadth of things (*Visual 10*). In other words, facilitators create new experiences, which are infused with premises from non-dominant paradigms and philosophies, thus they offer conditions and exposure to different types of perceptions for learners. The intention of these new experiences is to provide learners with an experience in which the premises of the context, and the *processes* of learning are just as important as the *content* of the learning. Ultimately, these experiences seek to create the conditions for complexifying and stretching individual consciousness and cultural

⁵⁵ Here levels of reality mean, i.e. individual, spiritual, cosmic, environmental, social, environmental.

paradigms, and thus ways of relating and creating with ourselves, each other and the (more-than-human) world.



Visual 10. Holarchies of intention in transformative sustainability learning

In essence, in this inquiry I am responding to the call for creating a '*vision for learning*' through a '*disruption of dominant assumptions*' in order to contribute to the '*heuristics for change*' (Jickling & Wals, 2017). A comparative exploration across transformative sustainability learning educators within university settings has not yet been undertaken for this relatively recent 'signifier'. This inquiry seeks to expand and illustrate the envisioned paradigmatic changes (both disruption and vision) within transformative sustainability learning, and offer insights from a comparative inquiry in the university setting, in relation to the premises and practices of transformative sustainability learning. In this inquiry, I explore questions within the holarchical spheres outlined above:

- What are the specific critiques of the dominant paradigm by transformative sustainability learning educators? What are their philosophical visions for a cultural and individual consciousness? How do all of these various critiques and visions for transformative sustainability learning relate? Are there other beliefs that are embedded in the dominant-cultural-paradigm, that would benefit from third-order reflection and diffraction?
- Is everyone using the terms transformative sustainability learning engaging in these philosophical reflections and diffractions? If not, what are the implications of this?

- How does their philosophical vision manifest in the design and facilitation of learning processes? How do we put this critique and vision into practice, particularly in university settings? If worldview shifts are a defining feature of transformative sustainability learning, what are potential reflection points for this shift?
- What are those experiences that create conditions for exposing and shifting the external dynamics of reality and the deepest dynamics of reality and with learners? How do we design experiences of holism (and wholism)⁵⁶, integration, and inner and outer independence?

The following *Scholarly Process segment* describes how this inquiry probes, reveals, and creates meaning in relation to these over-arching questions.

⁵⁶ While sometimes used interchangeably, holism and wholism can signal very distinct perceptions and concepts. As defined by Karl Pribram, *wholism* can refer to the 'whole' system, as in a perception of emergence, as in 'the sum is greater than the whole of its parts'; and *holism* can refer to a holographic nature of reality in which there is a unifying energy or information field in-forming all of tangible reality. This inquiry engages with both perceptions. To bring clarity to these concepts, I use the word invoked by each author, but also clarify in the text whether the authors are invoking the former or latter interpretations.

Scholarly Process

The following three chapters explain the scholarly process of this inquiry. The first chapter describes and positions my inquiry philosophically. The second chapter introduces and defines the over-arching structure (and also the analytical frame) of the inquiry. The final chapter introduces the perspectives I used to make-meaning in this inquiry.

Chapter 3:

Philosophical orientations

Within this chapter on *Philosophical orientations*, I contextualise my scholarly approach, sense-making and writing in this inquiry by introducing *post qualitative philosophy* and its relevance and tensions with my probe into transformative sustainability learning. This chapter also contextualises (e.g. provides the premises for) the following two chapters, in which I describe the *analytical framework* and *processes* for gathering and interpreting perspectives, experiences, and insights within this concept and experience of transformative sustainability learning.

This description and justification of my philosophical orientation may be lengthier than most theses. The following depth is required, as post qualitative philosophy demands a very different explication than what might elsewhere be known as ‘methodology chapters’, as post qualitative philosophy calls into question the very idea of methodology. These chapters demonstrate my intention for alignment and criticality of the scholarly process itself.

3.1 Introduction to the philosophical orientations to this inquiry

From the beginning of my doctoral experience, I sought to authentically value the 'Philosophy' within the Doctorate of Philosophy process. This specific intention manifested on the first day when I picked up John Dewey's treatise on *Experiential Education* (1933). Intuitively I felt I could make *more meaningful sense* in my inquiry, if at the outset I understood the various philosophies contributing to learning and change.

Building on this push of intuition, I have come to believe in the importance of philosophically informed research (Brinkmann, 2018). Why do we read philosophy? Philosophies can make visible the prioritised concepts and forms of logic implicit in diverse views of the world. For example, what concepts do we and our theories prioritise? What logics do we perceive, read and make meaning with, e.g. difference, relationality, implication, distinction (Morin, 2001, pp. 21-23)? Thus, reading and practicing diverse philosophies creates the conditions for us to develop new ways of perceiving-and-thinking-in-being (Hadot, 2004, pp. 77, 270). These new perceptions, in turn, help us to critique theories, our observations, our ourselves, our world, and the trans-contextual interdependencies amongst all of this (Wagemann, 2017).

While this inquiry could be interpreted as Good Old Fashioned Qualitative Research (Brinkmann, 2014b), several important affinities (and tensions) exist between my inquiry and *post qualitative research philosophy*. In this section, I explore the worldview patterning across 'the Posts', which amounts to a deep critique of the dominant-cultural-paradigm and its manifestation in the process of science and qualitative inquiry, and hence how the Posts resonate with my inquiry, both in shared qualities and resonant-processes.⁵⁷

3.2 Discovering post qualitative philosophy

By the time I discovered post qualitative philosophy, my inquiry had evolved into an exploration of pedagogical processes for expanding our awareness beyond dominant ways of thinking and being. Post qualitative philosophies have a similarly critical stance of the dominant Cartesian worldview. The Posts argue we have an ethical imperative to liberate

⁵⁷ Many aliases describe post qualitative research: new materialisms, new empiricisms, poststructuralism, posthumanism, postformalism, postmodernism. Thus, leading scholars often refer to this emerging philosophical melange as "the Posts" (Lather & St. Pierre, 2013; St. Pierre, 2013b).

ourselves from 'enstructured thinking-in-being', and to hold this ethical imperative front and centre in our doing as researchers (St. Pierre, 2014; St. Pierre, Giardina, & Denzin, 2011).

The resonance between the philosophical goals of my research content and post qualitative research struck me. Hence, even though I discovered the Posts later in my research and cannot position my research as existing entirely within its framing, it was still ethical and necessary for me as a researcher to learn from the Posts. If I am critiquing the dominant paradigm in my thesis, I should also consciously reflect on and experiment with how these critiques play out in my own process of inquiry (St. Pierre, 2011).

Interestingly, what set me on a path toward finding post qualitative research was a strong visceral reaction to a book on qualitative coding. I had finished my interviews, and was subsequently reminding myself of 'pre-existing methods' for 'finding themes in qualitative data' in order to 'represent reality' through their interpretation. Reading one of the most well-known handbooks for coding in qualitative research (Saldana, 2009), I became increasingly distressed by the quantitative guidance applying to nearly every one of these qualitative approaches, e.g. extrapolate 30-50 nodes, which must then be extrapolated into 10-20 concepts. Then look for relationships. The method seemed to encapsulate enormous assumptions of *quantitative* universality across all complex situations spaces (St. Pierre & Jackson, 2014).

After all of my philosophical reading which critiqued the dominant-cultural-paradigm, this guidance for coding felt like an extreme over-simplification of the meaning-making process by dissecting the mass of data into parts that felt manageable. Looking back, my deep reading of philosophy enabled me to question the dissonances between positivist ontologies and epistemologies as they manifest within qualitative research, but also to attempt to do something different. In trying to find other paths, I came across Svend Brinkmann's *Philosophical Orientations for Qualitative Research* (2018), and then the plethora of work by Elizabeth St. Pierre, Patti Lather, Alecia Jackson, Lisa Mazzei, and many more.

3.3 What is post qualitative research and its philosophical positioning?

Post qualitative researchers tend to be inspired by the philosophers who embody deep critiques of the Cartesian-Newtonian, Enlightenment, euro-centric hegemonic worldview.

This includes such poststructuralist philosophers as Gilles Deleuze, Felix Guattari, Michel Foucault, Jean-Francois Lyotard and critical feminist philosophers such as Donna Haraway and Karen Barad (Taylor, 2016). The philosophers who preceded and influenced the poststructuralists, i.e. John Dewey, William James, Henri Bergson, Niels Bohr, are also recognised as contributors to post qualitative philosophy (Brinkmann, 2018, p. 155-165).

Based on their deep philosophical engagement, these post qualitative scholars have taken serious the task of critical reflection on the worldview and paradigmatic assumptions within which they operate when ‘doing research’, and based on this critical reflection, are ‘diffracting’ into new worldview territories. One of the primary intentions of this group of philosophy-practitioners is to destabilise the onto-epistemological perceptions and beliefs of a) humans as primary and superior, and b) the logical rational mind of the individual human self as the fundamental start and end point for understanding reality. Post qualitative philosophy argues that these beliefs have caused innumerable unethical problematiques, which are only conceivable in worldviews with a primarily separatist or dualist perception. As a movement to expand our perceptions, post qualitative philosophy seeks to “*undo tired binaries*” such as theory/practice, body/mind, body/brain, self/other, emotion/research, human/nature, and human/animal (C. Taylor, 2016, p. 7). As particularly relevant to my inquiry, post qualitative research in education recognises how dualism can be both embedded within and overcome via pedagogical practice (e.g. Higgins, 2016; Lenz Taguchi, 2016).

The Posts tend to attribute this inherited myth of separatist perception and rational science as creating *the only* meaningful knowledge, from René Descartes. In separating *res cogitans* (the thinking thing) and *res extensa* (the extended thing), and asserting *I think, therefore I am*⁵⁸, the interpretations of René Descartes have meant that ‘epistemology has trumped ontology’ (St. Pierre, 2013b). In other words, the tendency of scholars steeped in the dominant-cultural-paradigm is to perceive issues of knowing as separate to issues of being, and moreover, become all-consumed with issues of knowing. The Posts scholars argue this separatist and hierarchical thinking is unnatural (St. Pierre, 2012, 2014), and

⁵⁸ As mentioned, I have not been able to engage meaningfully with René Descartes works, so I can’t comment on this, but I find this statement, though often critiqued by the Posts, to be quite true as well. At face value of this statement, I would agree that our worldviews and paradigms absolutely create our realities. But what the Posts are arguing against, is the assumption that ‘thinking’ is rational/objective only, and that René Descartes doesn’t recognise the agency of the material and the more-than-human in influencing our worldviews, paradigms, and experiences.

they actively experiment with ways of better recognising the intermeshings of our ways of knowing and being (St. Pierre, 2011).

3.4 Shared heritage of philosophers between the Posts and this inquiry

A singular transition line from qualitative to post qualitative does not exist, but rather ‘various complicated genealogies’ emerge (Taylor, 2016, p. 22). I concur and thus within this section, I explain why a striking resonance exists between my inquiry and the philosophy of post qualitative inquiry, even before I engaged in a thorough reading of the literature on post qualitative research. I argue this striking resonance exists largely because of the *overlapping heritage* between the philosophical reading at the beginning of my inquiry and those thinkers who influence the Posts.

Many relationships exist between influencers of post qualitative philosophies and the philosophers⁵⁹ I explored in this thesis (i.e. John Dewey, Paulo Freire, Basarab Nicolescu, Edgar Morin, Erich Jantsch, Gregory Bateson). Because of John Dewey’s role in enriching *process* philosophy (Seibt, 2016), post qualitative philosophies view him as an important contributor (Brinkmann, 2014a), and arguably one who paved the way for posthumanist theories (Westling, 2006). Beyond this direct link, other meaningful relations exist through shared sources of inspiration. John Dewey and William James worked very closely together to development their ideas, and William James left an indelible impression on Niels Bohr (Nicolescu, 2014b, p. 185). Ground-breaking physicist Niels Bohr and his worldview logic of ‘complementarity representing great truth’ (Max-Neef, 2005) was a foundational inspiration to physicist-philosopher Karen Barad (the Posts) and a transdisciplinary philosopher I engage in my inquiry, Basarab Nicolescu (Barad, 2007; Nicolescu, 2002). Donna Haraway, whose cyborg metaphor is often involved in post qualitative research, was influenced by Gregory Bateson, a polymath systems thinker I engage in my philosophical explorations. Both Giles Deleuze (heralded by the Posts) and Erich Jantsch (reviewed in my inquiry) were influenced by Henri Bergson’s radical process philosophy. The Posts draw upon works of ecological relationality, decolonising and Indigenous theories, process philosophy, and transdisciplinarity (C. Taylor, 2016), all of which have strong resonance with and influences within the spheres of my inquiry.

⁵⁹ Philosophers in the sense that they have all attempted to reflect on, vocalise and espouse a worldview.

Establishing this link between the philosophers of the Posts and of my inquiry is pertinent for two reasons. Firstly, I suggest that my research is resonant with the philosophical intentions of post qualitative research, even though I may not have followed the more typical pathway towards post qualitative research. Demonstrating these connections supports my argument that at their philosophical heart, post qualitative inquiry, the philosophers I reviewed and the content of my inquiry share similar intentions: the desire to perceive and think beyond dominant constraints, so as to live differently (St. Pierre, 2016). The threads described above are but a few of the ‘convergences’ between post qualitative philosophers and those in my own inquiry. My point here is not to be exhaustive, but to demonstrate the meaningful resonance that exists.

Additionally, leading Post scholars are aware that many philosophers resonant with their ideas are not yet integrated into Post inquiry (St. Pierre, 2016). I suggest that the philosophers in my inquiry (such as Erich Jantsch, Basarab Nicolescu, Edgar Morin, Gregory Bateson) represent helpful people for post qualitative researchers to read in order to enrich their relational/process ways of thinking-and-knowing-in-being. As Elizabeth St. Pierre suggests, it is our unity in diversity that makes us more resistant and resilient to harmfully enacted ways of being-in-knowing-in and denigrations to the world (St. Pierre, 2016).

3.5 Synergies of post qualitative philosophies with my inquiry

In line with shared philosophical heritage and intentions, this section introduces the harmonic qualities and processes between post qualitative philosophies and this inquiry, including: recognising the influence of the inquiry on the inquirer; invocation of new metaphors; transcending separatist perceptions; acute awareness of the ethics of ‘knowledge production’; and integrating, rather than vilifying the dominant paradigm.

Recognising the influence of the inquiry on the researcher

The first synergy with post qualitative philosophies and this inquiry relates to recognising the ability of the research to transform the researcher in the process of inquiring. The onto-epistemology of post qualitative philosophy enables and validates a recognition of how researchers change throughout their inquiry. Post qualitative research critiques the assumption of human subject as holding all of the agency and the object of study as being inert, passive, and thus re-constructable. Instead, the Posts perceive subject and object as

both simultaneously having agency to act (e.g. both are *agential*). This ontological stance means the object of the inquiry is not seen as separate from the life-world of the researcher, but rather space is created to become aware of how the research 'acts' on the researcher. Similar to the Posts, I recognise and make reference to the change in myself, because the inquiry and I intra-acted on each other.

New metaphors to help us erode unhelpful norms of thinking-and-being

The second shared quality between post qualitative philosophy and this research is the intention to find new metaphors to make conscious and erode dominant, reductionist ways of perceiving-thinking-and-being (St. Pierre, 2018). The Posts' rejection of separation as a fundamental worldview logic, has led to a "semantic explosion of words and concepts with the stated ambition of eroding the established binaries" (Brinkmann, 2018, p. 149).

Giles Deleuze and Felix Guattari's 1987 *Thousand Plateaus* is a quintessential illustration of this semantic explosion. Many of the concepts and terms created in this challenging opus can help the reader see beyond ingrained ways of thinking-in-being, and to view the world afresh through never-before-imagined lenses, similar to the intention of the Hasan Ozbekhan and the term 'problematique' (*Ch. 2, Spheres of inquiry*). Once grasped, terms such as "lines of flight", "deterritorialise", "majoritarian", "minoritarian", "circles of convergence", "rhizomatic" provide a metaphoric cornucopia to perceive the world more chaotically, or on the verge of unknowing (Gough & Sellers, 2016; Mickey, 2012). Instead of the dominant reductionist and hierarchical metaphors of x/y axes, tables, and flow charts, these terms invoke unpredictability, the infiniteness of knowledge, and the always present tensing of becoming. As stated in the Introduction to *Thousand Plateaus*, the intention of this opus is founded within a desire to *move beyond dualism, separateness, binaries* (Deleuze & Guattari, 1987, pp. 3-7), embedded in our dominant ways of perceiving and making meaning. Exploring the implications of the myth of separateness, as a means of transcending it, is a shared quality between the Posts and this inquiry (*Ch. 7, 8, 11*).

Pause to consider this inquiry from the perspective of Deleuze's metaphors

While in the main, I do not use Giles Deleuze's metaphors throughout the thesis - because time did not permit to engage comprehensively across this daunting work - the reading I've done on the metaphors continue to challenge me to remain humble in my assertions of truth, and to perceive in less linear, mechanics views. I do, however, incorporate terms

from Karen Barad and Giles Deleuze in the thesis, specifically when these terms have influenced practitioners of transformative sustainability learning, or when the metaphors are particularly helpful in explaining my conceptualisation of the phenomena - such as 'diffraction' (*i.e. Ch. 2, Spheres of inquiry*).

Even so, I suggest that Giles Deleuze and Felix Guattari's metaphors - plane of immanence, circles of convergence, majoritarian and minoritarian, lines of flight, asignifying ruptures - could offer another conceptual interpretation of my thesis. The intermixing dynamics of reality I introduced (logic-of-perception, worldviews/paradigms, practices) can be conceived of as an infinitely fluxing and changing 'plane of immanence'. This plane of immanence represents the inseparable nature between logics-of-perception, worldviews, emotions, practices, materials, meanings, actions. This term - plane of immanence - demands a perception that our deepest beliefs are real-time manifestations of how we think, speak, and create, rather than being something separate (Lenz Taguchi, 2016).

Once this plane of immanence is recognised, pragmatically, the dichotomy between theory and practice is overcome. As we explore one (either theory or practice), we see the inextricable relationing with the other, for example in our own theory<>practice⁶⁰ as researchers. I have attempted to explore the 'plane of immanence' of transformative sustainability learning in this inquiry.

Continuing with the Deleuzian metaphors, the first year of my thesis uncovered a large 'circle of convergence' around the critique of the dominant paradigm between preceding-philosophers and some educators. Some minoritarian people perceive beyond majoritarian norms and converge around the space of transformative sustainability learning. However, some of the literature in this space tends to be reterritorialised within the dominant paradigm and this new signifier (transformative sustainability learning) instead cloaks Cartesian enactments of pedagogical approaches. In contrast, some educators extend a 'line of flight' of relational ontologies into a multiplicity of singular learning experiences, each with their own unique processes. This mapping of different 'lines of flight' demonstrates diverse ways of self-reflexive-and-diffractive-knowing-in-being-and-learning-in-producing-reality, towards 'more flourishing, life-affirming aspects of becoming' (Lenz Taguchi, 2016, p. 42).

⁶⁰ In this inquiry, the symbols <> invoke a profound relationality between what the dominant-cultural-paradigm often perceives as separate.

Transcending separateness towards embracing worldviews of dynamic relationality

In addition to recognising the agency of the process of inquiry to change the inquirer, and disrupting the separatist myths within the dominant psyche, a third synergy between post qualitative philosophies and this research is an attempt to develop *dynamic relational* onto-epistemological-axiological perceptions. Both post qualitative philosophy and this inquiry explores how relational and process paradigms helps us transcend separatist ways of perceiving, knowing, being.

Diverse *dynamic relational* perceptions explored in this inquiry can be briefly illustrated by using the oft incited metaphor of Heraclitus's river (e.g. see Graham, 2015). Instead of river and river-wader being separate and unchanging entities (as in the dominant, static paradigm), dynamic, relational ontologies invite us perceive:

- the intra-action between the river and the individual, in which both act on each other and thus together become a new phenomenon (as inspired by Barad, 2007),
- how we are the river and the river is us (as inspired by Jones & Hoskins, 2016; Selby, 2002),
- the river and humans (and reality in general) represent a unity in opposites, in that we only exist as *stable* entities precisely because of our *constant dynamic flux* (e.g. flow of water and metabolism of food) (as inspired by Jantsch, 1980c).

Collectively, these onto-epistemological-axiological perceptions illustrate how post qualitative scholars and people within this inquiry have a heightened curiosity for relationality, process, interdependence, and newness. But not newness for progress' sake, but rather newness guided by a strong axiological value of supporting and restoring life (St. Pierre, 2016).

Ethical implications of knowledge

Perhaps most significantly, the fourth shared quality between the Posts and my inquiry is the hyper-awareness of the ethics of what we bring into the world as 'knowledge'. Once knowledge is produced and published, its interpretation and use is out of our control as researchers; yet 'production of knowing is always also a production of reality that has material consequences' (Barad 1999, p. 7-8 in Lenz Taguchi, 2016). Specifically, post qualitative inquirers believe in "an ethical imperative to rethink the nature of being to refuse the devastating dividing practices of the dogmatic Cartesian image of thought" (St.

Pierre, Jackson, & Mazzei, 2016). Philosophers that I reviewed in this inquiry also heed similar warnings about knowledge brought forth into unpredictable dynamics of actions and consequences (Morin, 2006) and thus I attempt to remain mindful in the creation of the 'product of this thesis' and how might it bring forth a 'more ethical production of reality'; for example, how might we contextualise rather than vilify the dominant paradigm, and other people working towards similar ends?⁶¹

Contextualising, rather than vilifying, the dominant paradigm

The final synergy I want to highlight between post qualitative philosophy and this inquiry is the reminder to contextualise and diffract with the dominant paradigm. In other words, even though we (Post scholars and I) might have a deep critique of the dominant-cultural-paradigm, we should not seek to 'go to war' against it, just to espouse a new 'universal claim' (Lenz-Taguchi, 2016, p. 53) and reproduce a binary structure (Higgins, 2016).

In this vein, I do not outright reject my previous training as an environmental and social scientist, largely steeped within positivist ways, as these can be seen as 'qualified cultural and situation truths' (Lenz-Taguchi, 2016, p. 54). Rather, as in transdisciplinary research, I attempt to contextualise when these ways of knowing-in-being are appropriate and in which mix of knowledges and contexts, depending on the questions I am asking (Willettts, Mitchell, Abeysuriya, & Fam, 2012), in order to work *within, against, and beyond* the dominant paradigm (Higgins, 2016).

This attempt to maintain a relational and holarchical view is at times challenging, both in terms of my own personal views and also in terms of how some of the transformative sustainability learning literature represents the Western paradigm. In terms of my own stance in this inquiry, I argue that the ubiquitous degradation of life-giving and evolving processes is largely driven by the dominant paradigm, as suggested by the Club of Rome story, and I feel anger and frustration at its totalising impact around the globe. I feel this reaction is not unusual for those who perceive the influence of the modern paradigm and the repeating, predictable pattern of alternative ideas being ignored, buried, or burned at the stake. Yet I am aware of Paulo Freire's warnings of 'fanaticised conscientisation' (1970). Paulo Freire points out that this initial angry response can lead us into fighting

⁶¹ As mentioned in *Ch. 3, Philosophical orientation*, diffracting with, rather than vilifying, the dominant paradigm can require constant vigilance for some, and I recognise that at times I invoke rhetoric that does not meet this goal, such as the quote above of St. Pierre, Jackson, and Mazzei, 2016. However, my awareness of this has strengthened over the past four years, and will continue, as I evolve as a scholar.

another ideological battle. *Ira furore brevis est.*⁶² How do we move with, through and beyond this madness?

Paulo Freire suggests we can use our anger to motivate us, but we must remember to act in love. The dynamic tensions between anger and love might help us to recognise that each paradigm arose from a set of complex interactions, and work with the most helpful aspects of each. I recognise significant benefits have been accrued in the era of the dominant paradigm (yet significant advances for whom and at what cost?), and that the modern onto-epistemology should not be totally negated, but rather used *contextually and relationally* with other ways of knowing (Gunnlaugson, 2004; Sterling, 2003, p. 9).

I also recognise that it could be easy to interpret in this inquiry that I am suggesting a clear hierarchical alternative to the dominant paradigm - e.g. we as a global community need to make the move from Separateness towards Relationality, and from mechanism towards emergence. I recognise the critiques against this simplified 'upgrade' discourse (Gunnlaugson, 2004, 2010). The holistic and widespread diffusion of 'a new cultural paradigm' is complex if not chaotic, and certainly not a quick matter of moving from A to B. And there are arguably 6,900 language-based cultural paradigms in existence in the world, and this diversity is precious (Cole, 2018).

3.6 How my process aligned with post qualitative philosophy

My inquiry exhibited four processes resonant with post qualitative research. Below I describe these processes, including immersion in philosophy; allowing for an emergent non-method; exploring the 'plane of immanence'; and creative analytical practices. These processes helped me to work towards alignment between the phenomena (content) of my inquiry and my own inquiry praxis.

Immersion in philosophy

The first post qualitative process in my inquiry is the immersion in philosophy. The Posts' require a thorough immersion as the philosophers inspiring this movement perceive reality in quite different worldview and epistemic 'grids' (in comparison to positivist,

⁶² Horace: Anger is a brief madness.

interpretivist, and constructionist research). Living from a different worldview - a process of transformative learning - requires significant time, patience, contemplation, experimentation, and volumes of reading (Brinkmann, 2018, p. 149; St. Pierre, 2016, p. 28; St. Pierre, 2017a, 2017c). Arguably, post qualitative researchers must engage so deeply with the philosophy, that one cannot *not* see with this philosophy, or “ethico-onto-epistemology”, in one’s day to day engagement with the world (St. Pierre, 2017c). In order to do this ‘well’, we must persistently and doggedly keep reading, thinking, writing and experimenting with philosophy (St. Pierre, personal communication, May 5, 2018).

My first year was dedicated primarily to philosophical reading, writing, creative reflecting and visual meaning-making.⁶³ While a year might not be sufficient for the “*long preparation* for post qualitative inquiry” (St. Pierre, 2017b, 2017c, 2018), I suggest my year of reading enabled initial yet significant transformative shifts towards a post qualitative lens. Within my changed perception, I *cannot* not use the philosophy to make meaning of the world around me.⁶⁴

Allowing for an emergent, contextual non-method

This initial immersion in philosophy enabled the next process resonant with the Posts: creating the space for a contextual non-method to emerge (St. Pierre & Jackson, 2014). In order to *think with theory as a process method* (Jackson & Mazzei, 2017), post qualitative scholars ask us to give up on pre-determined methodology (St. Pierre et al., 2016). Instead, the goal is to know the philosophy so well, that you can inquire into the phenomenon and allow for emergent and more meaningful forms of analysis to develop, with your interpretation of the philosophy as guide in that particular context (St. Pierre & Jackson, 2014). Your process of inquiry evolves to find and follow what ‘realities’ take shape, or

⁶³ I am aware this focus on philosophy could also be critiqued as continuing separatist tendencies of privileging the rational mind. But I think the challenge is to remember that the philosophical reading should not be just a head exercise, but an embodied experience to integrate and play with in your daily life.

⁶⁴ While running through a cemetery, I couldn’t help but think about how its design and practices signify the dominant paradigm in its segmentation into matrices of land we own, and humans as separate for nature, in box and chemical preservation. I couldn’t not see rat baits placed around our apartment as manifestations of the dominant paradigm, and dread how these materials come back to haunt us. I couldn’t listen to politicians rant sanctimoniously on TV about nation-states without feeling a reaction to this concept as one of the most unhelpful human separatist human constructs. I saw materials in the supermarket with the advice: “this packaging is not recyclable, dispose of properly” as further proof of our insane, inconsistent, onto-epistemology. I saw of picture of Western anthropologists using a physical matrix to study Indigenous culture, and it struck me as utterly missing the point. The interactions between the world and I became a stage for recognising and criticising the manifestations of the dominant paradigm, and a space to play with other ways of being on a daily basis.

how ‘worldings’ (the creations of realities) are informed (Jackson & Mazzei, 2017).

Yet, is very difficult to escape our training (C. Taylor, 2016; St. Pierre, 2016a).⁶⁵

Fortunately, my institutional home practices a strong transdisciplinary approach, and the post qualitative notion of non-method is not dissimilar to the transdisciplinary notion of evolving methodology (Mitchell & Ross, 2017; Taylor, 2016, p. 22). So, I did not suffer long from methodology diverting me from the more fundamental issues of onto-epistemology (Lather, 2017, p. 114; St. Pierre, 2014).⁶⁶ The goal of perfect methodology became backgrounded by the inquiry itself (St. Pierre, 2016, p. 28). Rather than spending significant time researching methodology, many of my methods were experimental and “emergent in the action of creation” (St. Pierre, 2016a, 2016b), based on what was ‘intense or urgent and co-arising within the interplay between philosophy and practice’ (Lenz Taguchi, 2016, p. 14), such as tracing the connections between philosophers, noted above.

Exploring the ‘plane of immanence’ for learning within and beyond the dominant paradigm

The two previous post qualitative processes enabled yet another post qualitative process to emerge: the exploration of the ‘plane of immanence’ (as introduced above). A practice or intention within post qualitative research in education is to recognise the assemblages between thoughts, beliefs, words, actions, people, materials, reality-creation (see for

⁶⁵ A post qualitative process wasn’t my original intention. I began my research with a strong orientation towards Good Old Fashioned Qualitative Inquiry (Brinkmann, 2014b). In the first week in I wrote my A3 notebook guiding questions for methodology: ‘how do I achieve rigour in my literature review, coding and analysis?’. Rigour in coding: this was my focus - methodology - in the first week. I was a case in point of the positivist scientism that has ‘for far too long’ put method before inquiry and ‘equated qualitative data analysis with coding data’ (St. Pierre & Jackson, 2014). Available research training encouraged me to stay within the bounds of positivist qualitative research by encouraging me to articulate my “problem statement,” my “research questions,” an argument for “research design,” number of “interviews,” my sources and methods of “data,” “data collection,” “data analysis.” All of these concepts, argue the post qualitative philosophers, are normalising concepts of qualitative research steeped in dualist, separatist notions of positivist research, in which the researcher is separate from the phenomena of inquiry (St. Pierre, 2016a, 2016b), and turn qualitative research into quantitative research, as Elizabeth St. Pierre points out.

⁶⁶ The experience described by Elizabeth St. Pierre resonates with my experience of my first year: *Some encounter with the world jolts us and demands our attention. It sets our curiosity to work; sends us to the library to read hoping to find others intrigued by the same problem; intrudes in our conversations with colleagues (“Have you ever wondered about —?”); saturates that liminal space-time between sleeping and waking; and, eventually, re-orientes our seeing, re-orientes our thinking, re-orientes being, so that orthodox distinctions fail, normalized boundaries dissolve, and things that are not supposed to relate connect and surge into new intensities. We believe this experience of the empirical is not so unusual but that our training inhibits it. We are required, in the name of valid, systematic science, to force that experience into the structure of a pre-existing methodology that simply cannot accommodate it. The orthodox is always wary of experimentation, but the new empiricisms and new materialisms require ethical experimentation—laying out a plane on which we can create new concepts* (St. Pierre et al., 2016, p. 104). For me, the ‘jolting’ experience was the repeating, clarion call to transcend the dominant paradigm.

example Lenz Taguchi, 2016 and Higgs, 2016).

Most of my thesis is in line with the intention and process of exploring and creating new 'planes of immanence'. While several interpretations of 'plane of immanence' exist in environmental and sustainability learning,⁶⁷ I gravitate towards description of 'plane of immanence' as "*the image thought gives itself of what it means to think, to make use of thought, to find one's bearings in thought*" (Deleuze and Guattari, 1994, p. 37 in Gough & Sellers, 2016), or as I interpret it, an awareness of the assemblage of our epistemologies (and ontologies, axiologies, and all other meaning-systems) as they intermesh with and influence our action in the world (and vice versa).

I explore of the plane of immanence in two segments: the *Premise segment* and the *Process segment*. In support of post qualitative endeavours, I bring awareness to a 'misdirected normative entangled set of onto-epistemological practices and enactments that constitute euro-centric legacies' as well as 'other-than-eurocentric and other-than-Cartesian possibilities'. Similarly, I do so in order to make space for 'plural ways-of-knowing-in-being to improve the (re)generating and sustaining of the ecologies of relationships' (Higgins, 2016) and to 'be creative of new potential ways of knowing and producing a multiplicity of realities in ways that might entail more flourishing aspects of being and becoming' (Lenz-Taguchi, 2012 in Lenz-Taguchi 2016, p. 52).

Creative analytical practice

The last post qualitative process in my inquiry is the engagement with creative and visual forms of meaning-creation (Brinkmann, 2018, p. 149). The philosophy of the Posts encourages researchers to work both within and against and beyond what is typically undertaken (rational, reflective interpretation) (Gough & Sellers, 2016). A creative analytical practice allows for intuitive, emotional, and other ways of relational-process knowing to influence the meaning and intellectualisation of an inquiry.

⁶⁷ Arguably the intention in post qualitative philosophy is to not ask if one's interpretation of post qualitative concepts is correct, but to explore what your interpretation allows to be created in terms of new perceptions and ways of being (Strom, 2017). Unsurprisingly then, diverse but related interpretations, applications, and usages exist for Deleuze and Guattari's 'plane of immanence' concept within those inquiring into environmental and sustainability learning, for example a 'plane of immanence' can invoke:

- a *conjunctive* worldview logic instead of a binary logic (e.g. invoking '*and*' instead of only '*or*') so that realities remain in a state of becoming (Bussey, 2018);
- a potential to experience Other through the joint fabric of being (Beeman & Blenkinsop, 2019, p. 9).
- a place of pre-philosophical experience that sits outside the norm and which is so significant, it allows for the creation of concepts that sit outside the dominant norm (Mickey, 2012, pp. 352-352).

My own creative analytical practice was largely visual. I tended to read slowly and thoughtfully, taking time to note, reflect, intuit, emote, interrogate my engagement with the world and its influence on me; a process that developed into a visual form of digesting and growing with the material. Daily, I would create connections between people, concepts, readings, and play visually with ideas and theories. Through this sustained meaning-making and creating practice, my A3 notebook filled creative analytical practices, each unique to the intensive 'chattering' of the philosophy/empirical interplay at that time in the thesis (Lenz-Taguchi, 2016). Anytime I felt intrigued, overwhelmed, excited, I would engage in a creative analytical process, often continually adding on to works over the course of the inquiry.

3.7 How does my inquiry sit in tension with post qualitative research?

While there is much alignment with post qualitative philosophy, my inquiry also sits in tension with post qualitative research for several reasons that I am aware of, and likely many reasons that I am still developing an awareness of.

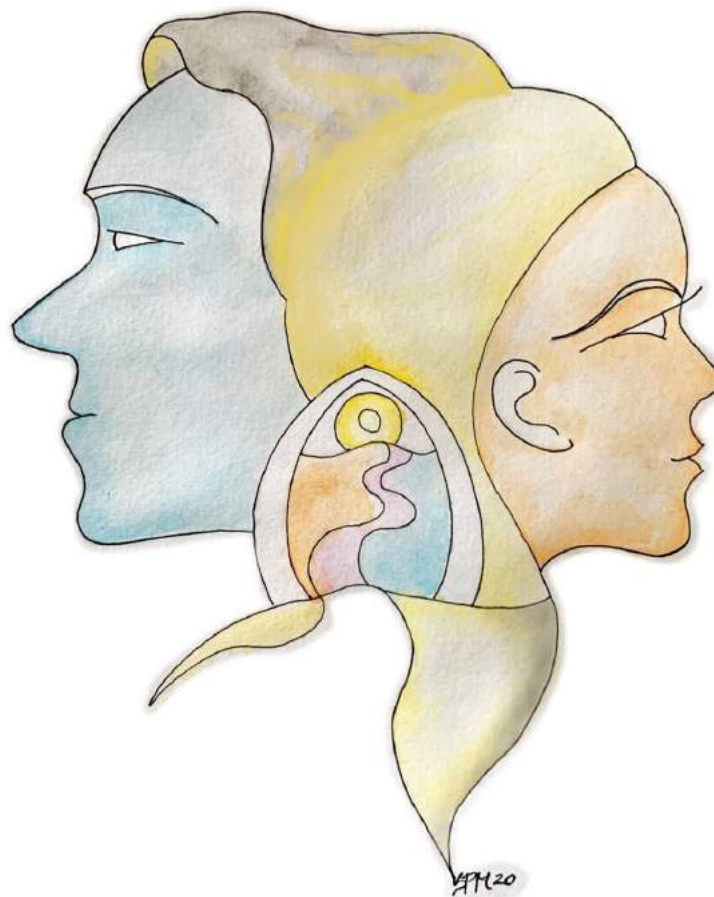
As I mentioned, I did not discover the philosophy early enough to pre-consider all of its implications, particularly in relation to interviews. After conducting my interviews, and engaging with post qualitative philosophy, I became aware of the critique of interviews as a "failed practice" because of the onto-epistemological assumptions embedded within this approach. Inquirers often perceive and conceive of an interview as a real mirror of a situation, a "coherent narrative" that represents "the Self" in the very telling of the experiences, rather than reading the interview as one of many possible stories that could have been told (Lenz Taguchi, 2012). Hence, interpretivist approaches run the risk of reducing complex and chaotic situations based on a reductive view of reality captured in an interview.

I agree interviews can easily be given undue weight of 'truth', especially if perceived in a 'dualistic' (West, 2004) or complicated (Snowden, 2000) worldview. I also recognise an interview is but a sliver in the universe of the educators' I spoke with, and that my perspective shades the meaning that is made of these interviews. On the other hand, I also see the interview as a valid entry point into awareness of and inquiry into amorphous, complex spaces, and discuss in *Ch. 5, Perspectives in inquiry* how I use the interviews as one perspective of several in this inquiry. In addition, I suggest that my engagement with these perspectives is looking towards a post qualitative orientation in that, I do not only

seek to understand what they might be saying, but also to engage with the questions of what allows them to say what they say, and what does an interpretation allow us to do (Freeman, 2014).

3.8 This inquiry as a Janus Head

In sum, I offer my inquiry as a helpful glimpse into what transition periods look and feel like for scholars. As such, the paradoxical metaphor of Janus offers insight into the nature of this inquiry. Janus, a Roman God, is often depicted as having two faces, each looking in the opposite direction. Janusian thinking-in-being then, often evokes the notion of holding paradoxical positions or ideas simultaneously as both valuable or true (Montuori, 2017). It is a symbol of transitions, beginning and endings, simultaneous entwining of and engaging with opposites, perpetually open to new meanings, motion, changes.



Artwork 2. *Janusian being and becoming* (Seth P. Morrison, 2020)

This Janus metaphor offers explanatory power for the liminal space of my inquiry, as this doctorate is both qualitative and post qualitative, as well as being neither qualitative nor

post qualitative at the same time. To explain: I am trained as a quantitative and qualitative researcher, but have stepped towards and within to the space of post qualitative philosophy in the past three years. In this inquiry, I am undergoing deep learning about how the dominant paradigm influences me as a person and as a person-in-research, all while I am researching how the dominant paradigm influences the world around us, including in the learning situation we design as educators. This transition as a researcher into a stretched onto-epi-axiological position in which I fully grasp and embody the arguments and positionality of the post qualitative research (C. Taylor, 2016, p. 18) is partial and on-going, because being able to see beyond your worldview in its entirety, I believe is not a quick nor ever complete process. Similar to epistemological pluralism (Healy, 2003), I believe my thesis represents philosophical pluralism.

The following chapters explain the specific scholarly approaches which emerge from and are influenced by these philosophical orientations. *Ch. 4, Analytical framing* introduces the 'analytical frame' of the document and *Ch. 5, Perspectives* introduces the perspectives used in this inquiry.

Chapter 4:

Structure of inquiry

“Problem-solving presupposes the existence of an unambiguous answer in the quest for the good and the right. But such an answer is possible only at one specific level of a multilevel reality...An answer is not an end, it does not terminate anything. To pose questions at ever new levels of discourse corresponds to an opening up of consciousness toward a multilevel reality.” (Jantsch, 1980c, pp. 273-274).

This chapter presents and justifies the structure of this inquiry. Following Erich Jantsch, the structure of this thesis mirrors various layers (dynamics) of reality, explored through discourse. Thus, this structure of my thesis is also my analytical framing. Here I describe the structure (analytical framing) to help the reader understand my logic, purpose and flow of this document. Within this chapter, I present the analytical questions for three dynamics of reality in more detail.

4.1 My analytical framing is a probe into the ‘layered dynamics of reality’

I chose ‘exploring the layered dynamics of reality’ as a structure and analytical frame, as it aligns with the content of the inquiry for several reasons. Firstly, the *litany*⁶⁸ in

⁶⁸ The most popularly accepted statement summarising a complex situation (Inayatullah, 2008, 2009), and

transformative sustainability learning is: “we need a new paradigm” (Moore, 2005a), and a layered method is a type of ‘paradigmatic approach’ for changing paradigms (Slaughter, 1997). There are multiple realities and transformative sustainability learning, amongst other fields, needs to engage with those multiple dynamics in order to change them. Secondly, the spheres of this inquiry (*Ch. 2, Spheres of inquiry*) suggest individuals and societies construct reality based on their individual worldview beliefs, and that the dominant beliefs are disrupting the ability of Earth’s processes to support diverse life. A layered method of exploring reality shares this constructivist assumption and the purpose of a layered method is to probe into these deeper influences of reality in order to improve *the way we are* bringing new ways of being into existence.

To develop my analytical frame, I synthesised several approaches to this method

I integrate and adapt several resonant layered methods in the analysis and framing of my inquiry. In order to invoke an interpretation that is in line with my holarchical intent, it is important to compare the philosophical premise and pragmatic purpose of these layered methods (*Table 27 in Appendices*). *Table 27* demonstrates that most of these methods developed their layered interpretation of reality *in reaction to the force and power of the Western paradigm* in shaping our experiences (and thus worldviews). And within these, I integrated the approaches with a holarchical intent.

These include the methods of Erich Jantsch, Stephen Sterling, and Sohail Inayatullah. Collectively, their shared qualities (*Ch. 2, Spheres of inquiry, Table 5*) and premises (*Appendices, Table 27*) for a layered method provide a unified justification for an “eclectic” inquiry into dynamic layers of reality (Inayatullah, 2004).⁶⁹ Even so, enough difference exists amongst the methods to create space in which insights can emerge from my own inquiry (rather than being bound by the specific attributes each method suggests).⁷⁰ By

most shallow level of reality (*Table 3*).

⁶⁹ And specifically, with Sohail Inayatullah’s justification of his causal layered analysis: we both interpret this method as compatible with Posts’ belief in the necessity of non-method, or rejection of a pre-determined method (see 2004, and *Ch. 4, Analytical framing*).

⁷⁰ For example, there are three material ways in which my process deviates from Sohail Inayatullah’s model. Firstly, Sohail Inayatullah suggests his Causal-Layered Analysis method is not *for* manifesting a specific envisioned worldview/paradigm (2004), yet in traveling through these layers in this inquiry, I am actively wondering and gathering how others are trying to manifest a specific envisioned paradigm in their work. This is more in line with Erich Jantsch’s and Stephen Sterling’s purpose use of the layered method. Secondly, we offer slightly different conceptions of the fourth layer of reality. Sohail Inayatullah defines the fourth layer as our deepest, unconscious mythical *and* metaphorical symbols, images, feelings and slogans which underpin and infuse individual worldviews and cultural paradigms *Table 3*. Different to this, I implicitly include metaphors in the worldview layer of reality because I find metaphors often relate to, or explain different aspects of a worldview, like an ontological belief or an epistemological, axiological belief. In reading through Sohail Inayatullah’s examples for metaphors (Inayatullah, 2004, 2005, 2009) I interpret them as

synthesising Jantsch, Sterling, and Inayatullah, I probe and reveal insights at three dynamics of reality:⁷¹

- Logic-of-perception (*premise* of transformative sustainability learning)
- Worldviews/paradigms (*premise* of transformative sustainability learning)
- Praxis (*process* of transformative sustainability learning)

The analytical frame also structures the flow of the document

The flow of the document mirrors the analytical framing. The document largely contains an explication of the philosophical premises of transformative sustainability learning through two dynamics of reality. We begin probing and exposing the philosophical premises of transformative sustainability learning with *critiques* of dominant paradigm dynamic and the logic-of-perception dynamic. After exploring the transformative learning experiences which enabled a shift in perception of the philosophers preceding transformative sustainability learning as well as current educators, we then continue with the philosophical premises of transformative sustainability learning in terms of *visions* for both the logics-of-perception and worldview<>paradigmatic dynamics. After the exploration of philosophical premises, I then demonstrate how these premises manifests in diverse learning processes designed by the educators.

The following sections explain the purpose, questions, and terminology within these three dynamics of reality.

4.2 Internal dynamic of reality: individual worldviews and shared paradigms

My purpose of this section is to reiterate why this dynamic of reality is important and

manifestations of worldview beliefs; for example, “Trust in Allah but tie your camel” represents a *spiritual-causality belief*; “linear story of taming nature” represents an *anthropological-causality belief*; “triumph of the West” represents a *societal vision*; “God gave humankind the earth to do as they wish” represents a *spiritual/theological belief*. These metaphors are enabled by certain logics-of-perception. Hence, the last main difference is that the deepest layer in my inquiry is one of logic-of-perception e.g. separatism, relationality, intra-dependence. For example, the worldview-metaphors discussed in my inquiry, such as reality viewed as a ‘machine’ or ‘Indra’s net’ or a ‘radically intra-active dance’, are enabled by very different relational logics-of-perception. I wonder if my innovative framing might address, for some inquirers, confusion around the distinctions between Sohail Inayatullah’s myth/metaphor level and worldview/paradigm level (a need identified in Inayatullah, 2004).

⁷¹ I also perceive these layers as dynamic and inter-steeping, so this construct of layers is merely a heuristic or temporary entry point into the complexity.

explain how I define the *worldviews and paradigms* dynamic of reality.

Worldviews and paradigms play an essential role in the construction of reality

As discussed in *Ch., 2 Spheres of Inquiry*, worldviews and paradigms are a powerful influence on our interpretation and creation of reality. These deep beliefs converge to dynamically organize a synthetic apprehension of the world and thus inform how humans interpret, enact, and co-create reality. Within this dynamic of reality, I wanted to know the variety of *critiqued* and *envisioned* beliefs when creating more sustainable and just ways of being.

Meaning-systems constitute and can be used to define worldviews and paradigms

Meaning-systems is a helpful construct to use in exploring the beliefs within worldviews and paradigms. In this section, I explain why I have chosen the concept of ‘meaning-systems’ to detail what constitutes an individual worldview and shared paradigm, where that concept comes from and then I synthesise a list of distinct meaning-systems used in this inquiry.

Individual worldviews and shared paradigms can be conceived of as a constellation of unquestioned and subconscious beliefs. Depending on the disciplinary lenses and theories employed, these beliefs are invoked using a variety of terms.⁷² Working across different perspectives requires me to again select and define terminology that is most useful for the purposes of this inquiry.

For several reasons, I use the terminology of *meaning-systems* to describe the beliefs comprising our worldviews and paradigms.⁷³ Meaning-systems can be defined as

⁷² For example: ‘habits of mind’, ‘codes’ and ‘meaning perspective’, within the theory of transformative learning (Cranton, 2016; Mezirow, 2012); or ‘categories’, if transformative learning is viewed as a metatheory (Hoggan, 2016); ‘preconscious beliefs’, ‘assumptions’, ‘filters’, ‘interpretive lenses’, ‘dimensions’ in psychology (Koltko-Rivera, 2000, 2004); ‘fundamental philosophical questions’ (Brinkmann, 2018, pp. 7-12) or worldview ‘aspects’ (De Witt, de Boer, Hedlund, & Osseweijer, 2016).

⁷³ Firstly, the term *system* in ‘*meaning-system*’ invokes concepts of relationality, dynamism, emergence, all of which are helpful and relevant concepts in this complex space of cultural and individual development (Dirkx, Mezirow, & Cranton, 2006). As long as ‘systems’ is not interpreted as a ‘reified thing’, this linguistic, conceptual, and paradigmatic framing reminds us that none of these meaning-systems are isolated, rather, as Gregory Bateson argues, they are impossible to separate (Bateson, 1991). Secondly, the notion of *meaning-systems* is invoked by spirituality and religion studies (Silberman, 2005; Umland-Sikkema, Visser, & Westerhof, 2018). The spiritual meaning-systems explore questions around what is sacred, and this is a powerful (Stuckey, Taylor, & Cranton, 2014), but often silent aspect of transformative sustainability learning in formal settings (Dirkx et al., 2006). Thirdly, while scholars of Transformative Learning Theory explore diverse beliefs as a “form that transforms” (Kegan, 2009; Taylor & Cranton, 2012), transformative learning theory tends to be dominated by the six ‘meaning perspectives’ as identified by Jack Mezirow (Cranton, 2016, p. 28). An adoption of the ‘*meaning-systems*’ term provides flexibility for additional dimensions based on input from other

preconscious beliefs and theories that give meaning to the world around us and our experience; they function as an inter-steeping⁷⁴ constellation of profound meaning through which reality is perceived and interpreted (de la Sienna et al., 2017; Park, 2007, 2010; Silberman, 2003).

Each researcher and field tends to have a particular focus on meaning-systems. To illustrate the diversity in potential meaning-systems, I summarise articles representative of various fields (*Table 7*).

| Beliefs about: | Transformative Learning Theory (a) | Western worldview studies (b) | Cultural comparisons (c) | Critical futures (d) |
|---------------------------|--|---|------------------------------------|--------------------------------|
| Ontology | | X | X | |
| Epistemology | X | X | X | X |
| Cosmology (time, space) | | X | | X |
| Axiology | X | X | X | |
| Anthropology | | X | | X |
| Spirituality | X | | | X |
| Societal vision | X | X | | X |
| Causality | | | X | X |
| Self | X | X | X | X |
| Rhetorology ⁷⁵ | | | | X |
| Aesthetics | X | X | | |

(a) (Cranton, 2016; Dirx et al., 2006; Hoggan, 2016; Mezirow, 2012; Yorks & Kasl, 2006)

(b) ((Brinkmann, 2018; De Witt, de Boer, Hedlund, & Osseweijer, 2016; Hedlund de Witt, 2014; Hedlund-de Witt, 2013; Koltko-Rivera, 2000, 2004)

(c) (Sebastian, 2018)

(d) (Inayatullah, 2004; 2009)

Table 7. Meaning-systems articulated in different fields of inquiry

While I urge each of us to continue to explore new and other yet-be-be conceived

disciplines, cultures, personal reflections.

⁷⁴ To 'inter-steep' is for entities, process, phenomenon to have a mutual pervading influence and saturation, like the softening and mixing of essences in an herbal tea. I first heard this term from Nora Bateson (2019), in her discussions of how we humans should develop the ability perceive complexity and systemic interdependence.

⁷⁵ Rhetorology as a meaning-system might require more explanation than the other meaning-systems. Rhetorology is not an identified "meaning-system", per se, by transformative learning or worldview researchers. Jack Mezirow touches upon this concept with his 'sociolinguistic' meaning perspective, but his term can be interpreted more broadly as social norms (Cranton, 2016). In comparison, rhetorology is my term to signal beliefs related to conveying meaning, i.e. beliefs about language, or communication. By surfacing beliefs relating to 'rhetorology' as a meaning-system within, or offering explanatory insight of, worldviews and paradigms, we are prompted to take seriously our perceptions and beliefs of what language (or communication) does do and can do in the world (St. Pierre, 2013b).

meaning-systems,⁷⁶ *Table 8* presents the definitions of the meanings systems used in my mapping of worldviews and paradigms. Within this inquiry, I probed and synthesised insights for both the commonly-articulated and rarely-acknowledged meaning-systems.

| Meaning-systems | Beliefs on the natures of: | References |
|-------------------------|---|---|
| Ontology | reality/ies, or what exists and what does not | (Brinkmann, 2018, pp. 7-9; Koltko-Rivera, 2004) |
| Cosmology | origins of the universe | (Laszlo, 2017; Swimme, 1996) |
| Time | i.e. Newtonian, quantum, linear, and/or circular time | (Dirkx et al., 2006) |
| Causality | i.e. linear, circular, and/or mutual causality | (Sebastian, 2018, p. 199) |
| Anthropology | roles of a human being and humanity, particularly in relation to nature | (Hedlund de Witt, 2014; Hedlund-de Witt, 2013, p. 78) |
| Societal vision | ideal societal organisation, i.e. how societal problems should be addressed | (Brinkmann, 2018; de la Sienna et al., 2017; Hedlund-de Witt et al., 2014, pp. 12-13) |
| Self | self-identify and notions of the self | (De Witt et al., 2016, p. 199; Dirkx et al., 2006; Sebastian, 2018) |
| Death | the phenomenon of death and its role, purpose, importance | (Hedlund de Witt, 2014; Selby, 2002) |
| Epistemology | knowledge, knowing. and wisdom | (Brinkmann, 2018; Cranton, 2016, p. 28; Hedlund de Witt, 2014; Koltko-Rivera, 2004, pp. 9-10) |
| Rhetorology | role of communication and language | (Barad, 2007; Cranton, 2016, p. 24; Dirkx et al., 2006; St. Pierre, 2013b; St. Pierre, 2017a) |
| Axiology | a basic value orientation: what is of value, and what is ethical and moral? | (Brinkmann, 2018, p. 11; Cranton, 2016, p. 26; Hedlund-de Witt, 2013, p. 78) |
| Spiritual ⁷⁷ | immaterial reality, sacred, God, the Divine, transcendent? | (Dirkx et al., 2006; Hedlund de Witt, 2014; Hedlund-de Witt et al., 2014; Koltko-Rivera, 2004; Park, 2007; Silberman, 2003, 2005) |

⁷⁶ I recognise that this selection of ‘meaning-systems’ could very well be a ‘tracing’ (Deleuze & Guattari, 1987, pp. 12-25); meaning, these conceptualised meaning-systems arise from fields and authors largely within ‘the West’. A different selection of meaning-systems might arise in a review of additional cultural worldviews. For example, Isabel Sebastian’s comparison of Eastern and Western archetypes highlights the meaning-system of causality more explicitly than the other predominantly Western perspectives. Each philosophical turn in the dominant culture is based on newly perceived assumptions, and no doubt unrecognised beliefs (or as of yet unconscious meaning-systems) exist within the dominant-cultural-paradigm.

⁷⁷ Spirituality is an importantly meaning-system in our worldviews, and can be used interchangeable with religion (Silberman, 2003, 2005, Park 2007), or in the case of philosophical studies, theology. However, spirituality can be argued as the broadest concept (in that religion is often associated with specific religions or

| Meaning-systems | Beliefs on the natures of: | References |
|-----------------|-----------------------------|---|
| Aesthetics | what is beautiful, artistic | (Cranton, 2016, p. 28; Dirx et al., 2006; Gidley, 2007) |

Table 8. Definitions of meaning-systems in this inquiry

The questions explored within the worldview and paradigms dynamic of reality

I use the diverse list of meaning-systems (*Table 7*) as a map for exploring the ‘individual worldview and shared paradigm’ dynamic of reality (*in Premise chapters 6 and 12*).⁷⁸ The purpose in these chapters on the dynamic of worldviews and paradigms is to unveil the beliefs that influence the design of our learning systems, towards either ‘more-of-the-same’ or towards more relational ways of perceiving and being. The intention in using these numerous meaning-systems is to explore:

- Within these meaning-systems: what critiques do the educators have of the dominant-cultural-paradigm and why? What additional or alternative perspectives, beliefs, assumptions, perceptions, do the educators think, feel, believe are important, and why? How do their philosophical premises converge or diverge with the philosophers preceding transformative sustainability learning?
- Which meaning-systems are and are not engaged in learning experiences, and why might that matter in terms of efforts to help learners become worldview-aware?

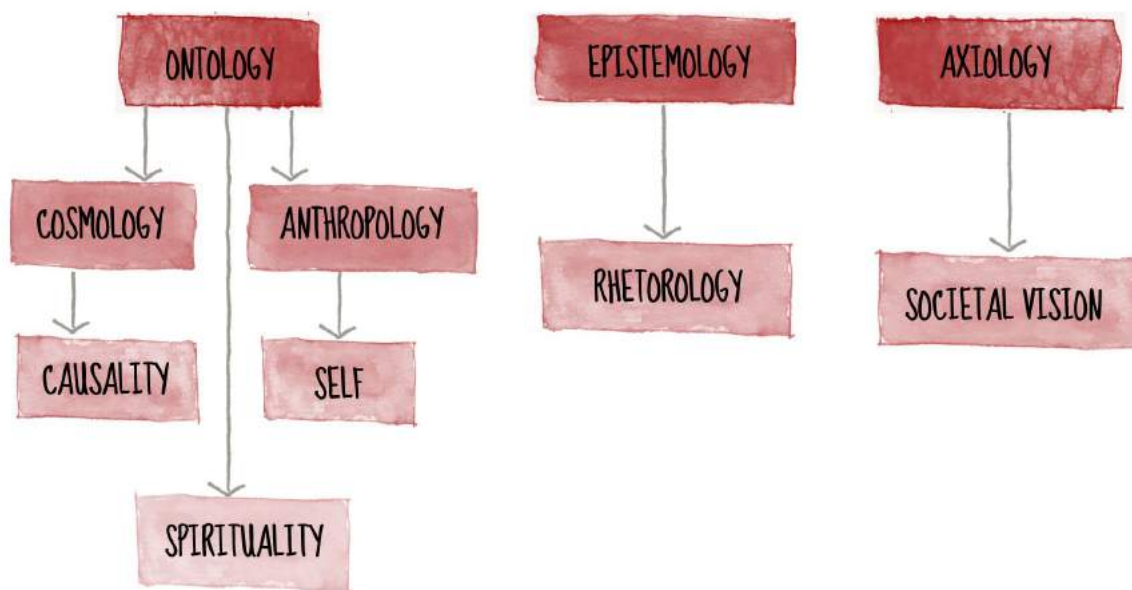
In this dynamic of reality, I intertwine paradigm critiques and visions from three sets of perspectives: a) philosophers preceding yet influencing transformative sustainability

institutions, and theology is the formal study of religion or theories of God), and thus I use this broader term. Moreover, all of the terms ending with the -ology suffix are potentially misleading in that ‘-ology’ refers to the science or the study of these ‘phenomena’. Yet, the study of something can be enacted separately from an awareness of one’s own beliefs. Thus, if time would have permitted, I would have explored and created alternative suffixes on these meaning-systems to better highlight that these meaning-systems are not only or just about the intellectual study/knowing of these beliefs, but rather in the case of worldviews, they represent the constant process of meaning-making between the self and the world that continually creates reality in a dynamic becoming of both. For example, what if it was *ontostomy* (the opening of perception and awareness of beliefs of reality as they manifest in the world around us), or *ontozoic* (as awareness of how our beliefs of reality create what we experience of life).

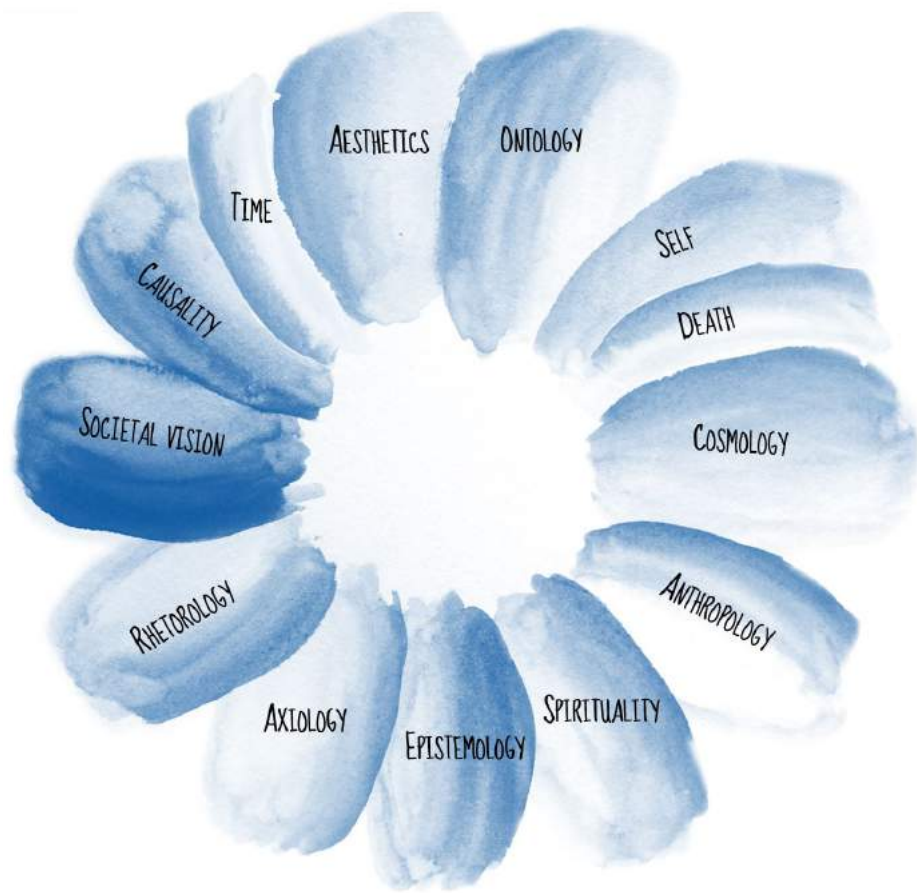
⁷⁸ In line with Post philosophy, I did not start out with this intention. It was only in the deep reading of philosophy and the mapping of the emergence of critiques, that I began to perceive ‘aggregates of intensities’, or realise each of the critiques could be ‘traced’ into the common philosophical meaning-systems (Deleuze & Guattari, 1987, p. 15). So, while most slotted into an existing ‘tracing of reality’, I also added beliefs about ‘death’ as a meaning-system, which was present in the practice literature but not explicitly in the transformative learning literature.

learning; b) in-depth vignettes of educational practitioners of transformative sustainability learning; and c) current literature described as transformative sustainability learning. These perspectives ('data') will be described in the following chapter.

Another question I explore is the impact not only of the meaning-systems themselves, but as well, the impact of how the meaning-systems are conceived as a whole. In this inquiry, I present two quite different visual interpretations of the relationality amongst the meaning-systems (*Visual 11 and Visual 12*).



Visual 11. Heuristic for critique of the dominant meaning-systems



Visual 12. Heuristic for [envisoning](#) more relational meaning-systems

I use two visuals of the same content because the visuals have different ‘intensions’.⁷⁹ In the *critique* of the dominant paradigm, the visual ‘intensionally’ invokes the common separatist and hierarchical relationships assigned to worldview and paradigmatic meaning-systems in dominant philosophy (*Visual 11*). Similarly, the visual of *relational* meaning-systems (to inform the design of learning experiences) captures the perception of relationality amongst the actual meaning-systems themselves (*Visual 12*).

These two interpretations are enabled by an even deeper dynamic of reality: our logics-of-perception. The following section introduces this dynamic of reality.

⁷⁹ Distinct to *intention* (aim or purpose), *intension* can refer to the internal content (or message) of a concept. In this inquiry, I use intension to designate that I strive to ensure that my visuals have philosophical alignment between their message and the ‘intension’ of their medium.

4.3 Deepest dynamic of internal reality: Logics-of-perception

The purpose of this section is to firstly, justify the term logic-of-perception as the deepest level of reality within the inquiry. Then I explain how I investigate the manifestation and implications of this logic, and the perspectives used in this probing.

Logic-of-perception is the deepest dynamic of reality infusing in our meaning-systems and actions

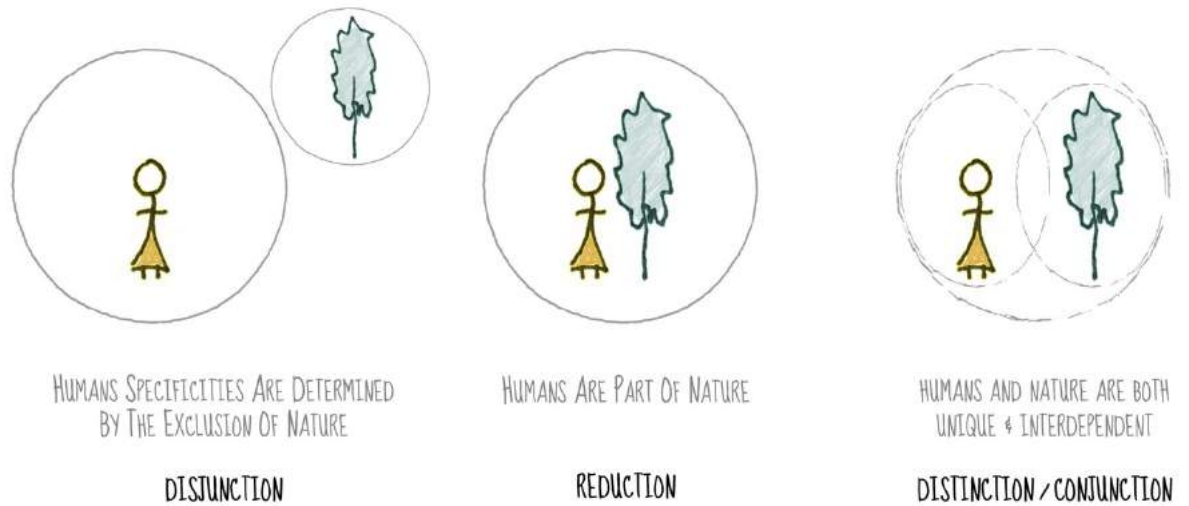
In this inquiry, the deepest dynamic influencing reality in the invisible depths of our unique worldviews and shared paradigms is framed as the logic-of-perception (*Ch. 2, Spheres of inquiry*). This term refers to the primary preconscious *logic* for perceiving and building worldview beliefs and mental concepts. Below I explain the sources inspiring this term to justify its use in my inquiry.

Justification of logic-of-perception as a 'term'

Edgar Morin, renowned French philosopher of complexity and transdisciplinarity, refers to the primary influence in our unconscious as the “logical operation” of the cultural paradigm. This ‘logic’ is similar to philosophical logic which dictates “the habits of the mind that are acceptable for inference and reasoning when arguing one’s position on an issue” (McGregor, 2011). But rather than always being a conscious point of reflection, as can be the case in philosophy, these paradigmatic and worldview logics exist deep within individual and collective unconsciousness. In other words, people unconsciously use *logical operations, or logics*, to find patterns and make meaning of experiences.

All worldviews, paradigms and philosophies have logics that become preponderant, pertinent, privileged, evident, and valid (Morin, 2001, p. 22). Examples of such logics include relations of comparison, i.e. relationships of: exclusion, inclusion, disjunction, conjunction, implication, negation (Morin 2001, p. 22). The dominant-cultural-paradigm privileges the logic of *separation, disjunction, or exclusion*, while ignoring ‘*conjunction*’. For example, in the dominant-cultural-paradigm, humans are perceived of as *excluded* or *disjoined* from nature (*Visual 13*). Other worldviews may embody more *complex* logical operations by perceiving multiple types of relationships between concepts. More complex logics include *both/and*, or *implication/distinction/disjunction* comparison, in which for example humans are perceived of as *both* part of *and* distinct from nature (*Visual 13*). In other words, above all else, a paradigmatic *logic* describes the essential *logic* by which

one's worldview makes meaning, often to the exclusion of other logical operations (Morin, 2001, p. 22). And these logics (and the relationships they imply), can all be described symbolically (circles in *Visual 13*). I draw on this circular symbology throughout the document to demonstrate various logics-of-perception.



Visual 13. Logics-of-perceiving humans and nature

Edgar Morin describes logical operations as functioning “profoundly in the invisible depths” of our unconsciousness, yet logical operations become universally diffused through our worldviews and actions (Morin, 2001). In other words, logical operations *create and express themselves in every unquestioned belief of our worldviews* (Morin, 2001, p. 21-22). Our logical operators then culturally imprint, normalise, and provide validity for thoughts, feelings and actions within a shared culture (Morin, 2001, p. 23). The logic also eliminates anything of dispute or contestation (Morin, 2001, p. 23). My inquiry demonstrates the various logics within the realm of transformative sustainability learning.

If logic is the more conscious ‘philosophical word’ to describe this profound influence on our worldviews and paradigms, perception is the more embodied term to describe the same phenomenon. Similar to Emilia de la Sierra’s conception of a worldview, the deepest dynamic of our meaning-making process is our sensory data that our bodies capture or the perceptions that form our worldviews (*Figure 1*). Hence in this inquiry, I use the term ‘*logic-of-perception*’ to denote this primary process of meaning-making within an individual worldview or cultural paradigm.

This separatist logic-of-perception is referred to by many labels and concepts:

separateness, exclusion, disjunction, dis-integrated, dualism, compartmentalisation, dissociation, binary, discontinuities, Other, dismemberment. While each of these terms

all are used in specific ways in various fields and have particular meanings, in this inquiry I perceive all of these descriptions from various philosophers as invoking the same phenomenon, as it manifests in different spaces, places and perspectives of reality. This phenomenon is the infinitely repeating patterns of how we turn “life’s rich and colourful continua into discrete either/or separations of their extreme poles (black or white)” (Hutchins, 2014, p. 35). In other words, each term essentially implies oppositions with no middle ground (Oxford, 2020).

But for the purposes of clarity, I attempt to temporarily distinguish between the two most frequently used descriptions in my inquiry, e.g.: *separation* and *dualism*. In this inquiry, separateness is the “core myth” (Inayatullah, 2009, p. 38), or the primary logic-of-*perception* in the dominant-cultural-paradigm. As Gregory Bateson implies, we turn this perception of separation into an opposition, or a dualism. Dualism is often the *academic term* for this exclusionary logic in our *conceptions*, where the mind is *conceived* as separate and opposite from the body, or human is *conceived* as separate and opposite from nature, etc. Thus in this inquiry, ‘separateness’ is the more unconscious *perception* of polarising dissociations and dualism is the more conscious *conception* of polarising dissociations. However, the more interesting question for me begins with a hunch that each of these terms arises from an awareness of the fundamental error of the dominant-cultural-paradigm; thus I am more interested in exploring how this diversity of separatist perceptions and conceptions has been recognised and overcome by philosophers and educational practitioners of transformative sustainability learning.

This interpretation is resonant with the layered models I synthesised

In my inquiry, the primary logic-of-perception of the dominant-cultural-paradigm is separation, disjunction, dualism, fragmentation. This interpretation aligns with the layered approaches of Erich Jantsch, Stephen Sterling and Sohail Inayatullah, in that they agree *separation* is the primary logic (and illusion, or myth) of the dominant perception (Jantsch, 1976; Sterling, 2019). In fact, Sohail once described “*unconscious structures of difference, basic binary patterns*” as the “core myth”⁸⁰ (Inayatullah, 2009, p. 38).

⁸⁰ As I suggest in this inquiry, all logics-of-perceptions are ‘myths’, particularly if they are used on their own. Many logics exist for our pre-conscious perceptions: disjunctive, conjunctive, unitary, etc. It is in uniting many diverse logics-of-perception, that we can improve our perceptions (*Ch. 11, Premise: relational perceptions*).

The questions explored within this dynamic of logics-of-perception

To address the concerns of philosophers (relevant to transformative sustainability learning) about the separatist logic-of-perception, I probe:

- How do the preceding-philosophers seek to abstractly and practically overcome the myth of separation? How do their messages complement each other in working towards a more holistic and dynamic perceptions?
- If transformative sustainability learning seeks to expand the dominant paradigm, to what degree are educators aware of and reflexive on the role of separatist logic-of-perception? How are transformative sustainability educators are seeking to manifest learning experiences which create condition for beyond-separatist perceptions?
- How can we transcend an only intellectual rejection of separation, towards a lived, embodied awareness of this logic-of-perception?

Similar to the worldview/paradigm dynamic, I explore the logics-of-perception dynamic in two ways: firstly, from a *critique* of the dominant separatist perception and secondly, as a collective *vision* for additional ways of perceiving.

4.4 External dynamic of reality: Process

The final dynamic of reality that I explore in this inquiry is that of learning processes, which arise from philosophical premises radically different from the dominant-cultural-paradigm. This section explains why I explore process, what I mean by process 'layer' of reality, and what the exploration of process includes.

In the case of this inquiry, process refers to the curated (designed and facilitated) learning experiences of sustainability educators. These learning experiences are a 'hologram of its subterranean bedrocks' (Sterling et al., 2018). In other words, the praxis as created and enacted, in essence, embodies the underlying worldviews, and their logics-of-perception. Thus, I explore the process layer of reality primarily to demonstrate the different processes of learning that emerge after a thorough critique of the dominant-cultural-paradigm and a visioning of alterative philosophical beliefs.

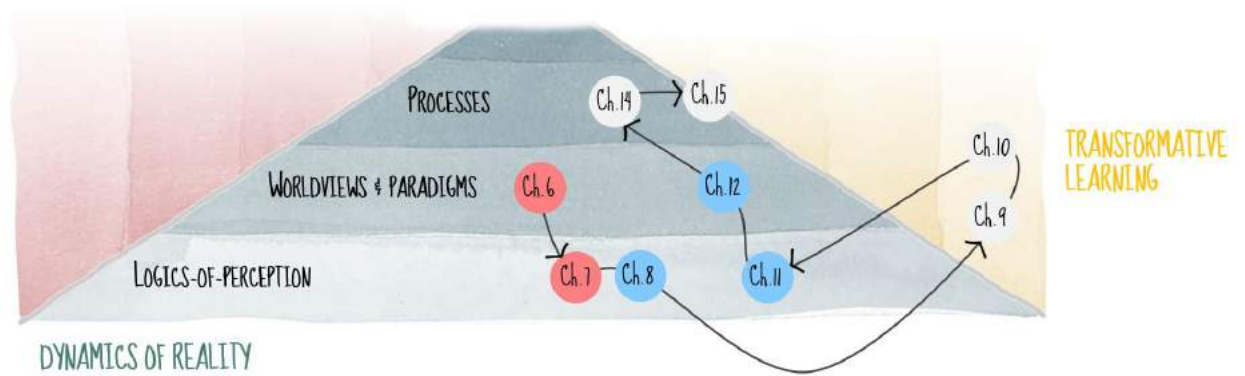
The questions explored within this dynamic of process

In the two internal dynamics of reality, I intertwine three perspectives (philosophers, educators, and current literature). However, in the *Process chapters (14 and 15)*, I invoke primarily the processes of four educators who have had their own transformative learning experiences. These experiences have brought an awareness of how their own worldview and other paradigms influence their notions of learning. Based on this expanded consciousness, these vignette educators seek to design different types of learning experiences. In these chapters on learning process, I question:

- What are the learning experiences which are designed from a radically different philosophical base?
- What are the convergences and divergences arising between four in-depth vignettes, particularly in relation to third-order, transformative learning?
- What reflective and generative questions arise from this comparison for educators aspiring for transformative sustainability learning designs?

In sum, the structure of this inquiry explores the *Premises* and *Processes* of transformative sustainability learning, using a layered approach to understanding and changing reality.

Each of the chapters is devoted to a specific dynamic of reality. The first seven chapters explore the Premises in eclectic but related ways. The last two chapters explore the Process. As espoused by Stephen Sterling (2003), and Erich Jantsch (1976a), I invoke these layered framings of reality to illustrate the **dysfunctions** of the of the dominant paradigm (*Ch. 6, Premise: meaning-systems*) and its logic-of-perception (*Ch. 7, Premise: myth of separation*). Recognising that “analysis of dysfunctions” at this deep worldview and perception level is only a “ground clearing-exercise”, and that the “fascinating and much more demanding task” is the exploration of new domains of cultural possibility and potential (Slaughter, 1997), I also explore other possible logics-of-perception (*Ch. 8: philosophers’ logic, Ch. 11: relational perceptions*) and worldview beliefs (*Ch. 12: meaning-systems*) (Sterling, 2003; Jantsch, 1976a). Finally, I illustrate and ground this abstract discussion in the learning processes curated by four educators (*Ch. 14: models and 15: three-orders*).



Visual 14. Flow of the analysis chapters, as related to the analytical framing

What follows is an introduction and justification of the three main sets of perspectives used in this inquiry to explore these dynamics of reality.

Chapter 5:

Perspectives in inquiry

In this chapter, I explain why and how I engage with three sets of perspectives to create and reveal meaning within the analytical framing of this inquiry (*Ch. 4, Analytical framing*).⁸¹ These perspectives include: a) philosophers preceding transformative sustainability learning, b) current literature, and c) in-depth vignettes of transformative sustainability learning.

First, I explain the complementarity of these perspectives. Secondly, I briefly articulate the resonance between this inquiry and the intention of hermeneutic philosophy. Thirdly, I introduce each set of perspectives. For each perspective, I describe who is included and why. After, I detail the interpretive processes used. Lastly, I summarise how the perspectives are integrated into the analytical framing.

5.1 These three perspectives entwined in this inquiry

These three sets of perspectives are distinct but complementary. The philosophers provide the preceding and deep philosophical premises for transformative sustainability learning. These can be compared to the premises of current literature, and to the premises of four educators in more in-depth 'vignettes'. The detail of the vignettes offers rich

⁸¹ E.g. sources of 'data' if one is of the qualitative ilk.

complementarity to the other two perspectives, as well as provide insight into how a deep and significant change in premises then manifest in processes.

5.2 First set of perspectives: preceding-philosophers

Philosophers who preceded and influenced transformative sustainability learning are the first set of perspectives I engaged in this inquiry. By this I mean the pedagogies emerging from their philosophies are all typically acknowledged as key elements of transformative sustainability learning. These pedagogies include: systems and complexity thinking, inter and transdisciplinary learning (e.g. applied, problem focused learning), critical pedagogy, and experiential learning (Burns, 2009, 2011, 2013, 2015; Burns, Vaught, & Bauman, 2015; Burns & Wolf, 2014).

To delve into the historical lineages of these pedagogies, I read and interpreted primarily the work of five philosophers. These philosophers included *John Dewey* (experiential education), *Paulo Freire* (critical pedagogy), *Basarab Nicolescu* (transdisciplinarity), *Edgar Morin* (complexity) and *Erich Jantsch* (systems, complexity, transdisciplinarity). While these are the more frequently profiled philosophers, I also engaged with other relevant scholars (i.e. Gregory Bateson, Fritjof Capra, Joanna Macy, Donella Meadows). The purpose of this engagement was to identify the philosophical intentions of these pedagogies, beyond how they are commonly written about as practices or competencies for students.

I now provide a more in-depth introduction to the philosophers, over the next five pages, for three reasons. Firstly, a hermeneutical approach must include a meaningful understanding of context from which each perspective emerges. Context is just as important to meaningful interpreting as the content of the philosophies.⁸² I also present the contexts of each philosopher in more detail in order to demonstrate their diversity, recognising their diversity makes the unity of their philosophical intentions to stretch beyond the dominant paradigm even more profound.⁸³ Thirdly, I also reiterate the

⁸² For example, I could have condensed the following introduction into a synthesis of their critiques and visions in a tabular format, but I believe introducing their philosophical beliefs in a personal context will enhance the meaning of discussions of their philosophies in subsequent chapters.

⁸³ By diversity, here I mean diversity in terms of time period, geographical area, and particularly philosophy of interest. Most of these philosophers are male, and largely of the 'Western tradition', and given more time, and knowing what I know now, I would certainly add more feminine and additional cultures to the mix (Greg Cajote, Hannah Arendt, Vine Deloria, Jr, Val Plumwood, Isabelle Stengers, Charlene Spretnak, Maria Montessori, Elaine Riley-Taylor, Lynn Margoulis, Robin Kimmerer, etc.), even though they haven't been directly attributed as a scholar of a 'primary pedagogy' relevant to transformative sustainability learning (but now I know how much each, and many more, has to offer).

linkages of the philosophies, and the pedagogies they inspired, to transformative sustainability learning. After introducing the philosophers, I explain my hermeneutic processes of interpretation.

John Dewey and his praxis of experiential education for resilient growth

Born in 1859 and living for nearly a century, American philosopher John Dewey lived at a time of rapid technological, social and economic change, and what he witnessed concerned him deeply: unquestioned application of science on society; strengthening of blind competition; a weakening of the democratic state and institutions in the face of capitalism; ineffective education systems that taught students as if they were empty vessels into which information could be fed; and, a systemic lack of reflective thinking in the populace (Dewey, 1897, 1927, 1933, 1938). John Dewey dedicated his philosophical and practical career to solving these real-world problems.

In John Dewey's analysis of *The Public and its Problems*, he describes a social pathology of seeing these issues as different phenomena, a pathology which operates with subtle and unconscious pervasiveness (Dewey, 1927). John Dewey was critical of this long-established, deeply embedded, and pervasive separatist, *either/or* perception, which influenced all facets of these issues, and thus John developed his philosophies with an ever-present perception and manifestation of dynamism, process, integration and relationality (Garrison et al., 2012; Seibt, 2016).

As a systemic and holistic thinker, John Dewey did not perceive these concerns as independent phenomena, but rather as outcomes of complex, deeply intertwined relationships between culture, institutions, education, and government, e.g. a socio-politico-environmental system in a state of un-resilient decay. In line with his vision to improve society, John Dewey's philosophies *interlinked* societal regeneration, learning, and action. Serving as president of both the American Psychological Association and the American Philosophical Association, John Dewey's learning theories *integrated* both of these fields. John Dewey's pedagogic creed maintained: "*Education is life*, not the preparation for life" (Dewey, 1897, p. 77). Core to his philosophy is the idea of pragmatism, or the belief that the truth value of knowledge is not separate from context, but rather *verified in the outcomes of its practical use*, for example in strengthening democracy (Dewey, 1927).

Dewey scholars argue that John Dewey may have exerted more *international influence* on education than any other figure in first half of the twentieth century (Garrison et al., 2012,

p. ix). His experiential learning theory and practice has certainly influenced contemporary educational theorists, such as Jack Mezirow (Marsick & Finger, 1994) and David Kolb (2015); and his philosophy continues to inspire transformative sustainability learning today (Sterling et al., 2018).

Paulo Freire and his praxis of critical learning for resilient liberation

Paulo Freire was a Brazilian educator, or “southern theorist” (Morrow, 2013, p. 74), most widely recognised for *Pedagogy of the Oppressed* (1970), which he later reflected on and updated as *Pedagogy of Hope* (Freire, 2004). Paulo’s passion for liberation-focused learning arose out of his very early experiences and influences in life. Born in 1921, and growing up amongst poverty and hunger taught him – through experience and reflection – “the **relationship** between social class and knowledge” (Gadotti, 1996, p. 5), and their **systemic conditions** which arose from hundreds of years of complex history of colonisation and subjugation (Freire, 1974, p. 25).

Through his early professional career in education, Paulo Freire experimented with methods of teaching and learning – such as culture circles – that could quickly provide Brazil’s 16 million illiterate farmers both the ability to read (technical learning) **as well as** develop critical consciousness of the forces maintaining their oppression (transformative learning) (Freire, 2004). This experimentation developed into a National Literacy Program, which engaged farmers in the process of democracy (learning **as** democracy, as opposed to learning *about* or *for* democracy) (Freire, 1974, p. 32), but was shut down by military a coup in 1964 (with support by the US government out of fear of left-leaning power, Pereira, 2018). Paulo Freire was subsequently exiled, and it was during this time that he wrote *Pedagogy of the Oppressed* (Morrow, 2013, p. 75). Paulo recognised that his exile was a sign of his success in bringing freedom, which unfortunately also brought about a reaction from those in power who had something to lose:

*"What does leave me perplexed is to hear or read that I intended to "Bolchevize the country" with my method. In fact, my actual crime was that I treated literacy as more than a **mechanical problem**, and **linked it to conscientizacao** [developing critical awareness], which was "dangerous." It was that I viewed education as an effort to liberate men, not as yet another instrument to dominate them (Freire, 1974, p. 51).*

Even as recently as 2013, Paulo Freire’s work was not taught at the Harvard Graduate school of education (a University he worked at). Bruno della Chiesa, a lecturer within the

Harvard Graduate School of Education, suggests that the banning of Freire's works within American public schools might speak to his continued ability to disrupt the status quo (Gardener, Chomsky, & della Chiesa, 2013). Paulo Freire is a key influence and acknowledged source for the Critical Pedagogy movement of education, as taken forward by Peter McLaren, bell hooks, and Henry Giroux (Irwin, 2012, p. 5), as well as those in transformative sustainability learning (Sterling et al., 2018).

Basarab Nicolescu and his praxis of transdisciplinarity for resilient healing

Similar to John Dewey and Paulo Freire, Basarab Nicolescu is concerned about the historical and current trajectory of humanity. He warns that even though humanity has been in tough times before and has always been able to survive, at this moment we are in a very real danger of complete and total self-destruction (Nicolescu, 2010). This could be material (nuclear war), biological (genetic modification or antibiotic resistance), and/or spiritual (lack of human connection and the general lack of 'respiration' with the cosmos), due to 'staying the course'. This 'course' was created by the prevalence of a *technoscience sword* under the rule of a *utilitarian mind*, with an *atrophied and dead soul* providing no guidance.

Born in Romania in 1942, Basarab studied theoretical physics, and eventually came to view the dominant paradigm as a major contributor to the peril of humanity. He often points to the Enlightenment as a significant event, manifesting *dualist perceptions* in the dominant-cultural-paradigm. The development of science during the Enlightenment represented a "violent break" with the *ancient wisdom* and *vision of holism*, when science more fully *developed independent of theology, philosophy and culture* (Nicolescu, 2002, 2006, 2010, 2014c). This violent separation between 'science' and 'ethics' has, he argues, engendered a *split between subject (the scientist/person of power) and the object (the Other/the objectified)*, and this objectification has facilitated many atrocities: exploitation, experiments, massacres, terrorism, wars (Nicolescu, 2006, 2010, 2014b).

Within his philosophical treatises – including the Manifesto of Transdisciplinarity (2002) and From Modernity to Cosmodernity (2014) - Basarab Nicolescu explains how transdisciplinary ways of knowing and being can help heal this violent subject/object divide. He urges scholars to "go beyond the *dichotomous, either/or mentality* that, in his view, produced many of the problems that now plague humanity" (Bernstein, 2015), towards a cosmodern worldview in which *everything is defined by its relation to other*

entities and an integrated view of complex levels of reality (individual, environmental, social, spiritual, cosmos, etc.) (2014).

Aside from a 1970 OECD seminar on inter- and transdisciplinary studies (featuring Jean Piaget, Erich Jantsch, and Andre Lichnerowicz), Basarab Nicolescu is one of the earlier philosophers expounding the need for transdisciplinary science⁸⁴ (Bernstein, 2015) and more broadly, transdisciplinary ways of being (Nicolescu, 2014b). Basarab Nicolescu's transdisciplinarity is a philosophical diffraction to other ways of being, as compared to other forms of transdisciplinarity which focus more on real world problem solving, but largely within the 'western' epistemic grid (Cole, 2017). Transformative sustainability learning should seek to curate both philosophical and practical transdisciplinary inquiry (Burns, 2009).

Edgar Morin and his praxis of general complexity for earth citizenship

Born in the same year as Paulo Freire (1921), Edgar Morin is an active French sociologist, yet his work spans and integrates innumerable disciplines. Edgar was born within a decade of his more well-known French poststructuralist compatriots Giles Deleuze, Felix Guattari, Pierre Bourdieu, and Michel Foucault. Despite the cultural and temporal proximity, Edgar Morin did not identify with postmodernism, as he was more interested in pursuing his own research agenda (Montuori, 2013a). Compared with his compatriots, Edgar Morin's primarily French corpus has limited influence in the Anglo-Saxon world (Askegaard, 2017). He is, however, well known in European and Latin American circles, and with increasing translation, recognition of his contribution to complexity theory and complex thought grows (Montuori, 2013a). Today Edgar Morin is the UNESCO Chair of Complex Thought and has several universities dedicated to teaching his methods.

Edgar Morin, fundamentally an activist, is concerned about and motivated by social justice. During WWII, as a Jewish resistance fighter he "*lived in mortal danger*" during the war years (Montuori, 2004). Edgar joined the French Communist party, believing in its ability to deliver social equity, but eventually the party expelled him after he openly critiqued the party's dogma (Montuori, 2004). After an honest self-reflection on his own self-deception in order to stay with the party during its growing repression, Edgar realised how critical it is for us to be aware of the "inviolable centers" we create, similar to Paulo Freire's anti-

⁸⁴ Basarab Nicolescu participated in the 1994 First World Congress on Transdisciplinarity, along with Edgar Morin, and he currently leads the International Centre for Transdisciplinary research (CIRET).

dialectical thoughts, or John Dewey's "mental furniture picked up unconsciously from tradition, instruction, or imitation" (1933, p. 7), which we do not identify, question, or challenge. All three explore how our ideas and their embedded ways of making meaning, can literally possess us. The beliefs - or engines - that threaten our very future, according to Edgar Morin, are the non-negotiable mental furniture of the dominant-cultural-paradigm:

*"The probabilities of a global future are extremely alarming: our space-ship is pulled by four engines without any control: **science, technology, economy, and the search for profit**—all this under conditions of chaos since the **techno-civilizational unification of the planet, under the Western push**, causes singular cultural resistances and cultural and religious re-closings. The planet is in crisis with all the possibilities, ones regressive and destructive, others stimulant and fertile" (Morin, 2006).*

As a sociologist, Edgar Morin delves into society's roles, functions, purposes, inter-relations with people over time. His *holographic method of inquiry* – investigating the situation from many levels and integrating many perspectives - meant he did not sit easily within any disciplinary department. As opposed to disciplinary boundaries, Edgar's boundaries of relevance in an inquiry include whatever is pertinent, including every perspective from a **personal to a planetary view** (Montuori, 2004, 2013). Within his personal view, Edgar Morin includes not only his own experience, but also has a constant awareness of his own worldview (ontological, epistemological, axiological) assumptions; e.g. he develops knowledge of his own knowledge - to ward against the illusion of certainty, idealization, rationalization, normalisation, etc. (Morin, 2001).

In his reflection on his own knowledge about knowledge, Edgar Morin realised the deep and lasting impact of **dualistic thinking and being**, and goes to great lengths to point out this subconsciously absorbed **human/nature divide and its implications** (Morin, 2008). Edgar Morin joins the dots to argue how this **disjunctive paradigm** manifests unethical and immoral behaviour towards one another, which can become a "bearer of death" (Morin & Kern, 1998).

Thus, Edgar's process of **complexity** is one of full immersion, and which seeks to avoid a mutilating or violent dismissal of political, psychological, sociological, emotional, historical contexts. For example, Edgar Morin takes an ethical stance and refuses to reduce anybody to their worst characteristic or actions, Nazis, murderers, political leaders: *"This refusal to reduce, to take a Manichean, simplistic view (such views are driven by fear, anger, and other*

emotions, but often masquerade as coldly rational) is a central element of Morin's work" (Montuori, 2013a). Instead, Edgar Morin applies his complexity-based notions to pedagogical principles for generating knowledge necessary for navigating the overwhelming planetary issues facing us on a 'small, literally wonder-full Homeland Earth' (Morin & Kern 1998; Morin, 2001), which can be integrated into transformative sustainability learning (Burns, 2009).

Erich Jantsch and his praxis of evolution for resilient futures

Erich Jantsch (1929-1980) was an Austrian astrophysicist, astronomer, systems theorist, and futurist, born in the same decade as Paulo Freire and Edgar Morin. While Erich Jantsch is not commonly known or discussed in the field of sustainability or learning, it can be argued that he has significantly influenced these fields (MacVie, 2017) as well as the fields of: systems (Capra, 1981; Jantsch, 1980c), futures (Jantsch, 1967), higher education (Jantsch, 1969, 1970, 1972a, 1972b; MacVie, 2017), and consciousness studies (Jantsch, 1976a, 1976b). His interests and contributions spanned a significant number of disciplinary domains because he believed disciplines, such as fore-casting, alone, are meaningless if pursued in isolation. Thus, similar to Basarab Nicolescu and Edgar Morin, Erich Jantsch believed meaning and purpose exist through disciplinary *integration*.

Erich Jantsch the man, is a bit of a mystery (MacVie, 2017, p. 9). The few existing personal descriptions depict him as exceptionally kind, committed to his work (MacVie, 2017), a polymath and genius, but often hard to access (Blanchard, 2010). Regardless, similar to the previous four philosophers, it is easy to perceive in his written work that Erich Jantsch looked into the future and was frightened by what he saw: negative side-effects of an all-consuming *belief in technology* were degrading nature, cities, and societal living; students at tertiary schools, such as MIT where he worked in the late 60's, felt the curriculum was irrelevant; the *lack of futures and systems thinking* within higher education meant students left university unable to deal with the complexities of their time (Jantsch, 1969, 1981). Erich Jantsch was deeply critical of 'traditional' habits of inquiring and creating, which he felt threatened the future of humanity, and devoted his lectures, academic writing and consulting to creating alternative futures.

According to Fritjof Capra, a well-known systems theorist in his own right, Erich Jantsch's final book, the Self-Organising Universe "provided the first grand synthesis of the new systems approach to life and evolution, based on the emerging paradigm of self-organisation" (Capra, 1981). In this book, Erich defines *self-organisation* as the central "*dynamic principle of life* which gives rise to a wide range of phenomena, including self-

renewal, self-healing, adaptation and self-transcendence in development, learning and evolution” (Capra, 1981).⁸⁵

Fritjof Capra, and many others, strive to integrate systemic thinking and being into their transformative sustainability learning. However, similar to transdisciplinarity, and complexity, and critical pedagogy, and experiential education, these pedagogies can be implemented within the dominant paradigmatic beliefs, thereby missing the worldview stretching potential embedded within the philosophies of these approaches (e.g. beliefs highlighted in blue above). This inquiry explores how to draw the worldview beliefs within these philosophies into the premises and processes of transformative sustainability learning.

Process of deep reading and interpretation of the philosophers’ work

The interpretations of the philosophers’ perspectives are hermeneutical in intention. Hermeneutics is a philosophy of interpretation and meaning-creation. In alignment with the definitions on worldviews (*Ch. 2, Spheres of inquiry, Ch. 4, Analytical framing*), hermeneutics believes that humans are born into a world with a need to make meaning of it. Our meanings might be both subconscious and conscious, but are strongly influenced by the historical traditions which we find ourselves born into, and can in turn end up enacting (Nixon, 2017). Hence, this inquiry is hermeneutical in the sense that I am investigating how historical traditions and other paradigms influence the learning process of transformative sustainability learning educators.

A helpful metaphor for the hermeneutical process I use to make-meaning with these philosophers is the idea of a ‘conversation’; a give and take, and back and forth, from which something new emerges (Nixon, 2017). Similar to Paulo Freire engaging with Karl Marx’s ideas, “not just in the brain but as alive, existing in, and emerging from people’s lived realities”, we can invite philosophers into our lives, to have conversation with them, as a means to improving our own praxis (Lake & Kress, 2013, p. 26). I read the seminal works of these philosophers slowly and closely, taking the time to visualize and question their arguments and assumptions. I also compared my own interpretations of their seminal works with more recent scholars dedicated to these philosophers. And I engaged

⁸⁵ Erich Jantsch was a friend and colleague of Fritjof Capra’s, who was the first to introduce him to the idea of self-organisation (Capra, personal communication, June 15, 2017). Fritjof Capra even considers his own work, largely a reformulation of Erich’s ideas: “My own synthesis of these concepts in the present book is, in a sense, a reformulation of Erich Jantsch’s earlier work” (Capra, 1996, p. 111).

their ideas in making meaning of my own daily experiences. Through these conversations, I developed a nuanced appreciation for the words that they chose and the metaphors that they used, which in turn provided me with a deeper understanding (grasped meaning) of their interpretations. To add more layers of meaning to their work I mapped the social ecology of who influenced the philosophers and who they influenced. Observing the personal and professional interconnections between each of them, also strengthened insights into how concepts travel and morph through our scholarly traditions. This 'hermeneutic circling' between these philosophers (Gidley, 2007) strengthened, deepened and integrated my conversation with each of the other philosophers.

A significant feature of hermeneutical analysis is the fluctuations and inter-relations between the 'parts' and the 'wholes' (Gidley, 2007, p. 11). Meaning, in this inquiry, I was not only simultaneously zooming in and across to the plentiful and varied works of the authors and their contexts (time period, languaging, personal history, life influences, goals, gender etc.), but I was also zooming out to the broader contexts of my inquiry and my own 'historically informed worldview' interacting with all of this. In other words, my hermeneutical approach recognises texts themselves are interpretations based on layers of history, personal experience, emotions and values that are not often explicit in the text, and thus I as a researcher am interpreting an interpretation, but also with my own history, social context, personal experiences and values (Lozano, Merrill, Sammalisto, Ceulemans, & Lozano, 2017; Nixon, 2017). The hermeneutical approach requires that we recognise and take this complexity into account in our 'interpretive processes' of written and spoken words (Freeman, 2014). I try to note this complexity in demonstrating reflexivity, and capturing the complexity in footnotes.

Another important aspect of interpretation is to acknowledge the various critiques of each perspective. In the main, I agreed with the principles of what these philosophers put forward; hence, my interpretation and reflections on their writing were largely from an appreciative stance. That said, many of these theorists have been critiqued in various ways.⁸⁶ I acknowledge and engage these critiques in the meaning-making with these

⁸⁶ John Dewey has been critiqued as too idealist in his all-encompassing, quintessentially modernist vision. In certain scholarly circles, modernist philosophies have pejorative connotations relating to essentialism (e.g. developing a meta-theory that applies to all of humanity and society); hopeful to a fault; and, discounting Indigenous ways of knowing (see for example racist descriptions in 1933, p. 18-19). Leaders in postmodern and critical educational theory argue that the 'pragmatist and constructivist' legacy has failed to deal with the problems and challenges of cultural diversity and power imbalances of our contemporary society and education. Thus, they argue much of which "passes for enlightened education and democracy in these times under the names of Dewey and Vygotsky seem hardly worthy of the title" (Giroux and Aronowitz, 1992 cited in Irwin, 2012, p. 6). As opposed to the critiques of critical theory, Deweyian scholars recognise that even though John Dewey pushed at the edges of the dominant enstructured ways of thinking, he was still a product of living

philosophers in the *Premise segment*. The following section introduces the second set of perspectives integrated in the *Premise chapters*: current literature on transformative sustainability learning.

5.3 Second set: current literature

The second set of perspectives interwoven (with the philosophers) in sketching the premises of transformative sustainably learning is a selection of recent journal articles. I explore recent articles from two dynamics of reality: worldview beliefs and logics-of-perception. Engaging this set of literature in a hermeneutical interpretation similar to the philosophers necessitated a ‘quality of reading’ over ‘quantity of papers’, thus I aimed to find a representative and illustrative subset rather than exhaustive list.

I began with an exhaustive search, and then selected papers for a hermeneutically appropriate sub-set. The search criteria for finding this subset included articles with “transformative learning” and “sustain*” in the title or abstract; were published within the last 15 years; and were found through ERIC (Education Resources Information Center) database. After searching against these criteria, several additional characteristics allowed me to remove the majority of surfaced papers.⁸⁷

In order to firstly, increase the breadth of perspectives within the remaining 70+ papers and secondly keep the papers to under 25 (in accordance with the intention for a slow and deep process of reading and interpretation), I included only one paper from each educator. Even though many authors, such as Elizabeth Lange, Stephen Sterling, Arjen Wals, Heather

within the ‘modern’ time (Garrison et al., 2012). Perhaps if John Dewey lived in a time of more complex societal consciousness about the need for decolonising his own thinking, he would have been in a better placed to address such criticism? Even though philosophies tend to define themselves in opposition to what has come before them, how can we instead interweave his messages of hope and unity into more complex stances diffracted with critical pedagogies: how can we continue to hold on to our hope in light of the critiques of power? And how can we be mindful of our human unity while recognising our incredible diversity? The other philosophers reviewed also receive their fair share of critiques. Paulo Freire missed the feminist turn (Torres, 1996, p. xxvi) and the more recent beyond-binary gender turn. In fact, most of these philosophers can be critiqued for their ‘essentialism of humanity around the masculine’, and using Man/his/him, and historically embedded sexist language. Erich Jantsch and Basarab Nicolescu are often inaccessible. Basarab Nicolescu repeats large sections of his own writing. In response to these critiques, I would like to invoke Nora Bateson’s notion of symmathesy here (Bateson, 2015): we are all products of mutual learning within our own contexts. Might we have come to similar conclusion had we lived their lives? What blind spots still exist within us?

⁸⁷ E.g. if a) sustain* referred to a concept quite different from the one illustrated in Section x (e.g. ongoing programmatic impacts, autism or health); b) ‘transformative’ was invoked without referencing at least one related theorist, such as Jack Mezirow, Patricia Cranton, Elizabeth Kasl, Edward Taylor, John Dirkx, Stephan Brookfield, Elizabeth Lange, Edmund O’Sullivan, Michel Alhadeff-Jones, etc.; c) ‘transformative’ meant only external change, and not the self-change implied by transformative learning; and, d) the paper focused on the institutional level as opposed to the experience and intention of the educators and facilitators.

Burns, Edmund O'Sullivan, David Selby had many papers that fit the selection criteria, I selected papers with abstracts that signalled insights into the layered contexts of reality. In total, I reviewed 23 papers, published between 2004 – 2018. As I read, groupings emerged of the *premise papers*⁸⁸ and the *content-process* papers.⁸⁹ We'll explore the implications of these groupings in *Ch. 6, Premise: meaning-systems*.

Process of deep reading and interpretation of the current literature

Mastery of 'paradigmatic methods' of inquiry (e.g. layered methods discussed in *Ch. 2, Spheres of inquiry* and *Ch. 4, Analytical framing*) is difficult because of the "critical and hermeneutic" skills required (Slaughter, 1997). To address these challenges, I used a more tactile qualitative approach to slow the process down, enabling a qualitatively different reflection, criticality, and interpretation. The process began by reading each of these papers in hard copy, and coding the papers for explicit discourse and examples of the meaning-systems, and noted whether the meaning-systems were being invoked in relation to a critique, desired shift, learning design, or learning outcome.

Settling on a process for synthesis was challenging. Initially I summarised my coding in a Word template, then Excel templates, then NVIVO codes; but all attempts to be "efficient" and rigorous, felt wrong, and appeared to lose the forest through the trees. So, I developed an approach that is both systematic and systemic, integrating the criticalness (asking specific questions of the authors), while allowing for emergence (what is unexpected or what patterns emerge that I wasn't looking for). I drew summaries of my coding on pieces of A3 paper. The author-educators' invocations of meaning-systems were summarised systematically. However, to make meaning of the proposed or actual learning process, I drew out the learning designs as 'purposeful activity systems' (inspired by Checkland & Poulter, 2010), thereby creating space to recognise the connections and interlinkages between the worldview premises and learning design, rather than purely dissecting the data (St. Pierre, 2013a). Instead of looking for insights in a linear document, I looked for patterns in a more systemic interpretation. In the slow mapping and digestion of each

⁸⁸ The 'premise papers' refers to the papers that critiqued two 'internal' dynamics of reality (e.g. the dominant separatist-perception and the dominant paradigm), and then discussed how this changed their design of the process and content of the course.

⁸⁹ The 'content-process' papers did not engage with the philosophical critique or vision of transformative sustainability learning, but rather focused just on the process and content. I recognised many reasons might exist for why these 'shallower' papers do not engage with the myth and worldview/paradigmatic levels of reality: the author/s may not be aware of the dominant paradigm in which they exist, or they may be aware of the dominant paradigm, but choose not critique it for the purposes of the publication.

paper, deeper consideration could be given to what each author-educator was communicating, and how I was interpreting it, in more of a conversation.

As we do indeed need education that gets to the depths of things (Schumacher, 1997), my primary question for this sub-set of literature was: what is the described need and vision for worldview and paradigmatic change? Are there indications or illustrations of how we might transcend the dominant paradigm and its separatist myth, and what transformative sustainability learning might enfold into our worldviews? What expansions of our worldviews do these transformative learning experiences seek?

Caveat

This process, like any other has caveats. The papers I reviewed only represent a tiny slice of each educator's experience, beliefs and pedagogical work - a metaphorical grain of sand in their lived universe - and therefore the perspectives extrapolated from this selection of papers is partial.⁹⁰ Similarly, these papers are a snapshot in time. Practitioners views change and it is the change that gives transformative sustainability education life (Williams, 2018). Also, I am aware that my interpretations can be emotionally influenced by such things as the order in which I read the papers, particularly because of my slow read, (for examples if I read a quite shallow paper immediately after a very deep paper); who the paper quotes (or doesn't quote) and how they interpret key authors. I attempted to be aware of my emotional reactions as I proceeded and explore them as they arose.

5.4 Third set of perspectives: learning vignettes

This final section explains the third set of perspectives engaged for creating insights and questions within the layers-of-reality method. This set includes four educators and their perspectives on their university courses and programs. I interpret their work, and interweave 'vignettes' from each educator within the *Premise* and *Process* segments.

In this section I introduce the concept of 'vignette', describe my process for selecting educators, introduce the four educators and courses, justify their selection, describe my meaning-making process of their work, and acknowledge several limitations of this approach.

⁹⁰ For example, David Selby's 2004 paper has the most extensive critique of the logic-of-separation in this sub-set, but in his contribution to the Journal of Transformative Education special issue paper, a critique of this dynamic of reality was not present (Selby & Kagawa, 2018).

Introduction to the 'vignette' concept

A 'vignette' is a hermeneutical approach, interpreting why and how educators do what they do (Liebermann, 1987). The vignette technique explores the practice and experiences of educators, and importantly, respects and honours each educator's unique contributions. This technique also compares and contrasts educator experiences to learn from their collective efforts (Lieberman, 1987). I developed the vignettes (insights into educator's intentions and experiences) based on their publications and an in-depth interview.⁹¹

Selecting educators

I found educators through literature and web searches for 'transformative sustainability learning'. I then emailed educators to ask if the term 'transformative learning for sustainability' resonated with their conception of their work, be it in spirit or in label, and if they would like to participate. If the educators agreed, I invited them to participate in an in-depth, 1.5-hour semi-structured discussion.⁹²

From October 2017 to February 2018, I conducted 13 interviews with educators who design(ed) and deliver(ed) learning experiences in undergraduate and graduate university programs in Australia, Canada, Europe and the USA.⁹³ Before each interview, I would source, read, annotate and visually map out the educator's available writing in an attempt to 'step into their world' (i.e. familiarise myself with their work and perspectives), and hence better honour our time together. The recorded interviews took place on Skype and in person. The conversations ranged from 1.5 hours to over 3 hours. In the case of one interviewee, the conversation has been on-going, as he subsequently became an external supervisor after our interview.

The interviews were flexibly and thematically structured around the questions of: "how did you become involved in transformative sustainability learning; how do you curate this learning process; why do you engage in it; what are some of the most significant changes you have seen within students and yourself; what do you think are some dynamics behind the wicked problems we face today; what are your fears, visions, burning questions." I also supplemented thematic questions with specific questions that arose when reading

⁹¹ Rather than asking educators to write their own vignettes, as in Lieberman, 1987.

⁹² UTS Human Research Ethics Committee Approval Number: ETH17-1721

⁹³ Another point of contextualisation of this research in that these vignettes are largely Anglo-Saxon. My future inquiries must be more cultural diverse.

their work. To aid the conversation in a more natural flow, I wrote these questions shorthand on an A3 paper, and would make brief notes next to the relevant theme as we talked. This meant each conversation took a different route, based on our dynamics and the interests of the educator. At the end, I could revisit any questions we had missed. I transcribed the interviews, and sent transcriptions to interested interviewees. To demonstrate my appreciation for everyone who participated, I also facilitated a paper swap amongst all participants.

After the interviews, my interpretation of educators' work narrowed to those who described the influence of their own transformative learning on their teaching practice (and the other interviews, I do not use in the thesis). I selected four educators who, in some way, described how their own transformative learning experience feeds into their reflections on how the dominant-cultural-paradigm influences what and how we teach, and how the common way of teaching perpetuates causes of our wicked socio-natural problematiques.⁹⁴

Introduction to the educators and their courses

Beginning with the shortest course (5-6 days) and moving to longest course (3 years), I next introduce the four educators and the unique contexts and premises of their university courses. Similar to the philosophers, I provide this detail now in order to better contextualise the presentation of vignettes of their work later in the thesis.

Joy O'Neil, Agential realist (food) pedagogy

Agential realism as premise for transformative sustainability learning

Joy O'Neil is passionate about creating more sustainable futures. She developed an innovative Sustainability Education doctorate program at the University of Wisconsin Stevens Point (UWSP). However, in this inquiry, I focus on Joy's kitchen-based learning, as a form of transformative sustainability learning.

Kitchen-based learning was conceptualised based on two courses. During Joy's PhD, she researched and assisted an undergraduate *Environmental Cooking* course and *Sustainable Food Systems* course. In the *Environmental Cooking* general science elective, ten

⁹⁴ This is certainly not to say that the other educators did not experience impactful transformative learning, but rather these four educators wrote and spoke in much greater detail across the various levels of reality (e.g. my analytical framing).

undergraduates would prepare and eat lunch and dinner together over a week (O'Neil, 2017b).⁹⁵ The *Sustainable Food Systems* course was taught in four-hour sessions on Saturdays (O'Neil, 2018).

The heading (title) of Joy's vignettes in this thesis is then distinct from the other vignettes. I interpret Joy's work from two courses in different contexts (whereas in other vignettes, I interpret a single course or program which has been running iteratively over multiple years, or decades). Thus, the headings for Joy's vignettes are named after her pedagogy – agential realist (food) pedagogy (rather than the name of a course). Joy more recently refers to kitchen-based learning as: learning *as* sustainability; transformative sustainability education; living and learning within a radically relational and material-discursive ontology (O'Neil, 2015, 2017a, 2017b, 2018), but I use the term 'agential realism' to highlight the distinct philosophical premises of her work.

Within these food-related courses, Joy constructs and applies her agential realist pedagogy. Joy's premises of transformative sustainability education are largely influenced by the philosophical beliefs of posthumanist philosophers, such as Karen Barad, thus her development of and interpretation of transformative sustainability learning often looks at the agency of material in influencing the learning experience, particularly through invoking memories and emotions. Joy took this theorising and designed a living systems program at UWSP, in which materiality and relationality played a key role, implying that her research on relational ontology can be added to different contexts, curriculums, programs and pedagogies.

Joy's quotes within are from her published works (which I reference), our interview on December 14, 2017, or from her review of the thesis in June 2020.

Janet Moore, Semester in Dialogue

Dialogue and design as a premise for transformative sustainability learning

Janet Moore describes herself as passionate about creating a more ecologically and socially just world, ensuring that we can meet the needs of future generations (Moore, 2005b). Towards this end and through her own transformative learning journey (Moore, 2004), Janet came to co-develop and implement 'CityStudio', an innovation hub metaphorically inside Vancouver's City Hall (Moore & Elverum, 2014). CityStudio is a

⁹⁵ The 3-credit course was 5-6 days, with morning (8am-12pm) and afternoon sessions (3-7pm).

network of courses that connect local government with staff and students across several tertiary learning institutes in the Vancouver area. Janet believes the CityStudio model, being replicated in over 10 locations, is one of the few education models that links intimately with local government.

Within CityStudio Janet has been curating and facilitating 'Semester in Dialogue' for ten years. 'Semester in Dialogue' is a 13-week, full-time course, with 20 interdisciplinary students and three facilitators. 'Semester in Dialogue' is an active engagement with and application of 'dialogue' and 'design' in their local community.

Janet's quotes within are from her published works (which I reference), our interview on December 12, 2017, or from her review of the thesis in June 2020.

Heather Burns, Leadership for Sustainability Education master's

Living systems paradigm as a premise for transformative sustainability learning

Heather Burns is an educator at Portland State University, Oregon within the School of Education. She is one of three facilitators of their *Leadership for Sustainability Education* master's program, which she has been co-running since 2010. Since 2010, the program's overall mission is to:

prepare learners with the leadership skills and opportunities, through coursework and community-based learning, to take leadership roles in envisioning and designing change and educating for sustainable solutions in our communities (Williams, Burns, & Kelley, 2014).

This two to three year program welcomes diverse educators, of all ages, who want to integrate sustainability into their pedagogy, be it English, community development, theatre, arts, psychology, etc. (Burns et al., 2015).

A premise of the master's program is that developing (relational) leadership is a vital ingredient for sustainability work (Burns, Munoz, & Sager, 2016). Thus, the program is initially run in a cohort style, meaning new students begin the program together every autumn and participate in the same foundational course, *Advanced Leadership for Sustainability*. After the two initial core courses, the cohort (now a 'co-heart') mixes with other students in various stages of the program and in other educational programs in the Graduate School (Burns et al., 2016; PSU, 2017; Williams et al., 2014). In Heather's vignettes, I interpret Heather's philosophy and enactment of transformative sustainability

learning, largely focused on the process of the first class *Advanced Leadership for Sustainability*.

Heather's pedagogy grows from a 'living systems' paradigm. For example, in a living systems premise, sustainability leadership and self-care are both perceived to be larger than the Newtonian perceptions of the individualistic self, and rather are ways of being that, at their core, are spiritual (Burns, 2016b).

Heather's quotes within are from her published works (which I reference), our interview on November 17, 2017, or from her review of the thesis in June 2020.

Richard Bawden, Hawkesbury Bachelor Systems Agriculture

Pragmatic systemicism as a premise for transformative sustainability learning

Richard Bawden was co-designer, co-facilitator and head of a radically new undergraduate course offered at Hawkesbury Agricultural College in New South Wales, one of Australia's oldest agricultural colleges.

Established in 1891 under the umbrella of the State Department of Agriculture, Hawkesbury Agricultural College initially focused on technical skills, within a techno-scientific paradigm of production and modernisation (Bawden, 2000a, 2004a). After an 'almost century-long uncritical commitment to the modernisation of agriculture' (Bawden, 2016b), Hawkesbury became an autonomous polytechnical institute in 1975. Importantly, this designation provided greater freedom over curriculum, pedagogy, staff selection and critical public expression (Bawden, 2000a, 2005b).

As the social, political, academic, economic, environmental milieu continued to worsen, the Hawkesbury School educators decided to embark on a fundamental review of their entire activities, including the hiring of a new head of School (Bawden, 2004a, 2005b; Bawden, Macadam, Packham, & Valentine, 1984). From 1978 to 1993, Richard Bawden was 'designated leader and academic head' of the School of Agriculture and faculty.

In 1978, the faculty began a serious review of their intentions and processes by engaging with the principles, theories and practices of systems, experiential learning, and cognitive development (Bawden, 2000a, 2005b; Bawden et al., 1984). Over the next three years of collective learning and experimentation, the College's first Bachelor of *Systems Agriculture/Applied Science* emerged in 1981.

The bachelor program and the faculty's intentions and process continued to evolve over

the next seven years. Signalling a significant shift, the faculty adopted a new name of Hawkesbury Faculty of *Agriculture and Rural Development*. The focus on development encapsulated the commitment to processes of improvement in rural Australian well-being as well as the health of the broader cultural and natural environment (Bawden, 2004a). Implicit in this shift was a continued commitment of the institute to collaboratively and critically learn their way forward 'beyond the grasp of the dominant paradigm' (Bawden, 2004a). Richard's perspective on this bachelor program is the focus of the Hawkesbury vignettes, including the philosophy of and the foray into a 'pragmatic systemic pedagogy' (Bawden, 2016b; Bawden et al., 1984) within the undergraduate program.

The vignettes on Hawkesbury are longer than the previous three. The undergraduate program was run for over 15 years, and the faculty have reflected on and documented it extensively. This voluminous writing is a valuable source of insight into the context and process of transformative sustainability learning.

One could describe the purpose of this course as rural and agricultural development, but the process the educators' facilitated was radical. Richard and his colleagues sought to create the conditions for agricultural systemists to emerge:

"Over a period of nearly two decades, starting in the late 1970's, faculty at Hawkesbury, in Australia, have been illustrating the significance of new paradigmatic approaches to agriculture and rural development. Not content to accept 'ecologically sustainable development' as mere rhetoric or perspective, they have been action researching their way to new understandings and practices of systemic inquiry and action for a better world" (Bawden, 2000a).

Unfortunately, the program did not continue (for reasons explained, but I note this now to explain the past tense used in some of the Hawkesbury vignettes).

Richard's quotes within are from his published works (which I reference), our interview on November 29, 2017, or from his reviews of the thesis in May, 2019 and June 2020.

Suitability and complementarity of these four vignettes

This mix of these four courses is well-suited for exploring the premises and processes of transformative sustainability learning. Stephen Sterling, a leader in transformative sustainability learning, has suggested that Hawkesbury College (i.e. introduced above) and Schumacher College are exemplars in transformative sustainability learning (Sterling,

2003, p. 295; 2010). Heather considers the Leadership for Sustainability Education to be resonant with the philosophy of Schumacher College. 'Semester in Dialogue' and 'Sustainable Food Systems' offer complementary and provoking perspectives to these 2-3 year programs, in that they are shorter (1-week and 13-week courses).

Interpreting the educator's premises and processes

I interpreted the interviews and literature of the vignette-educators for their philosophical *critiques* and *visions* of worldview beliefs, with specific attention paid to implicit or explicit engagement with the logic-of-perception. I also interpreted the transformative moments which influenced their critical reflections on teaching and learning, in order to interpret where and how this change has guided them as educators. This interpretation was done through inductive and deductive NVIVO coding, visual mapping analyses, and iterative writing processes (similar to the processes already discussed). Finally, I shared my interpretation with the educators to hear their thoughts on usefulness and acceptability.

Identifying threshold concepts

I also analysed the vignettes (and broader literature) in terms of the potential threshold concepts of these learning experiences. Threshold concepts "*identify particularly troublesome, transformative, irreversible and integrative ideas central to a discipline or field of study*" (Meyer & Land, 2003), and have been increasingly applied within descriptions of transformative sustainability learning (Barrett et al., 2016; Harmin et al., 2017; Loring, 2019; Sandri, 2013). Threshold concepts are of great importance to this inquiry because they offer a synthesis of the third-order meaning (*Ch. 2, Spheres of inquiry*) from the learning experience, by capturing the worldview stretching capacity of the learning experience (Barrett, et al., 2016).

I identify threshold concepts in three ways. Firstly, several educators explicitly state their identified worldview-stretching (threshold) concepts. For example, a previously identified transformative sustainability learning threshold concept is: *more-than-humans are active communicating agents rather than simple objects to be studied* (Barrett et al., 2016). However, explicit identification of threshold concepts was not a common practice amongst the educators. So, in addition, I identify *threshold concepts* from a deeply considered comparison of the dominant-cultural-paradigm with the additional beliefs and perceptions potentially experienced by learners in the vignettes. I demonstrate how these threshold concepts can link the educator's unique premises with the learning processes (Ch. 12, Premise: *meaning-systems*, Ch. 14, Process: *models*).

Limitations of vignettes

Several caveats apply to the vignette approach. Firstly, I recognise that while trying to be comprehensive by including written literature and in-depth interviews, these sources again represent relatively tiny threads amongst the tapestries of each educators' work. In addition, some of the educators are or were pressed for time to publish because of their responsibilities, and so the published work I reviewed may not have been recent, nor encompassing all aspects of their philosophical premises and learning processes. Therefore, my meaning-making of their 'planes of immanence' could only ever be partial.

Relatedly, the internal dynamics of reality are challenging concepts to articulate during an interview. Therefore, I did not specifically ask in the interview, "what is your stance on separatism, or what is your ontological view". Rather, my interpretation of their stance on logics-of-perception and meanings systems was largely from their writing and their interviews.⁹⁶

Another limitation is related to one of my starting assumptions. I begin the inquiry with the assumption that I should look at the individual educator. As I became more involved in their practices, I realised most of these courses and programs are taught in partnership.⁹⁷ Subsequent inquiries could look at how differing philosophical positions within co-taught programs influence the learning design and condition for transformative learning.

⁹⁶ Knowing what I know now, I would curate this inquiry as a collective learning process, in which interested educators could explore this together.

⁹⁷ I now realise my approach was arguably a non-systemic approach, by focusing primarily on the individual, and I wonder what I would have found if I engaged with the collective in addition to the individuals?

5.5 Summary of scholarly process

In sum, to advance the philosophical premises and processes of transformative sustainability learning, I probe three dynamics of reality (articulated in *Ch. 4, Analytical framing*). Within these dynamics of reality, I interweave and make-meaning from three sets of perspectives: a) philosophical predecessors, b) a subset of current literature; and c) in-depth vignettes.

We now move onto the premises of transformative sustainability learning.

Premise

This segment of my thesis is a pilgrimage into the premises of transformative sustainability learning. By premise, I mean, the philosophical (demonstrated worldviews, paradigms and logics-of-perception) influencing and informing transformative sustainability learning.

This segment represents a pilgrimage both in the sense of its length and its discoveries. The following eight chapters are the bulk of the scholarship of this inquiry. Within the following chapters, I uncover and trace previously un-synthesised territories of the premises of transformative sustainability learning, as expressed by *philosophers preceding transformative sustainability learning, educators in recent literature, and vignette-educators*.

More specifically, this segment on premises explores two 'internal' dynamics of reality. I reveal and synthesise premise *critiques* and *visions*, both in terms of meaning-systems and the even deeper logics-of-perception (*Visual 15*).

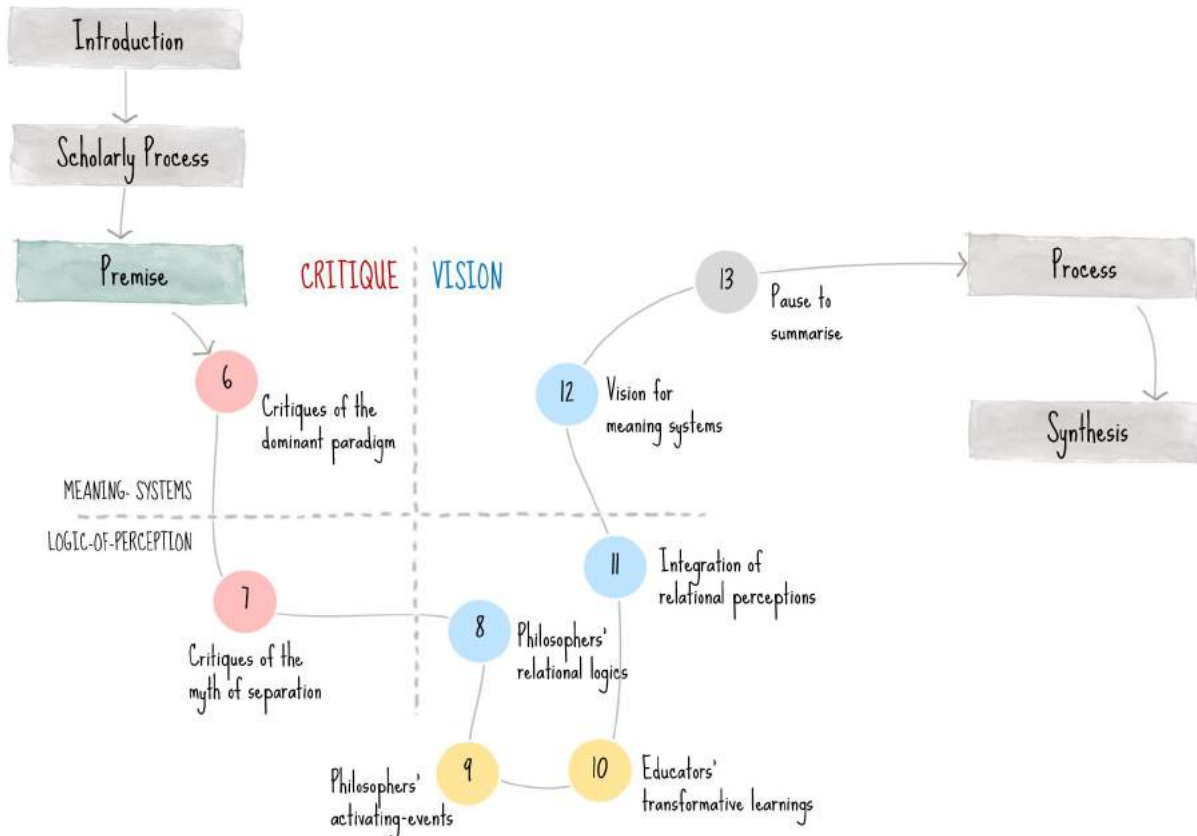
To begin, I first demonstrate how an awareness and *critique* of dominant-cultural-paradigmatic beliefs is a fundamental premise of transformative sustainability learning (*Ch. 6, Premise: meaning-systems*), for both philosophers and educators. Next, I identify how, at an even deeper dynamic of reality, critiques of the separatist logic-of-perception also form a profound premise of transformative sustainability learning. I also illustrate the challenge of educators in overcoming this logic, by demonstrating the ubiquity and infusion of separatist logic-of-perception in every meaning-system of the dominant-cultural-paradigm (*Ch. 7, Premise: myth of separation*).

Another foundational premise of transformative sustainability learning which I confirm and articulate is the necessity of a transition beyond, or a complexification of, the dominant-cultural paradigm. I identify and convey how the philosophers preceding transformative sustainability learning promoted non-separatist logics-of-perception (*Ch. 8, Premise: philosophers' logic*). Next, I surface the transformative moments described by the preceding-philosophers⁹⁸ (*Ch. 9, Premise: philosophers' activating-events*) and vignette-educators (*Ch. 10, Premise: educators' transformative learning*) to identify similar qualities and conditions of their experiences enabling or confirming beliefs and perceptions beyond the dominant-cultural-paradigm.

⁹⁸ 'Preceding-philosophers' is my designation used throughout the remainder of this thesis for the five philosophers engaged in introduced in *Ch. 5, Perspectives*, as those who contributed to pedagogies relevant to transformative sustainability learning.

Lastly, I reveal and illustrate one more aspect of the premise of transformative sustainably learning: the **vision** for more relational logics-of-perception (Ch. 11, Premise: *relational perceptions*), which embed in and complexify many belief meaning-systems (Ch. 12, Premise: *meaning-systems*).

This pilgrimage of premise is mapped in *Visual 15*, both in relation to the **critique** and **vision** for two dynamics of reality (meaning-systems and logics-of-perception).



Visual 15. Visual summary of the pilgrimage of premise

In sum, the premises of transformative sustainability learning are comprised of critiques of the dominant-cultural-paradigm and visions for more relational meaning-systems. My assertion is that without a premise exploration by educators and learners, change will remain shallow. Hence, I delve deeply into philosophical premises because I wonder if a greater awareness of the numerous meaning-systems and the power of our logic-of-perception might enable more profound change.

Chapter 6:

Critiquing dominant beliefs

In this chapter, I evidence broad critiques of the dominant paradigm as part of the premise for transformative sustainability learning. First, I introduce critiques of the preceding-philosophers in terms of the origin and development of the dominant-cultural-paradigm. Then I systemically present the paradigmatic critiques along ten specific meaning-systems within transformative sustainability learning literature and courses.

This chapter has several purposes. First, I seek to convincingly demonstrate the breadth and depth of critiques about the dominant-cultural-paradigm as relevant to the premise of transformative sustainability learning. Secondly, I demonstrate why this critique matters. Importantly, not every educator who describes their work as ‘transformative sustainability learning’ engages in such a critique. The educators who do not engage in this third-order reflection design qualitatively different learning experiences than those who do. Thus, a key purpose is to demonstrate that engaging with critical third-order reflections and diffractions (e.g. one’s own transformative learning as an educator) can lead to more meaningful designs.⁹⁹

⁹⁹ As a quick reminder, third-order learning refers to Gregory Bateson’s notion of being able to be aware of the premises informing the context of our experiences (*Table 5*).

6.1 Philosophers' critiques of the dominant-cultural-paradigm

Philosophers-preceding transformative sustainability learning critique the dominant-cultural-paradigm, for examples in terms of its reliance on *reductive, deterministic, sequentialist, positivist* beliefs highlighted in the Club of Rome story (*Ch. 2, Spheres of inquiry*). This section introduces the critiques of the preceding-philosophers through revealing their articulated origins of these beliefs. Arguably, an important step in transcending the indoctrination of cultural paradigms is understanding from where the paradigmatic beliefs originate (Freire, 1974).

Paradigmatically-aware preceding-philosophers attribute the origins of the dominant-cultural-paradigm to the *uncritical adoption of beliefs originating with, and various interpretations of*, Greek philosophers, Abrahamic religions, the founders of science (e.g. Democritus, Aristotle, René Descartes, Isaac Newton, and Francis Bacon), and other influencers who valued the notions of the individual self and competition (John Locke, Adam Hume, Charles Darwin, Adam Smith, etc.). These historical figures are given the inglorious credit for being crucial in founding and perpetuating the tendencies of the dominant paradigm - separatist perceptions and *materialist, reductive* beliefs – which are summarised in this section.

Greek philosophers

Parmenides and Heraclitus (6th and 5th BCE)

In the selection of reading for this inquiry, the earliest examples of the *materialist, reductive* interpretations of reality are explained by comparing the pre-Socratic philosophers Parmenides and Heraclitus. Arguably, Parmenides' reality was a "*changeless plenum*" of *static substance* (Osberg, 2015, p. 25), where plurality is considered an illusion (Seibt, 2016). Heraclitus, on the other hand, is described as one of the first euro-Western *process* thinkers, who viewed *change as the ultimate source of being*, where radical flux and alteration exists at every instant (Osberg, 2015; Seibt, 2016, p. 24). In the evolution of Western cosmology, Parmenides' view overshadowed that of Heraclitus, contributing to a euro-Western metaphysics concerned mainly with static substance (Osberg, 2015, p. 25).

Aristotle (4th BCE)

The next most commonly cited forebear contributing to dominant paradigmatic beliefs, chronologically speaking, is the Greek philosopher Aristotle. Aristotle is revered as an ‘indestructible writer of the Western world’ (Denby, 1997), yet he is often critiqued for his *materialist* tendencies (Seibt, 2016; Stuckey, 2010), as well as generating and perpetuating detrimental dichotomies between, and prioritization of, ends over means (Macy, 1991, p. 104), contemplative knowledge over experiential knowledge (Garrison et al., 2012); and men over women (Capra, 1982, p. 19). In Aristotle’s thought “equal partnership between people leads to dissension”, whereas “hierarchy leads to order”, and much of his work arguably is an attempt to justify unequal relations, starting with husband and wife (Denby, 1997, p. 126).

Aristotle’s *reductive* tendencies are also elegantly demonstrated in his three rules of thought (Montuori, 2013a). In *Metaphysics*, Aristotle attempts to bring clarity and ‘truth’ to the process of inquiry. He believed names and concepts can mean different things to different people, and thus lead to ambiguity, whereas facts by their nature are, and must remain, unambiguous. In order to utilise sound logic on the basis of fact and in avoidance of ambiguity, Aristotle developed three laws of thought (Aristotle, 350 BCE):

1. *The Law of Identity: a statement cannot remain the same and change its truth value*

(e.g. a juniper bush is a juniper bush)

2. *The Law of Non-Contradiction: no statement is both true and false*

(e.g. a juniper bush cannot *not* be a juniper bush)

3. *The Law of the Excluded Middle: every statement is either true or false*

(e.g. it’s either a juniper bush or not a juniper bush)¹⁰⁰

Aristotle’s reductive and separatist logic embeds the notion of mutual exclusivity and is the foundation of the dualistic epistemology that infiltrates and continues to govern societies and their flawed decision-making (Montuori, 2013a). These laws of thought can

¹⁰⁰ To argue why we must ground ‘truth’ inquiries as either true or false, Aristotle applies these rules of thought to ‘being a man’ and ‘not being a man’:

“It is impossible, then, that “being a man” should mean precisely “not being a man”, if “man” not only signifies something about one subject but also has one significance. ... And it will not be possible to be and not to be the same thing, except in virtue of an ambiguity, just as if one whom we call “man”, and others were to call “not-man”; but the point in question is not this, whether the same thing can at the same time be and not be a man in name, but whether it can be in fact” (Aristotle, 350 BCE).

be symbolically captured within the Boolean symbol and logic, in which truth values are determined as either true or false binary categories (e.g. *Visual 22*). These indelible rules create the conditions for people to 'know reality' in terms of right or wrong, black or white. In other words, those steeped within the dominant paradigm tend to take a "rich satisfaction in the **separate integrity** of each thing on earth. That a thing is itself and not another thing - a juniper bush is a juniper bush and not a rose bush - **is profoundly moving, perhaps the most moving circumstance in all our existence**" (Denby, 1997, p. 118).

While this 'Aristotelian' view has continued to infuse and confuse most sense-making in the dominant paradigm, other scholars have contextualised his separatist onto-epistemology within other onto-epistemologies. For example, Niels Bohr refers to Aristotle's 'facts' as '*trivial truths*' (i.e. reductively and only perceiving the difference between a juniper and a rose bush).¹⁰¹ Similarly, instead of opposites, Gregory Bateson would perceive how the **juniper bush, the rose bush, you and I are all connected**.¹⁰² Relational knowing is an inquiry into the interdependencies between the juniper and rose bush, in addition to their distinctiveness as the rose bush and juniper. In other words, there are scholars who have recognised how an Aristotelian worldview completely misses a more complex, interdependent, relational view of reality; and, how this partial and truncated perception has contributed to devastating impacts on our relationship to each other and nature (Montuori, 2013; P. Stuckey, 2010). We will continue to explore this separatist onto-epistemology within this inquiry.

Religion

Religions also influence the way we as individuals and societies perceive and maintain beliefs about the world (Macy, 1991). A common criticism of the Judeo-Christian traditions, as it relates to the dominant paradigm, is the perpetuated belief of the **male-god as the supreme** reason and ultimate source of power (Capra, 1982, p. 24). The stagnant **hierarchy** (e.g. a chain of beings, starting with God, angels, humans and animals) maintains the perception of humans as superior to all other flora and fauna, and yet separate from the divine (Capra, 1982, p. 58). The monism and **belief in one authority**

¹⁰¹ As we'll continue to explore in this inquiry, Niels Bohr suggests trivial facts can be contextualised within contradictions and paradoxes as the '*great truths*', where their opposite is also true.

¹⁰² Gregory Bateson often posed mysterious questions to his students, to create the space for contemplating other ways of perceiving our worlds, for example, "What is the pattern that connects? What pattern connects the crab to the lobster and the orchid to the primrose and all four of them to me? And me to you? And all the six of us to the amoeba in one direction and the...schizophrenic in another?" (Bateson, 1979, p. 8)

contributes to thinking in terms of absolute, universal and supreme, with deleterious effects on relationships with other cultures (Sunde, 2008), relationships with nature (Barrett et al., 2016), and the myth of self-righteousness, e.g. if you are fighting God's battle, you will win (Macy, 1991, p. 5).

René Descartes, Francis Bacon, Galileo Galilei, Isaac Newton

Following Aristotle and Judeo-Christian beliefs, dominant paradigmatic beliefs have been linked to René Descartes, Sir Isaac Newton, and Francis Bacon.

The French philosopher René Descartes (1596 - 1650) attempted to develop a new form of philosophy (science), different from the Aristotelian focus on a causal exploration of existence (Ravetz, 2006). He sought a method that could create truths certain beyond any shadow of doubt (Capra, 1982, p. 44). In questioning everything and building his philosophy up from scratch, René Descartes located the human essence in thinking, rather than doing. He asserted that we think with our mind and not with our bodies, as our bodies are not useful agents of knowing. René Descartes epistemology created a *gaping divide between mind, and matter and body* (Capra, 1982; Damasio, 2005, p. 25).

Another famous Cartesian doctrine, in line with Parmenides and Aristotle, is that *matter* is the basis of all existence, which can be assembled into and analysed as a giant machine. This view of the *universe as a mechanism* and prioritisation of the human brain over all else meant that René Descartes onto-epistemology regarded all living organisms as machines constructed from parts,¹⁰³ and a belief that there was no purpose to life, or spiritual nature (Capra, 1982, p. 23, 43). These worldview beliefs allegedly manifested in René Descartes' instructions for his students to ignore the screams of live animals undergoing dissection, as these screams were perceived as only the sounds of machines breaking down (Heacox, 2014, p. 45). René Descartes' reductionist, mechanistic, analytical, separate-from-ethics-and-intuition epistemology forms the basis of the development of scientific beliefs and inquiry.¹⁰⁴

¹⁰³ Many have pointed out how the social narratives influence philosophical and scientific beliefs (Kuhn, 1996; Friedman, 2010; Foucault, 1970), thus it should perhaps be unsurprising that the rise of mechanistic puppets was popular in René Descartes' social milieu (Heacox, 2014, p. 45).

¹⁰⁴ The age of the Scientific Revolution of the 16th and 17th centuries depended significantly upon René Descartes' axioms and philosophies. For example, the unorthodox and renegade heliocentric hypothesis of Nicholas Copernicus (1473 - 1573) and the planetary motion hypothesis of Johannes Kepler (1571-1630) were not popularly accepted until the teachings of René Descartes (Smit-Keding, 2015). In addition, Galileo Galilei (1564 - 1642), who confirmed the Copernican hypothesis into a valid scientific theory, formalised Cartesian ideas in his axioms for mathematics.¹⁰⁴ Francis Bacon (1561 - 1626) used Cartesian reasoning to develop the

While René Descartes may have created the framework for 17th century science, Isaac Newton (1643 - 1727) developed a complete mathematical formulation of the mechanistic view of nature commonly known as the grand synthesis (Capra, 1982, p. 48). In terms of scientific process, Isaac Newton blended the *empirical inductive* approach of Francis Bacon and the *rational deductive* approach of René Descartes (Capra, 1982, p. 49) to arrive at a common conception of critical scientific thinking. In terms of content, Isaac Newton built on the work of (astrologers/cosmologists) Nicholas Copernicus, Johannes Kepler and Galileo Galilei to formulate classic physics, a mathematical theory of the world in which gravity dictates the motion of bodies, from planets, to stones to tides.

Sharing Aristotle's distaste of disorder, Isaac Newton rejected outright the notion that disorder could exist in the universe: Isaac Newton's world was one of complete order,¹⁰⁵ and if reality or phenomena were perceived as un-ordered, this is simply because we humans were ignorant of the underlying causes (Morin, 2008, p. xxxiv). His universal laws of nature were characterised by *prediction, order* and *determinism*, meaning that these universal laws are viewed as so precise, that we must be able to predict and thus determine the reality of all phenomena in our world (Kauffman, 2007). Isaac Newton continued to refine science as an exercise in *reductionism*: breaking items down to their smallest parts to gain understanding (Morin, 2008). Together, these paradigmatic beliefs – relating to perceptions of causality, time, epistemology, self, ontology, cosmology - still reside in the dominant-cultural-paradigm.

According to the intellectual lineages engaged in this inquiry that relate to transformative learning and sustainability, these fore-thinkers from Aristotle to René Descartes and Isaac Newton, helped create and embed the dominant paradigmatic beliefs, over several hundred years. The scientific paradigm is largely founded on onto-epistemological beliefs such as:¹⁰⁶

inductive method of scientific method of experimentation (e.g. conducting experiments, drawing conclusions, and further testing these; Capra, 1982, p. 40).

¹⁰⁵ And yet, how does this description relate to the descriptions of Isaac Newton as one of the last great alchemists? Alchemy preceded modern science, and can be defined as the 'art and science of transformation', offering a deep and practical integration of science, spirituality and consciousness (Bullard, 2019). For our current predicament, this might offer insights in how to reintegrate the sacred and mysterious with science? This is a question for future inquiry.

¹⁰⁶ The list is an adaptation of Alfonso Montuori's Introduction in "On Complexity" (Montuori in Morin, 2008, p. xxxi).

Certainty (*over uncertainty*)
 Reductionist *focus on parts* (*over wholism*)
 Quantifiable, measurable, verifiable data (*over qualitative, subjective data*)
 Universal knowledge (*over local knowledge relevant to only specific settings*)
 Either/or thinking (*over accepting and working with ambiguity and paradox*)
 One correct view of, or right ways for, a situation (*over multiple, relevant, views*)
 Deterministic laws of cause and effect (*over unpredictable chance/emergent events*)
 Objective knowledge of exterior objects (*over subjective knowing and inner experience*)

The above list relates primarily to our epistemological beliefs, but the dominant-cultural-paradigm has been characterised across many aspects of meaning-systems. This inquiry dives deeply into this critique and characterisation within the next section on the meaning-system critiques.

The emergence of the Enlightenment thinking provided freedom from religion, God, and the tricky questions of ethics (Kant, 1997).¹⁰⁷ This rational, clockwork interpretation of the universe spread quickly among middle classes, into the Industrial Revolution, modernity, and we still sit within its lamplight (Morin, 2008, p. xxxi; Nicolescu, 2012). But, this realm of science, restricted to what can be measured and quantified, has “exacted a heavy toll”: *“Out go...aesthetics and ethical sensibility, values, quality, form; all feelings motives, intentions, soul, consciousness, spirit. Experience as such is cast out of the realm of scientific discourse”* (Laing, 1982 in Capra, 1982, p. 40); resulting in the dominating notions of predict and control throughout Western society (Kauffman, 2016). Hardly anything has *“changed our world more during the past four hundred years than the obsession of scientists with measurement and quantification”* (Capra, 1982, p. 40) (visualised in *Artwork 3*).

¹⁰⁷ Not to make light of this. Oppression by the Church in this time period was thick, fast, and final. If you stepped outside of the religious doctrine guided by your own independent thinking, it was worth your life, as demonstrated by say countless ‘heretics’, such as Giordano Bruno who attempted freedom of cosmological and philosophical thought (although various perspectives exist as to why he was burned at the stake and for whether it was for his beliefs in natural science or his metaphysical views - see (Herzfeld, 1932) compared with (Laszlo, 2012); again, perhaps their own interpretation is based on their own worldview). The key point is that we can’t overstate the necessity to try our best to understand the complex circumstances and contexts within which people and paradigms emerge, as a means of growing comfort with complexity, humility, compassion, and integration.



Artwork 3. *The Objective Truth Factory*, Carlijn Kingma (2016)

“Before being submitted to society, knowledge will be checked for being ‘true’ and ‘objective’, since, that is what we do at university, construct the objective truth. Hence, our newly written knowledge, will be forced down through the objective truth funnel, the final test, where it will be stripped of all qualitative and subjective aspects, and norms and values. Until only impartial, objective numbers remain: facts, proven to be exactly what they are. Next, through the ducts, those numbers are led to the binary press, where they will be cut into zeros and ones, ready to enter the computers of the programmers. Through algorithms and optimizations, the programmers turn the zeros and ones into efficiency, speed and growth. On the other side of bridge, we see all those who dared to take the other road, we see the artists, the musicians, the poets, the philosophers, the utopians, or those who just seem to be fishing for something. Resonating on beauty, values, morals and ethics, or how to harmonize our intellectual, social and cultural life. But for them it is too dangerous to cross, they are not needed here, and their questions cannot have a place inside this rational society of numbers.”

This section has introduced the critique of the dominant-cultural-paradigm, through the story of its origins and development, according to the philosophers preceding transformative sustainability learning. The following section demonstrates the resonances of some transformative sustainability learning educators with these critiques.

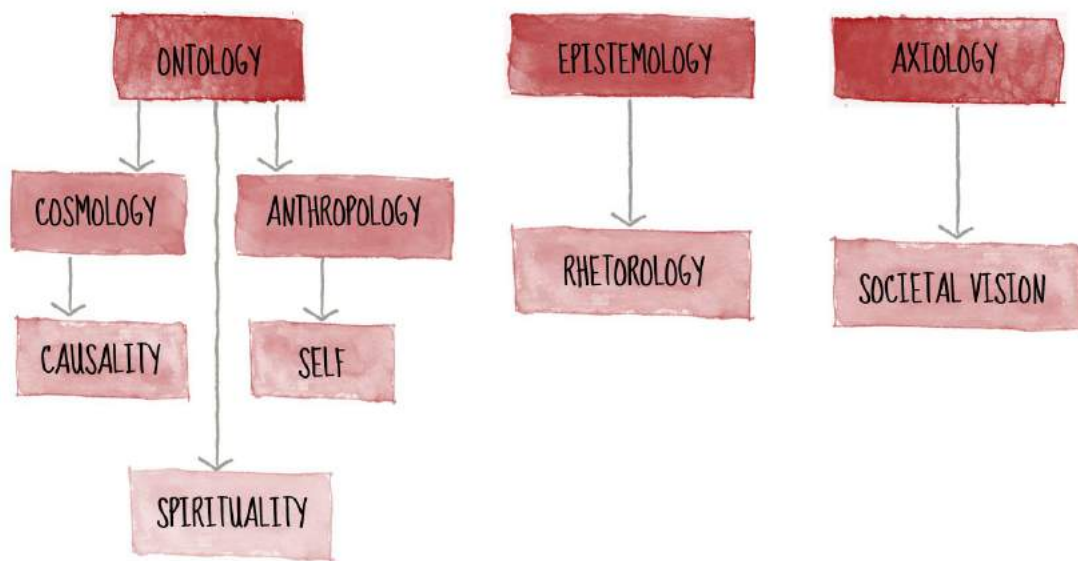
6.2 Critique of dominant beliefs in literature and vignettes

In this section I systemically probe and synthesise critiques across ten meaning-systems of the dominant-cultural-paradigm (*Visual 16*). The critiques of these meaning-systems are shared between vignette-educators and current transformative sustainability learning literature, who suggest that dominant beliefs can destructively manifest within our socio-natural experiences and systems.

As a caveat, I recognise the reductionism and perhaps even harm evident in my presentation of these critiques. In presenting the argument quite rationally and succinctly, for example, this 'harm' may include reinforcing or over-simplifying stereotypes, or creating the illusion of 'getting it' first intellectually, when these discussions should be felt and emoted experientially. To help move towards a trans-rational experience, or towards 'groking'¹⁰⁸, I include several images and artworks.

The order of revealing and discussing the meaning-system critiques mimics common assumptions in Western philosophy. Across Western academic literature, meaning-systems tend to be viewed hierarchically, with ontology, epistemology, and axiology being the most important. Thus, I begin by presenting critiques of ontology (followed by cosmology, causality, anthropology, sense of self, and spirituality). Then, I move onto epistemology (followed by rhetoric). Finally, I discuss axiological (and societal vision) critiques. *Visual 16* captures this assumed hierarchy of meaning-systems, as well as assumptions of these meaning-systems as separate, with clear boundaries. I use this visual three times in the chapter to both summarise the critiques we have covered, and to highlight the next set of meaning-systems I present and discuss.

¹⁰⁸ To 'grok' is a term imagined into existence by science fiction author Robert Heinlein in his 1961 novel *Stranger in a Strange Land*. Now the term can imply that to 'grok' something is beyond 'knowing', rather, it is to claim that you have deeply entered the paradigm of this concept and it has entered your worldview, which is now transformed as a result (D'Andrea, De Paoli, & Teli, 2008, p. 128).



Visual 16. Meaning-systems as commonly represented in Western academia

6.3 Ontology: A materialist reality

Critiques of the dominant ontological beliefs

*Reality: the state or quality of having **objective independent** existence or being a **mathematically real quantity** (Merriam-Webster)*

One's ontological perceptions and beliefs - of what is reality, what is real, what is being - have profound implications for how we making meaning, decisions, and action in our world. The preceding-philosophers and vignette-educators (who wrote about their 'third-order' reflections) critiqued the dominant **materialist** views of reality, as succinctly defined in the Merriam-Webster dictionary.

What is meant by materialist views of reality? As an experiment, ask someone to look out the window and comment on what they see. Common responses for those steeped in the dominant-cultural-paradigm are 'birds, trees, buildings, streets, cars'; in sum, they see 'materials', as opposed to processes, relationships, energy, etc. Another common response of those steeped in the materialist ontological view when discussing reality is to grab a hold of whatever material is nearest and proclaim 'this <insert object> (e.g. pen, book, cup) is real, I can touch it and hold it". These views might be true on one level of reality, but these are a highly-reductive ontological perception, or a classic mechanistic perception of reality, in which everything is composed of small building blocks.

Educators and philosophers attributed this ontological belief to René Descartes, Francis

Bacon, Isaac Newton and many other ‘Enlightenment’ philosophers and scientists. Because of this belief, “the universe down to the human body was assumed to be comprised of elements moving in clocklike patterns” (Lange, 2018b). With this perception, ***all entities in nature, the world, and the universe are seen as solid and separate, with a rational, mechanistic, predictable, controllable (deterministic) structure*** (Lange, 2018b; O’Neil, 2018; Selby, 2002; Sterling et al., 2018). All material is primary, yet considered ***devoid of meaning*** and ***intrinsically without purpose***.

These materialist views are not wrong *per se*. They represent one perspective. But as initial, primary or fundamental views of ‘what reality is’, they influence how people and societies make meaning and see the role of humanity in shaping reality. Arguably materialist and hierarchical perceptions contribute to feelings and actions of superiority and domination; *leading to inequitable treatment of nature and our fellow humans* (De Witt et al., 2016; Dewey, 1910; Morin, 2001, p. 82; Nicolescu, 2014a; Sunde, 2008).

This brief vignette from Hawkesbury College, NSW demonstrates the staff’s critique of the materialist view of reality, even in selecting the name for the Bachelor in ‘Systems Agriculture’.

Vignette: Hawkesbury Bachelor in Systems Agriculture

Critiques of *materialist reality* in the name of the program

The very name of the Hawkesbury Bachelor in Systems Agriculture was a deliberate choice to enable Richard and his colleagues to distinguish their approach from the materialist focus on Agricultural Systems which was “all the rage at the time”. In other words, they wanted to distinguish between *learning* systems (e.g. processes for improved, systemic learning) and learning *systems* (e.g. learning about ‘systems’ as an ontological thing, e.g. belief that ‘systems’ exist and can be controlled).

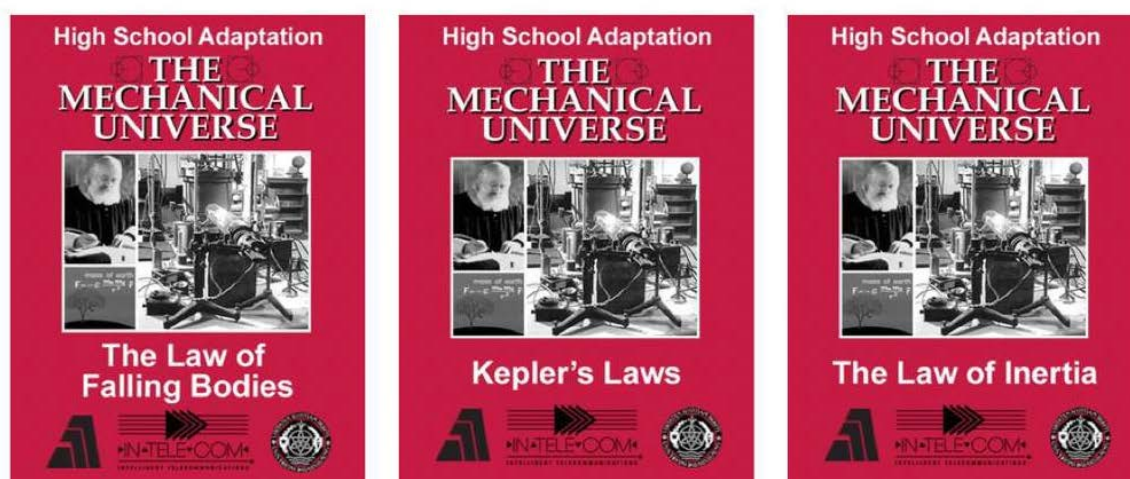
6.4 Cosmology: A lifeless universe

Critiques of the dominant cosmological beliefs

*Cosmos (noun): an **orderly harmonious systematic** universe (Merriam-Webster)*

Our cosmological perceptions encompass beliefs about the universe’s origins, as well as concepts of ‘time’ and ‘space’. Educators engaged in third-order reflection critiqued

dominant cosmological perceptions inherited from the Scientific Revolution (Lange, 2018b; Sterling, 2003, p. 143; Sterling et al., 2018). Elizabeth Lange, lead editor of the special issue on transformative sustainability, argues the dominant-cultural-paradigm tends to view the universe as “*largely empty with bits of matter*, and in which quanta and space-time are understood as the ultimate level of the universe” (Lange, 2018b). This *life-less, unchanging, mechanistic, predictable meaningless universe* means those influenced by the dominant-cultural-paradigm remain “disenchanted of such cosmic myths and teaching stories that recognize cosmic mystery” (Weber, 1946 in Lange, 2018b). This *rational universe* also perpetuates the problematic idea of a *one-world singular, absolute universe*, in which alternative conceptions are dismissed or ridiculed (Chaves, Macintyre, Verschoor, & Wals, 2017).



Artwork 4. The Mechanical Universe for high school students (Beaty, 1990)

Dominant conceptions of time were also critiqued by educators and philosophers. In dominant assumptions, humans perceive ourselves "moving around in three-dimensional space and *linear time*, impacted by external forces such as gravity" (Lange, 2018b). Newtonian physics suggests that linear time is reversible, meaning *future and past events can be understood and predicted* according to natural laws, and rejects the idea that the future cannot be predicted (Nicolescu, 2006; Ozbekhan, 1968). Again this view is not wrong per se, but linear views tend to *reject Ancient Indian and Indigenous cosmologies*, or other forms of consciousness, that recognise the ability to communicate across time and space (and species) (Barrett, 2013; Grof, 2000).

Adding another perspective, David Selby and Fumiyo Kagawa critique our dualistic tendencies to focus us on immediate *short-term danger, while backgrounding longer-term threats* (2018). This separatist view of time influences people to address longer-

term threats, such as climate change, rationally and strategically, rather than holistically with emotion, metaphor and experience (Selby & Kagawa, 2018).

6.5 Causality: linear

Critiques of the dominant beliefs of causality

Our perceptions and beliefs of causality refer to the ways in which we make meaning in relation to cause and effect (Sebastian, 2018). For example, the dominant-cultural-paradigm has a tendency to think linearly, in rational logic, to conceive of a singular endpoint. But when this linear logic enters into real-world context, it quickly bends into circles, becoming a paradox, and thus a place where people get stuck, or must learn to move beyond (Bateson, 1991, p. 204 in Capra, 1982, pp. 82-83).

The transformative sustainability learning literature, which engaged in paradigmatic reflexivity, critiqued cause and effect perceived in an “*inexorably linear fashion*” (Selby, 2002). Rather than perceiving instability, chance, dynamism, perspective and relational causality into our interpretations, the dominant-cultural-paradigm perceives these characteristics as shortcomings in our knowledge and capacity to control (Selby, 2002). This simplistic approach to cause and effect means that “*all causal relationships are reducible to the motion or translation from point to point of simple bodies or the composite bodies made up of them. The mysterious causal efficacy of fire, disease, light, or anything else is explicable, in the last analysis, as the motion, bump, and grind of the implacable particles*” (Callicott, 1986, p. 303 in Selby, 2002).

A number of educators shared a strong agreement that these *overly reductionist linear perceptions* of cause and effect manifest in our beliefs that learning “about” sustainability will lead in a direct step-wise fashion to behavioural and social transformation (Chen & Martin, 2014; Lange, 2018b; O’Neil, 2018; Sterling et al., 2018; Tassone, Dik, & van Lingen, 2017). Two vignettes below further demonstrate this critique of linear causality within transformative sustainability learning.

Vignette: Leadership for Sustainability Education master's program

Critiques of *causality* embedded in the master's learning experience

Heather Burns, co-coordinator and facilitator of the Leadership for Sustainability Education program at the Portland State University perceives how the Newtonian paradigm, with its linear logic, plagues educational settings within three levels: a) how teachers teach b) what teachers teach, and c) how the teaching institutions are viewed as a whole.

In terms of how teachers teach, there is a continued perception that educators can control, force, or push learning along a linear pathway, which leaves little room for emergence, or the unplanned. In passive and hierarchical learning, content is **handed down** as concepts to students from books or theories (Burns, 2016b). This transfer of largely disciplinary knowledge tends to ignore the physical, emotional, and spiritual (Burns, 2011, 2016), or the ability (and necessity) of students to contribute.

In terms of what teachers teach, particularly as it relates to being a change-maker, this mechanistic view trains students to determine the problem linearly, then the solution, then to develop goals, and then to plough straight ahead, regardless of who they leave behind. These types of linear, predictive assumptions tend to equate with shallow learning and change creation, in which technological fixes are sought, which do not question the status quo (Burns & Briley, 2015).

Thirdly, this view also colours the perception of change creation within institutional organisations, such as universities. Human organisations are viewed as systems with internal rules that once determined, can be predicted, controlled, and regulated.

Vignette: Hawkesbury Bachelor in Systems Agriculture

Critiques of *causality* infused in the Hawkesbury learning experience

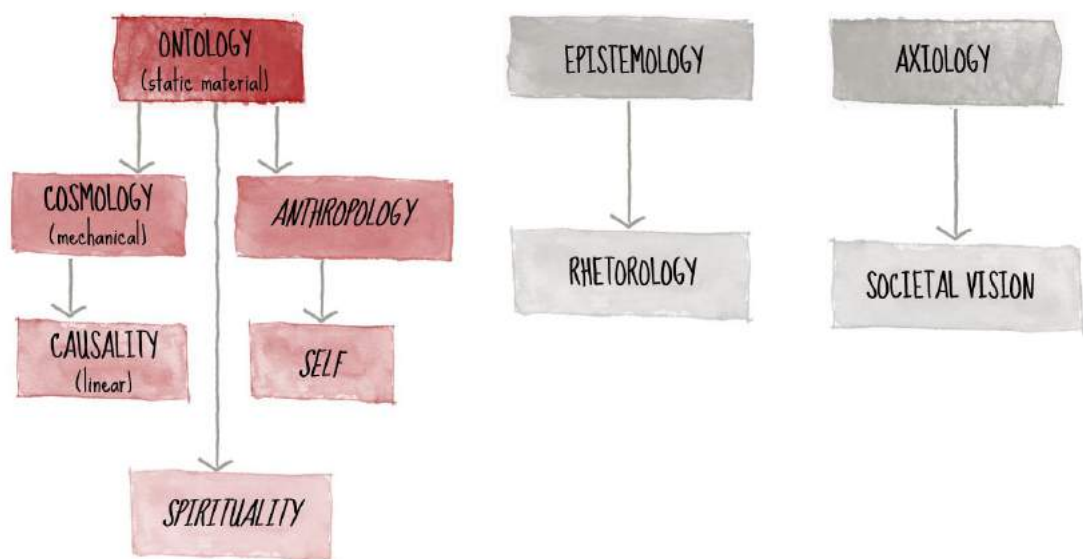
Richard and his colleagues also critiqued the embedded assumptions of linear causality within the techno-scientific problem-solving approach. When complex problems are approached using a linear logic, positivist rationalist reductionists tend to believe, for example, we can do better by doing more of the same, e.g. we can solve problems with more money, or universities can increase impact by doing more teaching, more research, more extension (Bawden, 1995). In fact, their original motivation for the change in

Bachelor’s program was “*the recognition that such assumptions within the Australian ‘agricultural industry’, were leading to its own self-destruction through the impacts of ‘more of the same’ technologies and managerial approaches on both the bio-physical and socio-cultural environments in which it was being conducted*”.

As the program continued to engage with Western peri-urban region of Sydney, the Hawkesbury crew also witnessed, ‘more of the same’, as having very little positive impact, or betterment, for the people of greater Western Sydney, or the way they deal with complex issues in their own lives (Bawden, 1995). Instead, Richard and his colleagues sought to improve the (integrated, holistic, systemic) quality of responses.

To review so far, the dominant-cultural-paradigm tends to view reality and the universe primarily as predictable materials, space and linear time. These notions are critiqued by some transformative sustainability learning educators (*Ch. 6.1-3*).

Looking ahead, how does the dominant-cultural-paradigm engage with other ontological questions on the role of humanity, a sense of self and spiritually? And how and why are these beliefs critiqued within transformative sustainability learning? In the following three sections, I probe and clarify critiques of these meaning-systems in dominant-cultural-paradigm according to perspectives relevant to transformative sustainability learning (*Ch. 6.4-6*).



Visual 17. Summary of onto-to-causal meaning-systems (and the next three in *italics*)

6.6 Anthropology: Human superiority

Critiques of the dominant anthropological beliefs

Anthropological meaning-systems (as defined in this inquiry) refer to our perceptions and beliefs about the concept of a 'human being' and 'humanity', particularly in relation to nature.

Several educators of transformative sustainability learning critique the dominant beliefs of **humans as separate and superior to nature**, as enabled by René Descartes' "**arrogation of the mind and free will exclusively to humans**" (Selby, 2002). This belief in human superiority allows us humans to continually locate ourselves outside of and superior to nature and the more-than human, in a separatist, dualistic and hierarchical relationship (Barrett et al., 2016; Selby, 2002). Charles Eisenstein, a philosopher influential to the Leadership for Sustainability Education master's, offers a highly synthesised and powerful caricature of what the contexts (created by the dominant-cultural-paradigm) tell us should be our conceptions of humanity:

*Who are we as a people? We are a special kind of animal, **the apex of evolution**, possessing brains that allow the cultural as well as the genetic transfer of information. We **are unique** in having (in the religious view) **a soul** or (in the scientific view) **a rational mind**. In our mechanical universe¹⁰⁹, **we alone possess consciousness** and the wherewithal to mold the world according to our design. The only limit to our ability to do so is that amount of force we can harness and the precision with which we can apply it. The more we are able to do so, the better off we are in this indifferent or hostile universe, the more comfortable and secure (Eisenstein, 2013).*

Our anthropocentrism, human exceptionalism, and 'hubris of uniqueness' (Lange, 2018b; Selby, 2002) has led to our complete disenchantment with the animacy of other beings, our denial of an ethical and moral being to other life forms and environments, our inability to commune and cooperate with the rich diversity of living organisms, and our impossibility to 'inhabit the world in all its sentience' (Bai, 2015; Plumwood 2002 in Barrett et al., 2016; Stuckey, 2010).

¹⁰⁹ See Artwork 4. The Mechanical Universe for high school students

Assuming that nature has no mind and non-human beings are mute and dumb, we afford only an *instrumental or human resource value to nature*, in which we humans are free to use, manipulate and consume nature as best suits our needs (Barrett, 2013; Barrett et al., 2016; Harmin, 2014). We rationalize and exploit the natural environment as if it existed in separate parts, and yet because of a primarily objective-consciousness, we do not recognise our guilt in this (Blackburn, 1971; Stuckey, 2010). It is precisely this combination of the normalized disconnected and authoritarian relationship between humans and nature, value-scarce rational modes of thinking, and our epistemological hyper-specialisation which ultimately have catalysed climate change, mental illness, cruelty and other socio-ecological disasters of the Anthropocene (Barrett et al., 2016, p. 23; Capra, 1982; Nicolescu, 2002; Obeng-Odoom, 2016).



Artwork 5. Actions arguably enabled by belief of humans as separate & superior to nature¹¹⁰

¹¹⁰ In this section, I continue to experiment with visuals as a way to demonstrate the manifestation of paradigmatic beliefs in action and experience, and how the context of our experiences unconsciously 'teaches'

6.7 Self: separate and isolated

Critique of the dominant perceptions and beliefs of self

In this interpretation of premises for transformative sustainability learning, our sense of self refers to our perceptions and beliefs about our self-identity. Other inquiries concerning the impact of our worldviews give prominence to 'sense of self' as profoundly influencing our actions, and thus they promote one's sense of self as a point of reflection for one's worldview (Sebastian, 2018).

A close read of the transformative sustainability learning literature that includes worldview reflexivity surfaces a critique of the concept of self as a **separate individual**. Charles Eisenstein again offers a synthesised caricature of what dominant paradigmatic contexts tell us we should believe about our conceptions of self:

*"Who are you? You are a **separate individual** among other **separate individuals in a universe that is separate from you** as well. You are a Cartesian mote of consciousness looking out through the eyes of a flesh robot, programmed by its genes to maximize reproductive self-interest. You are a bubble of psychology, a mind (whether brain-based or not) **separate from other minds and separate from matter**. Or you are a soul encased in flesh, **separate from the world** and **separate from other souls**. Or you are a mass, a conglomeration of particles operating according to the impersonal forces of physics"* (Eisenstein, 2013).

Several educators and preceding-philosophers recognised that the dominant notion of human identity, equated with the notion of an 'individual self', is a distortion of the original meaning of the word 'individual'. Instead of denoting a single self **who is separate** from others, the concept of *individual* originally meant **a person undivided from the whole** (Morin, 2001; Selby, 2002).

The dominant interpretation of the individual self gives **primary agency to the Self-as-**

(indoctrinates) these deep beliefs. Yet, I also want to raise the question of how we do this ethically, and with compassion, and an understanding of complexity in why people do what they do?

Sources for photos, in order of appearance:

<http://www.fao.org/news/story/pt/item/10324/icode/>

<https://www.usbr.gov/newsroom/newsrelease/detail.cfm?RecordID=63383>

<https://www.pewtrusts.org/~media/legacy/uploadedfiles/peg/publications/report/pegbigchickenjuly2011.pdf.pdf>

https://www.washingtonpost.com/graphics/2017/world/global-waste/?itid=lk_interstitial_manual_7

https://www.vice.com/en_au/article/7b7nkd/new-zealand-is-killing-possums-with-something-called-1080

Subject to act upon (and abuse) the material world of Objects (Lange, 2018b; Nicolescu, 2002; O’Neil, 2018). Arguably, this estrangement from others, including nature and the more than human, is an existential crisis of identity, because of our additional (and often unrecognised) identities ***as selves-in relation*** (Einstein, 1950; Selby, 2002).

This ***illusion of self as an isolated ego*** in the world (Capra, 1983, p. 29 in Selby, 2002) is often manifested in education, which prioritises the notion of the ‘discrete self’, for example through individual and competitive testing, and often ignores or is blind to the ***relational self***, or the ***dancing-undivided-from-the-whole self*** (Selby, 2002), which will be explored in the philosophical visions underpinning transformative sustainability learning (*Ch. 12, Premise: meaning-systems*).

6.8 Spirituality: not of this world

Critique of the dominant perceptions and beliefs of spirituality

The spiritual meaning-systems (defined here as our perceptions or beliefs about the sacred, the Divine, or immaterial reality) can be a powerful determinant of our assumptions and behaviours in the world (Silberman, 2005). The philosophers preceding transformative sustainability learning, in essence critiqued the way that the dominant-cultural-paradigm tends to ignore or denigrate any curiosity or belief in mystery, sacredness and communion with our holistic experiences. According to Gregory Bateson, over the centuries the dominant culture has developed a kind of madness, in which we have learned to identify single purposes for our goals and thus act with a single-minded, selfish purposiveness, and as such the dominant-cultural-paradigm has lost connection with the sacredness, respect, reverence and love for the totality of the living systems in the world (Charlton, 2008, pp. 5-6). Or, if on the spiritual path, the world can often be perceived as a ***battlefield***, in which good is pitted against evil; or as a ***trap***, in which we try to extricate ourselves, and ascend to a higher plane (Macy, 1991, pp. 5-6). Charles Eisenstein offers a critique arising from systems and transdisciplinarity philosophies, on the dominant-cultural-paradigm, which brings together these points:

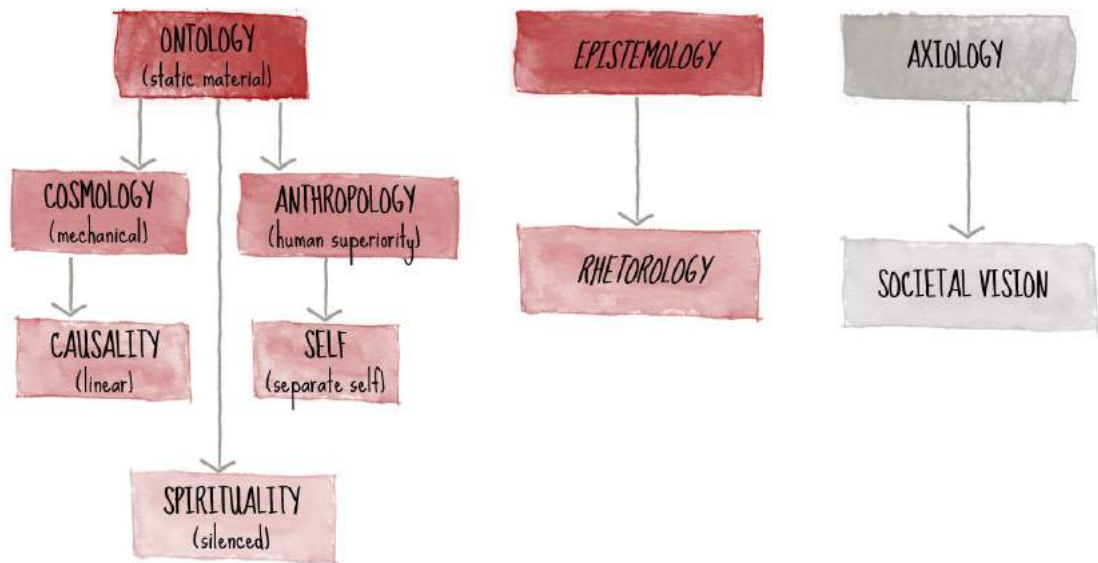
*What, therefore, is sacred? ... A holy person doesn't succumb to the desires of the flesh. He or she takes the path of self-denial, of discipline, ascending into the realm of spirit or, in the secular version of this quest, into the realm of reason and the mind, principles and ethics. For the religious, to be sacred is to be otherworldly; **the soul is separate from the body**, and God lives high*

above the earth. Despite their superficial opposition, **science and religion have agreed: the sacred is not of this world** (Eisenstein, 2013).

Spirituality was not a significant, explicit feature of the transformative sustainability learning current literature, beyond the critique of the **Enlightenment's dismissal of spiritual ways of knowing**. Elizabeth Lange provided the most explicit critique of the way that the dominant epistemology is often separate from beliefs of spirituality. Before the Enlightenment, God, theology, and spirituality were seen as integral to Western ways of knowing (Lange, 2018b). During the Enlightenment, free thinkers sought desperately to think for themselves, rather than being told what to be thought by powerful religious leaders, or anyone else (Kant, 1997). Therefore, knowledge was split into knowledge of the world and knowledge of morality. In striving for freedom, David Hume argued that we cannot use empirical evidence or causal reasoning to prove the existence of God, but as a result "...the presupposition of God itself could be discarded, leaving the scientists together with the rulers of state and industry, in charge of passive matter, infinitely reconstructible to serve their interests" (Ruether, 1992, p. 197 in Lange, 2018b).¹¹¹ This lack of personal engagement with the 'grace of interconnectedness' in which we live and become, gives us the **'capacity to be wrong in rather creative ways, so wrong** that this world we cannot understand may become one in which we cannot live" (Bateson and Bateson, 1988, p. 200 Charlton, 2008, pp. 1, 6).

In pause, the ontological views of the dominant-cultural-paradigm tend to include a lifeless universe, where humans are superior amongst all else. As lone selves, the beliefs about one's well-being are perceived largely without relation to the well-being of others. These notions are critiqued by some transformative sustainability learning educators. Such ontological beliefs have profound implications for how people set out to 'know' and what they believe is morally good and right. Next, I probe epistemological and axiological critiques of the dominant-cultural-paradigm according to perspectives relevant to transformative sustainability learning, beginning with epistemology and rhetoric.

¹¹¹ Perhaps an interesting irony to explore is the suggestion that the notion of the Enlightenment, as used to describe the Western separation of knowing from God, was a term arguably appropriated from the Buddhist notion of Enlightenment, or the ultimate spiritual achievement into truth (Banerji, 2016).



Visual 18. Summary of onto-to-spiritual meaning-systems (and the next two in *italics*)

6.9 Epistemology: compartmentalised knowing

Critiques of the dominant epistemological perceptions and beliefs

Our epistemology - perceptions and beliefs about knowledge, truth, wisdom and the process of knowing - was the most commonly critiqued meaning-system across preceding philosophy, the literature review and the vignettes. In a sense, this focus on epistemology is unsurprising. In the dominant-cultural-paradigm, contributing to academic literature is largely seen as an epistemological endeavour (as opposed to an onto-epi-axiological endeavour). So, this might mean epistemology is the meaning-system we are most comfortable with and used to within the academic realm. That said, might epistemology also be the way into realising that we have a worldview and to recognise our other meaning-systems (Bawden, 2011a)?

The previously discussed cosmological-ontological beliefs of the dominant-cultural-paradigm both necessitate and are enshrined within **rational, objective, positivist, empirical, reductionist** ways of knowing (not that this is recognised in the common visualisation, *Visual 18*). In other words, this materialist-rationalist onto-epistemological assemblage supports a type of “knowing” that focuses on materials and breaks these perceived machines down into their component parts, in order to understand them.¹¹² If

¹¹² For example, when a scientist kills fish to assess their ears as a means of understanding habitat and fish

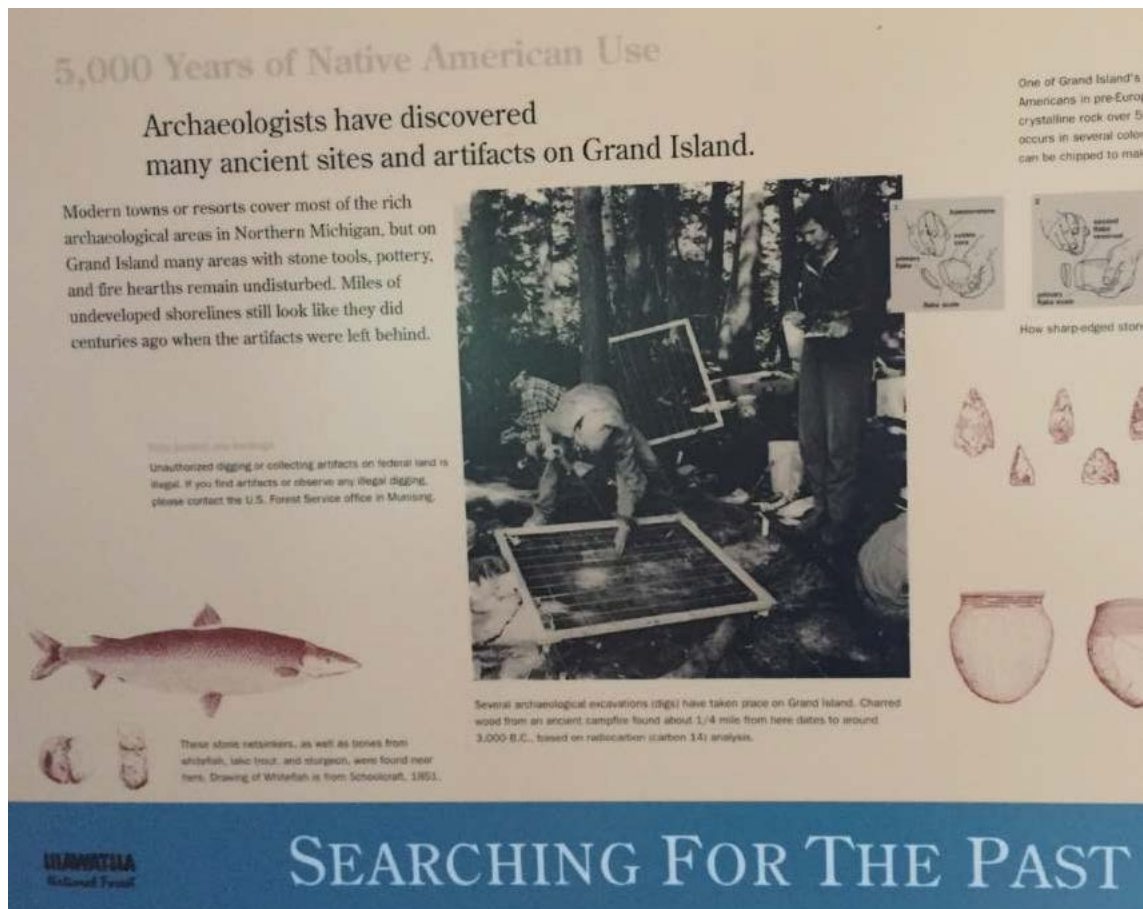
an error is found in one of the 'parts' of a 'system', **changes tend to be made without consideration of the whole**. Yet ironically, insights about specific parts tend to be generalized to the whole (Selby, 2002). The dominant tendency is to understand the world around us in well-reasoned logical empiricism; predicted and controlled in mathematical terms, with **no account of emotions, transrational perceptions, mystical insights, and spiritual beliefs** (Lange, 2018b), nor crucially of the significance of systemic emergence through non-linear inter-relationships (Bawden, 2016b). The human rational mind is the top of the hierarchy, separate from our souls, bodies, nature, world, universe.

Transformative sustainability learning argues that this perception of our rational minds alone as the conscious controller of our will and bodily instincts is false (Lange, 2018b). Yet these dominant ways of knowing are largely held as the 'gold epistemological standard' (Montuori, 2013a; Morin, 2008), and much learning leaves untouched the axiological and affective realms of understanding and being (Sterling et al., 2018), or explicit reflection on and diffraction with other ontological or cosmological perspectives (Lange, 2020).

This objectivist, materialist, reductionist, absolutist knowing means that those steeped in contexts of dominant-cultural-paradigm perceive **knowledge in dichotomous right or wrong, terms**, and **view knowledge as independent of cultures and other experiences influencing the human mind** (Lange, 2018b). This epistemological assumption allowed and continues to justify an "epistemicide" or "silencing of inclusive and holistic epistemologies" (Barrett et al., 2016).

This dominant epistemological view of 'knowledge gained through knowing parts' brings other significant ramifications. Reductionism creates a fragmented structure of knowledge (e.g. **hyper-specialisation, atomisation, compartmentalisation**), mirrored in the creation of our universities and newspapers, which stifles and prevents dialogue across boundaries (Capra, 1982, p. 45; Montuori, 2013b; Scholz & Marks, 2001). This unchecked splintering and segregation of knowledge arguably throws civilization as we know it into question (de Freitas, Morin, & Nicolescu, 1994; Kleiber, 2001; Nicolescu, 2002, 2014c): "*The barbarism of specialization,*" is linked to both human tragedies (such as Hiroshima, the Holocaust, slavery), and profit at the expense of ecosystems (Obeng-Odoom, 2016). We struggle to connect our specialisation to the social, cultural or historical reality (Macedo, 2006). In addition, the proliferation of disciplines and knowledges makes a **global and**

planetary view impossible, which fosters “unconsciousness and irresponsibility” ultimately bearing death (Morin & Kern, 1998).



Artwork 6. Reductionist epistemologies applying grids to the world¹¹³

Similar epistemological critiques of the dominant-cultural-paradigm were also an integral part of the vignettes, and in particular a premise for Hawkesbury Agricultural College’s Bachelor of Systems Agriculture. The following vignette explores Hawkesbury’s in-depth critique of the epistemological beliefs of the dominant-cultural-paradigm.

¹¹³ These are my photos taken on Grand Island, Michigan in August, 2019. The photos show archaeologists applying a grid to the world to ‘create meaning’ of a living culture that perceives reality entirely through relationalities. At that point in time, in the thick of my PhD, it struck me as completely missing the point. Yet, in defence of archaeologists, some are ‘social archaeologists’, who may use grids in their excavations, and also seek from science (and ethnography with descendants) an understanding of the worldviews, spirituality and social systems of the societies they study. I mention this to remind us of the importance to be aware of how are we integrating plural and diverse knowledges (and also, to be mindful of who is engaging with the studies of culture and why, to root out any implicit hierarchical, colonialist thinking).

Vignette: Hawkesbury Bachelor of Systems Agriculture

Epistemological critiques infused in the Hawkesbury learning experience

The Hawkesbury program had a notably extensive critique of the dominant epistemological tendencies of the dominant-cultural-paradigm. This critique - identified below - informed the program's philosophic premises of transformative learning, and represents a rare level of worldview and paradigmatic awareness within Western tertiary learning (Sterling, 2010).

Across his writing, Richard Bawden (head of the School of Agriculture during the development and the tenure of the Bachelor's degree) eloquently outlines the inadequacy of the dominant techno-scientific paradigm in terms of understanding the complexity within which we operate, and how this view of the world has created unprecedented destruction and risk to all living systems (Bawden, 2016b). This scientific-technological (techno-centric) worldview prevails, yet is 'hopelessly inadequate' for at least three reasons (Bawden, 2005c). Firstly, the primary logic of separation prevents people from perceiving the complexity, inter-relatedness and emergence of the world around us. Thus, secondly, humans create messy situations precisely because we cannot perceive and act in systemic ways. Thirdly and finally, we are not able to adequately improve our actions, because the dominant paradigm is "incapable of reflexivity by the nature of its very epistemic foundations" (Norgaard 1994 in Bawden, 2003, 2005c; Bawden & Packham, 1998). The following sections of this vignette surface Richard's epistemological critique embedded in his 'second and third inadequacies' of the dominant paradigm (and his first inadequacy will be discussed in Ch. 7 on the separatist logic-of-perception of the dominant-cultural-paradigm).

Inadequacy of the dominant epistemology: We can't respond to situations of 'un-development' that we've created

Due to the first inadequacy (e.g. separatist perceptions), the modernisation of agriculture (and our institutions and societies) has unfortunately and paradoxically 'long harboured the seeds of its own demise' (Bawden, 2005c). The prevailing epistemological stance couples **positivist frameworks of ideas with reductionist methods** and an **objectivist stance** in selecting areas of concern (Bawden, 2005c). The resulting reduction in **uncertainties through the creation of rationalised knowledge** is precisely what led to and continues to exacerbate the many challenges we face today caused by the 'un-

development' of socio-ecological systems (Bawden, 2016b; Bawden & Macadam, 1990).

These types of 'hardly ethically defensible' challenges we've created represent a gross failure of duty-of-care, and are causing extreme anxiety in parts of society today for those worried about the potential, eventual collapse of human civilisation itself (Bawden, 2003, 2004a, 2010c). And, frustratingly, the blinkered capacity of the worldview underpinning [agricultural] science is **unable to stop creating, nor respond adequately and responsibly** to the growing list of challenges (Bawden, 2010b).

Inadequacy of the dominant epistemology: The inability to be self-aware

The empirical, positivist, objectivist, reductionist worldview is 'so inadequate in its construction of nature and the way nature is known that it cannot recognise its own inadequacies' (Bawden & Packham, 1998). In other words, there is an 'axiomatic belief in the techno-science paradigm' because the techno-science worldview is paradoxically incapable of third-order reflexivity by the very nature of its epistemic foundations (Bawden, 2003, 2004a). Thus, for people steeped in the dominant-cultural-paradigm, it is not common to be reflexively self-aware of unconscious assumptions and beliefs.¹¹⁴ A challenge then arises: though a litany of issues spring from the dominant-cultural-paradigm, and we are in urgent and profound need for paradigmatic change, worldview awareness is not easy for everyone, nor can it be forced (Kuhn 1962 in Bawden, 2005c).

Universities as sources of un-development

Arguably given the state of the world, the mission of universities should be to contribute to socio-ecological 'development' (i.e. betterment), both in terms of content and process. To not do so, would be ethically indefensible (Bawden, 2005c, 2008). However, Western societies, and thus universities as microcosms of societies, tend to be ignorant of the sheer complexity that makes up our world of experience (Maturana and Varela, 1987 in Bawden, 2005c).

As a result of this ignorance, Richard argues that within universities there is a **dominance of instrumental rationalist knowing** over other ways of knowing; a kind of **cognitive authoritarianism** (Bawden, 2005c, 2008). Richard also suggests a pervasive view persists of scientists as the only valid experts. This 'colonisation of the lifeworld by instrumental

¹¹⁴ This can also be the case with many belief systems outside of the dominant-cultural-paradigm.

rationality' (Habermas 1984 in Bawden, 2016b) means agricultural teachers often prefer: instrumental teaching over communicative teaching; pedagogies for passive acceptance of knowledge over active creation of knowledge; and academic studies over real-world interventions (Bawden, 2005b). Agricultural programs characteristically reflect '*compartmentalised scientific disciplines*' and use the '*atomistic curricula of reductionist science*' (Bawden, 2005c; Bawden et al., 1984). The more experts are valorised and the more students see themselves as future experts who come to the rescue, the more the thinking for oneself decreases as 'cognitive labour is divided to the experts', and away from the farmers (Bawden, 2005c, 2016b). Consequently, agricultural development becomes more technical, and the *expert / lay person distinction* becomes increasingly wider, when instead it must become much more integrated (Bawden, 2004a).

Richard argues how universities do not provide holistic experiences for what we do and how we do it. Very rarely do courses develop learning experiences with the latest theories of intellectual, ethical and moral cognitive development. Put more bluntly, he believes most universities, particularly in agricultural sciences, do not help students learn about how to learn and how to be critical of their learning, and how the learning relates to their own worldview or the paradigm in which they are being taught (Bawden, 2005c). Without this type of epistemic, or worldview development, in essence, everything can be indoctrination. Yet this indoctrination isn't intentional, or even conscious. Most agricultural faculty are unaware of the modernist paradigm that their worldviews are founded on (steeped in) and that their pedagogy is a reflection of their worldview. This means students can be indoctrinated in subtle ways, for the language that is used 'is an expression of your pathology'. And the language of science and technology, including environmental science and ecology, is replete with metaphors of mechanism: framework, lens, vehicle for change, levers, drivers. And all of this does not change because, as Richard argues, some universities, and many agricultural science programs, do not practice what they preach: they themselves are not organised as learning institutions, deeply and collaboratively reflecting on the matters they teach, how they teach, and most significantly, why (from a worldview awareness) they teach the way they do (Bawden, 2005c).

6.10 Rhetorology: Human communication as superior

Critique of the dominant perceptions and beliefs of rhetorology¹¹⁵

In this inquiry, rhetorology refers to the perceptions and beliefs about language - what are valid ways of communicating and what are the actual and ideal properties of communication. The dominant-cultural-paradigm commonly assumes that language can *objectively capture an external reality*, without any hidden agenda or subjective influence, and that objectivity is an appropriate quality to communication. In contrast, worldview-diffractive literature on transformative sustainability learning shares doubts that linguistics offers an objective, harmless representation of a static, external reality (Sterling et al., 2018).

The critique by the educators who engaged with this meaning-system, was framed largely around the ability of discourses to embody and carry forward a particular ideology. For example, Stephen Sterling and his colleagues recognise that “linguistic devices such as metaphor and narrative function in our construction of reality—and that prevailing linguistic forms tend to *privilege the interests of the powerful, disenfranchising, and delegitimising other epistemologies or worldviews*” (Sterling et al., 2018).

These critiques were largely influenced by the postmodern turn. Postmodernism attempts to reflect on and ‘take seriously the linguistic structures that frame our communication’. These scholars seek to reveal the goals implicit in these linguistic structures, thereby showing how these linguistic structures can lose “their innocence”, or objectivity (St. Pierre et al., 2011). For example, M.J. Barrett invoked Foucault’s notion that discourses are “an effect of power and can *support and/or challenge the dismissal, ridicule, absence, usefulness or appreciation of particular ways of knowing and being*”, such as Indigenous cosmologies and worldviews (Barrett et al., 2016). The following vignette also identifies with this postmodern critique.

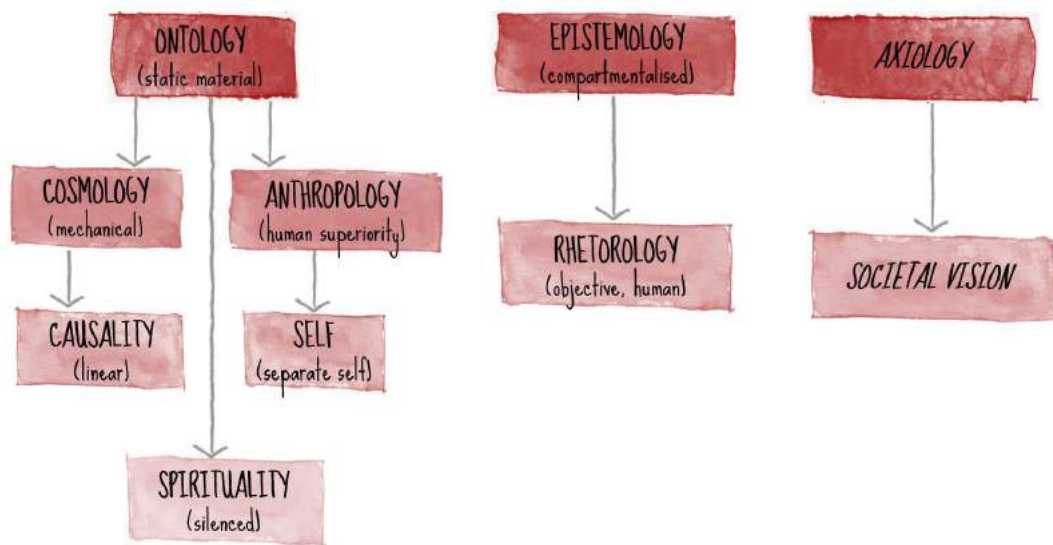
¹¹⁵ As defined in the analytical framing (Ch. 4), rhetorology as invoked here refers to the qualities and beliefs about communication, as opposed to rhetoric as the qualities of motivating and persuading (of course, relationalities exist between the two, but that is outside of the scope of this inquiry).

Vignette: Agential realist (food) pedagogy philosophical premise

Critiques of *rhetorology* infused in the food pedagogy experience

Joy O'Neil, creator of kitchen-based learning (a transformative sustainability learning pedagogy), critiques this dominant belief of “static linguistic representations” (2018). One of her key purposes in transformative sustainability learning is to “perturb classical ontology and epistemology in transformative learning theory and “its representationalist triadic structure of words, knowers, and things” (Barad, 2003, p. 813 in O'Neil, 2018). This representationalist standpoint embedded in the dominant-cultural-paradigm perceives these concepts as separate, in which the ‘knower’ observes the ‘things’ from a distance, and then objectively chooses the words to discuss this separate reality. From her perspective, this triadic structure removes all agency from ‘things’ and ‘words’, and does not reflect the radical intra-dependence, interconnected becoming, and inseparable mutual agency of words, knowers and things in creating reality.

A picture is emerging of the philosophical critique; one in which we can begin to see the patterning of separatism, as a logic-of-perception, enabling the beliefs emerging in each of the meaning-systems (which I will explicitly reveal at the end). How will the patterning of separatism continue through the remaining axiological meaning-systems probed in this critique? For example, a significant critique of the dominant-cultural-paradigm is the perceived and enacted separation between what is and what ought to be (between onto-epistemology and axiology). The following two sections (*Ch. 6.9 and 6.10*) explore the axiological critiques amongst perspectives relevant to transformative sustainability learning.



Visual 19. Summary of onto-to-rhetorical meaning-systems (and the final two in *italics*)

6.11 Axiology: separate from knowing

Critiques of the dominant axiological perceptions and beliefs

Axiological meaning-systems in this inquiry refers to our values, morals and ethics. As the dominant-cultural-paradigm views reality as mainly static material, and knowable primarily via ‘superior human rational cognition’, the dominant-cultural-paradigm often separates values from knowing¹¹⁶, and applies value judgements simplistically in terms of right and wrong (Lange, 2018b; Sterling et al., 2018).

The transformative sustainability learning articles, with third-order reflections, also critique axiological trends: of ***absolutism, certainty*** (Chaves et al., 2017; Selby, 2002), ***authority*** (O’Neil, 2018), ***order, control, domination, masculinity*** (Lange, 2018b), ***conformity, servitude, competition*** (Sterling et al., 2018). These values are not inherently bad, but rather, the scholars argue, as the dominant guides for societal evolution (Jantsch, 1975b), these axiological beliefs manifest problematic outcomes. Even values that are associated with more reductionist notions of sustainability, such as ***stability*** and ***balance*** were critiqued if adhered to so strongly that they do not leave room for evolution and complexification (Jantsch, 1975; Selby, 2002).

¹¹⁶ Often described as a side-effect of the Enlightenment, as touched upon in *Ch. 6, Premise: meaning-systems*.

Preceding-philosophers also critiqued the myth of separation within our axiological meaning-systems. For example, the logical operation of separatism creates false dichotomies of prioritising ends over means (e.g. economic growth over equity) or means over ends (e.g. science for its own sake rather than for societal good) (Blackburn, 1971; Dewey, 1910; Jantsch, 1970; Macy, 1991, p. 104; Morin, 2001). Furthermore, without consideration of values, ethics, morals within *both* the means *and* ends, our vision periscopes towards *efficiency* and *effectiveness*, e.g. with no regard for efficacy (Abson et al., 2017; Nicolescu, 2002, 2014c; Rittel & Webber, 1973). This simplified view brings forth unfortunate consequences, such as leaders consulting scientists and military, rather than ethicists, in deciding warfare strategies (Capra, 1982, p. 23); and ignoring scientists who have an integrated ethical compass.¹¹⁷

This general inability to deal with ethics and the *replacement of ethics with neoliberal economics* is explored below in the philosophical premises of the Hawkesbury program.

Vignette: Hawkesbury Bachelor of Systems Agriculture

Axiological critiques infused in the Hawkesbury learning experience

One central philosophical premise of the Hawkesbury vignette is that all complex matters engage the intellectual, emotional and moral dimensions; every ounce of knowing is contextually ethical (Bawden, 2005c). However, the science-techno-economic worldview has *little capacity to deal with ethical issues* (Bawden, 2005b). Moral judgement has seemingly been *eliminated from prevailing concepts of rationality*, or at least it is a very

¹¹⁷ As a result of deploying the atomic bombs on Hiroshima and Nagasaki, despite the pleadings of religious leaders, over 200,000 people were cruelly murdered (NPS, 2017). The shock of this event, and other similar events led some scientists to reel at the level of destruction that comes from a dissociated axiology. Albert Einstein, whose axiological beliefs were inextricably tied to his epistemological beliefs, tried to alert others to the consequences of this separatist approach to knowing and doing: "In May 1946, Albert Einstein sent a telegram to several hundred prominent US citizens asking them to support an education campaign aimed at helping people understand the risks and potential benefits associated with atomic energy. In the telegram, which was published in the New York Times (*Atomic Education Urged by Einstein, 1946*), he asserted that: *Our world faces a crisis as yet unperceived by those possessing power to make great decisions for good or evil. The unleashed power of the atom has changed everything save our modes of thinking and we thus drift toward unparalleled catastrophe. We scientists who released this immense power have an overwhelming responsibility in this world life-and-death struggle to harness the atom for the benefit of mankind and not for humanity's destruction.... We need...a nation-wide campaign to let the people know that a new type of thinking is essential if mankind is to survive and move toward higher levels*" (Einstein, 1946 p. 13 Nolet, 2016). Similar to those that ignored Albert Einstein's warnings, Russian Andrei Sakharov, who helped develop the hydrogen bomb, was stricken by his conscience, and became a political dissident and vigorous defender of human rights, eventually leading to his banishment from Russia (Kolb, 2015, p. 312).

rare synthesis of rationality with practical reason and moral discourse (Bawden, 2003, 2005c).

Similarly, moral and ethical judgement has been removed from conventional approaches to development, or socio-ecological improvement (Bawden, 2003). Instead, neo-liberal economics and capitalism is becoming a social and moral philosophy, where its existence alone is valued, and is a substitute for all other ethical beliefs (Bawden, 2005c). Thus, dominant agricultural science concentrates on the 'desired end of *efficiency* and *effectiveness* towards *productivity growth*, rather than land utilisation patterns that are ethically defensible' (Bawden, 2003; Bawden & Packham, 1998). Development then becomes for and synonymous with the generation of financial wealth in contrast to the pursuit of systemic well-being that is inclusive of people and the rest of nature alike (Bawden, 2005c).

Nicoletti keen to help promote ag stories

Travis King

29 May 2019, 8 p.m.

News



Photographer Alice M and John Nicoletti have teamed up to donate a series of books showcasing Australian agriculture to regional and rural schools across the country. The pair struck up a friendship when Ms M featured Mr Nicoletti's farming operation in her The Grower series of books, including this photo of harvest time at one of the Nicoletti properties.

Artwork 7. Manifestations of modernist axiology's infusing school books¹¹⁸

¹¹⁸ This photo is from an Australian agriculture magazine, Farm Weekly. The article describes how the

6.12 Societal vision: global, perpetual growth economy

Critique of the dominant societal visions

Both preceding-philosophers and educators critiqued the dominant 'sociological' meaning-systems, or perceptions and beliefs about how to organise society. Their criticisms focused on societal structures, processes and institutions born from the perception of *separateness* and *hierarchy*, e.g. that a sub-set of humanity is separate from and superior to nature *and* other people.

This logic-of-perception transmutes into a "virtually unfettered license to exploit" via processes of *colonising and globalising* empires and ecclesiastical institutions, and the more modern notions of nation-states, corporations, and rampant industrialised development (Chaves et al., 2017; Berry, 1998 in Lange, 2018b; Selby, 2002; Sterling et al., 2018). Neo-colonisation continues to export a militarised, conquest-oriented culture, that "plunders and eradicates people considered less human" (O'Sullivan, 1999 in Lange, 2018b), and renders other paradigms (ontologies, epistemologies, spiritualities) as invalid and inaccessible (Barrett et al., 2016; Chaves et al., 2017).

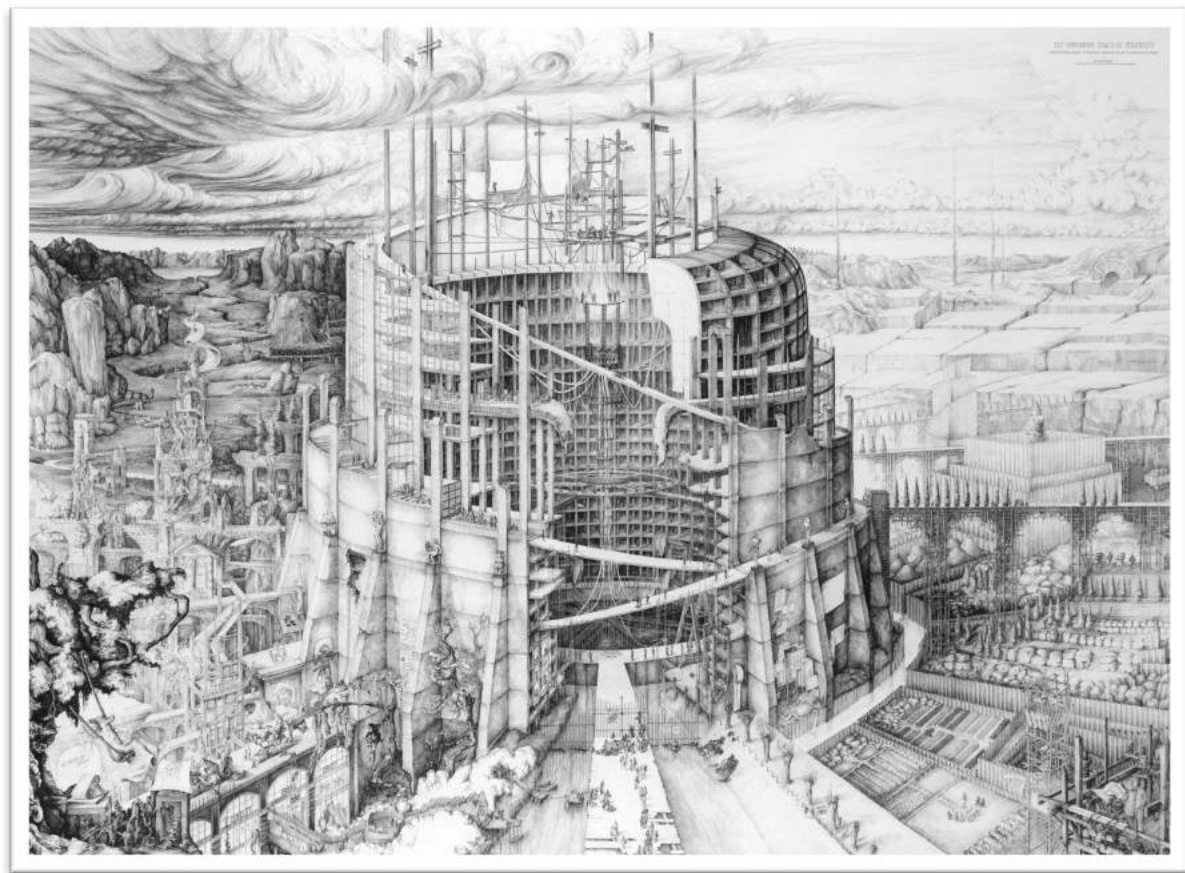
A foundational idea of the dominant-cultural-paradigm is a progressivist belief that the world and life in it were on a permanent trajectory of material betterment (Bawden, personal communication, November 29, 2017). In other words, a fundamental ailment of societies is the inter-steeping of linear, reductionist, hierarchical beliefs in providing the foundations for an "economy first" societal vision, and the belief of guaranteed progress and unlimited growth in our economy, at the largely unnoticed and undiscussed expense of everything else (Abson et al., 2017; Callon, 2005; Capra, 1982, p. 11; Espinosa & Walker, 2017; Meadows, 2004). The most current form of a social institution built on domination - the modern neoliberal corporation - advocates a "deep adversarial view in search of profits and monetary power" (Lange, 2018b), encouraging the values of convenience, ease, speed and dismembering us from our human and natural communities along the way

Nicoletti farm, one of Australia's largest arable operations, is going to be highlighted in a series of books on agriculture, noted to schools across the country. While a laudable initiative, my point here is to demonstrate how these books can subconsciously perpetuate the beliefs of domination, efficiency, productivity, growth, conformity to the students.

Again, I am experimenting with visuals of 'cultural artefacts' to demonstrate the manifestation of paradigmatic beliefs in action and experience, and how the context of our experiences unconsciously 'teaches' these deep beliefs. This is not to point blame, but rather raise these questions ethically, and with compassion, and an understanding of complexity for why people do what they do.

(O'Neil, 2018).

This societal vision enables and hides dehumanization, across the globe, with irreversible and complex impacts on the environment (Freire, 1970; Kleiber, 2001; Lange, 2018b; Morin, 2001). These neoliberal and industrial views manifest detrimentally in and influence educational policy and pedagogy (Sterling et al., 2018, O'Neil, 2018), for example, seeing 'bums on seats' as a product to maximise.



Artwork 8. The Babylonian Tower of Modernity, Carlijn Kingma (2017)

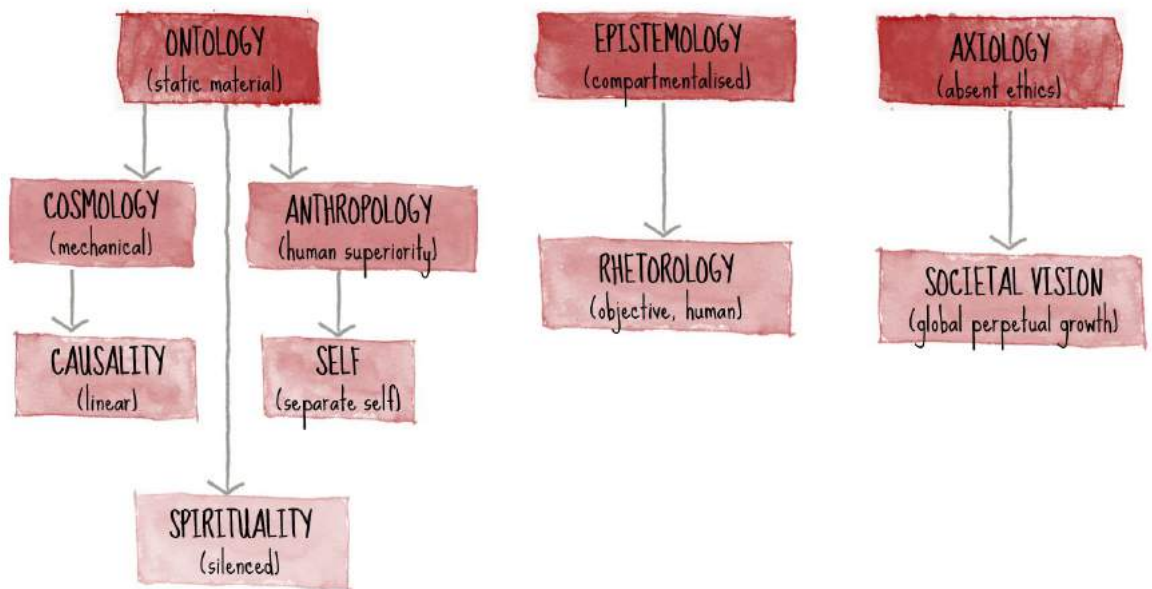
“Why does man build a tower?...we are building a tower to reach for the heavens of progress. Organized around an oil engine, we deploy, we produce and continue to grow. But somehow along the way, dissonance emerged on the exact direction we are heading. And while trying to reach for these heavens of progress, we forgot why we actually wanted to go there in the first place. And once we finally reach the skies, our sight is clouded with smog.

Almost everyone inside the tower – or maybe even everyone – secretly dreams of being better. To be smarter, richer, more liked or more powerful. And in order to become this better person, and move up inside the hierarchy of our society, a man will face competition. Most of us get stuck somewhere in some layer of accomplishments/success, but for the lucky little few, who can make it to the top, the world beneath is a playground. But first of all, down in the center of the drawing, to be able to enter the tower at all, a man has to have the right papers. Like the lottery you can win a ticket for access, if born in the right country at the right time. If not, we are very sorry to tell you, but I’m afraid today we are full. But if you happen to win and you have made it inside, you can walk the ramps, that circle up, and eventually aim for the skies. But again, like everything else in this world, not without resistance. Inside the tower, at the bottom of it all, we find the working class. We call them the lower educated, and they perform practical tasks, such as taking the oil from the earth. To transcend and move up inside the tower of success, perhaps to the service based practices, you need first to pass through an educational gate, to prove you are worthy of the task. But to reach for the skies, it doesn’t stay there, there are multiple thresholds and gates. Although the gates of global borders now seem permanently open, you will soon walk upon some more, judging your ethical background, your gender and family name. And finally, for the engineers and programmers who work inside the building for bigger trade, to become a god in our own little world, to become director of the political muppet show and to rule, point and divide, there is a gate to pass only with money.”

6.13 Summary

*Each participant in the drama we call life, is relatively situated within a **meaning horizon** against which her/his/their life is acted out. Whatever the level of perceptivity and perspective, the participant will see the world only within the parameters set by this level which, however, he/she/they takes to be the whole of reality itself (Jantsch, 1981, p. 274).¹¹⁹*

This chapter explores the largely unconscious ‘meaning horizons’ (Jantsch, 1981, p. 274) of the dominant-cultural-paradigm within the writing of preceding-philosophers and third-order reflections of transformative sustainability educators. These critiques illustrate the premises that transformative sustainability educators attempt to be conscious of in their life, societies and when designing experiences. *Visual 20* summarises the essence of the critiques (within a medium that embodies these hierarchical and reductionist beliefs).



Visual 20. Summary of critiques of the dominant-cultural-paradigm

Transformative sustainability educators seek to improve the way we create change, by becoming aware of the plethora of unconscious paradigmatic beliefs in the dominant culture, as well as their own worldviews. This ‘third-order awareness’ enables a fundamental re-imagining of other ways of being and becoming together (discussed in

¹¹⁹ I’ve updated the quote for more inclusive, beyond-binary pronouns.

Premise chapters 8,11,12; Process chapters 14, 15).

I recognise that this analysis still harbours reductionist tendencies, even though it resonates with the Posts and Sohail Inayatullah's postmodern casual-layered analysis approach (*Scholarly Process segment*). One reductionist tendency of this analysis and synthesis is a presentation by 'categories'. I recognise that mapping the critiques of the dominant-cultural-paradigm to one particular meaning-making system skims over the complexity. And yet, this is in part because I am also mirroring how these meaning-systems are commonly critiqued. Another reductionist tendency is that this section is a critique of the dominant-cultural-paradigm, rather than critique and celebration, as should be sought in Post philosophy and transformative sustainability learning.

Even though my inquiry has temporarily landed here, I continue to imagine more relational ways of perceiving and synthesising the 'plane of immanence' (or worldview and reality mutual co-arising). For now, the above analysis and synthesis of each 'meaning-system' can be conceived of as an entry point, or illuminating light, into the fog of the dominant-cultural-paradigm. In the future, inquiry approaches can expand beyond this 'categorisation', and undertake a more relational, systemic analysis and synthesis to construe the deep interlinkages and relationalities between meaning-systems.

6.14 Discussion: why philosophical premises matter

The preceding half of this chapter (*Ch. 6*) introduced the philosophical synergy between philosophers influencing transformative learning and current transformative sustainability educators. This section discusses why this resonance matters.

Similar to the initial story of the Club of Rome, if you engage with ideas cultivated from different worldview premises, your own worldview 'filter' might prevent you from seeing or engaging with the diffractive, transformative potential and intention of these new ideas (Salner, 1986). Thus, the resonance between philosophers and educators matters because transformative sustainability learning educators with an awareness of the beliefs of the dominant-cultural-paradigm tend to enact the pedagogies in ways more aligned with the philosophers' original intent. If educators are not aware of the paradigmatic beliefs, they tend to implement pedagogies in ways that are reterritorialized back into the dominant-cultural-paradigm. In other words, transformative sustainability educators' engagement with the pedagogies maintains the pedagogies' transformative intent, rather than reinforcing the dominant paradigm. This awareness of the profound mutual co-arising

between internal worldviews and collectively enacted paradigms is ‘a difference that make a difference’ (Bateson, 1991, p. xii). I further explain why below.

Pedagogies relevant to transformative sustainability learning emerged from a critique of the dominant-cultural-paradigm

As this chapter has demonstrated, a critique of the dominant-cultural-paradigm is implicit in transformative sustainability learning. Each of the preceding-philosophers paused to reflect on the long arc of history, and as a result, asserted that the dominant paradigm, and its onto-epi-axi-etc. views, brings deleterious effects which seriously impede humanity’s ability to be sustainable, let alone resilient and regenerative. Each of the preceding-philosophers has embedded sharp critiques of the dominant-cultural-paradigm within their attempts to bring forth new ways of inquiring, learning, and action that would simultaneously transform the ‘worldview <> action <> implication’ holarchies towards more ethical, regenerative ways of being.

Many examples exist of how these preceding-philosophers sought to fundamentally shift the beliefs of the dominant-cultural-paradigm. For example, John Dewey overcame the disconnection of learning from the whole person and real world experience; Paulo Freire integrated consciousness-raising with praxis (theory and action informed learning) for change in society; Edgar Morin developed methods for embracing more complex perception of reality; Basarab Nicolescu theorised methods of inquiry that transcend all disciplines and levels of reality; Erich Jantsch developed entirely new ways of designing societies based on the perception of relational wholes (*to be explored more in Ch. 8, Premise: [philosophers’ logic](#)*). Their work contributed to Western notions¹²⁰ of: experiential education, critical pedagogy, complexity, transdisciplinarity, and systems thinking, which all originally intended to change the enactment of learning and inquiry beyond beliefs of the dominant-cultural-paradigm.

Even though these pedagogies originally emerged from a critique of the dominant paradigm, not all enactments of the pedagogy maintain the original philosophical premise

As I’ll describe below, my hermeneutical reading revealed that each of these pedagogies can be enacted with varying levels of connection to their philosophical premises. In other

¹²⁰ I use the qualifier ‘Western’ to acknowledge many other cultures have developed their own philosophies resonant with experiential, systemic, holistic, critical, transdisciplinary learning (Aluli Meyer, 2001; Little Bear, 2009; Williams, 2018).

words, each of these inquiry/learning methods have both 'shallower' and 'deeper' enactments ('shallower' being submerged in the dominant paradigm, and 'deeper' being enacted integratively with the philosophical premises):

Shallow and *deep* transdisciplinarity (Max-Neef, 2005);

Systems thinking or *systemic being* (Bawden, 2004a, 2005c);

Complex systems dynamics and *general complexity* (Morin, 2006);

Weak and *deep* complexity (Montuori, 2013a; Morin, 2006; Osberg, 2015);

Extension educator or *communicative partner* (Freire, 1974, pp. 81-106);

Shallow platitudes for violent histories, or *meaningful historical readings* (Macedo, 2006);

Experiences within the school boundaries based on pre-digested materials, or *experiences integrated with physical and social surroundings which arouse curiosity* (Dewey, 1938).

The existence of these shallower interpretations suggests that as people engaged with the preceding-philosophers' ideas, the philosophers' worldview premises – the very reasons for creating these pedagogies - were left behind. As the postmodernists might say, the philosophers' methods for 'inquiry/learning/action' were 'reterritorialised' into and interpreted/enacted from within the dominant-cultural-paradigm (*Ch. 3, Philosophical orientation*).

If one engages with ideas cultivated from different paradigmatic premises, one's own worldview 'filter' might prevent one from seeing and engaging with the diffractive, transformative potential and intention of these new ideas.

If we are, steeped within the dominant-cultural-paradigm, we must become aware of and develop the ability to transform our own worldviews, in order to be able to engage with these philosophically different inquiry/action/learning methods *in their deep and meaningful forms* (Bawden, 2003, 2004b, 2016a; Salner, 1986). To transform the world,

we must also as a “prerequisite imperative” transform ourselves (Bawden, personal communication, November 29, 2017).¹²¹

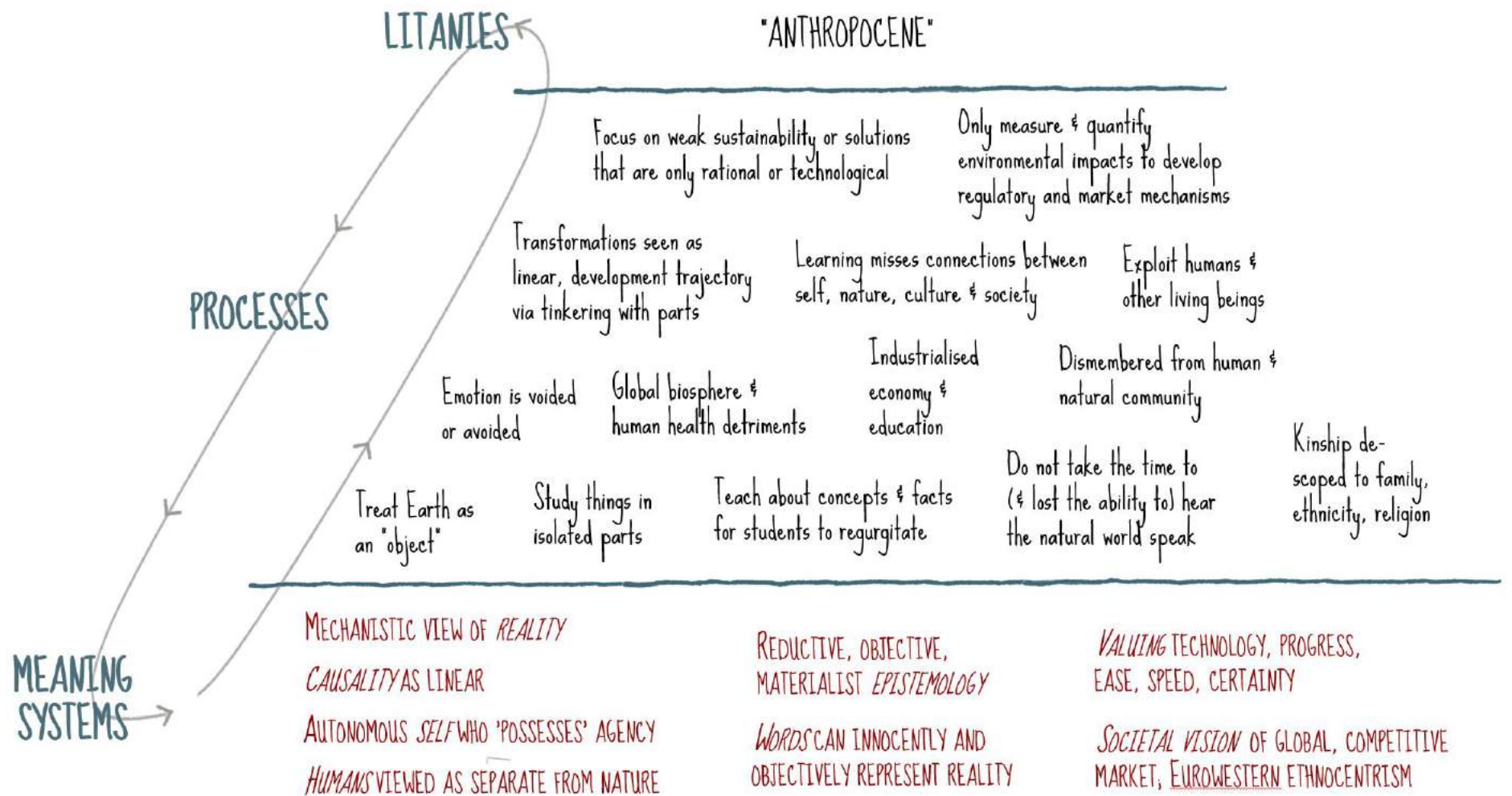
The vignettes within this inquiry demonstrate these educators have undergone their own transformative, third-order learning and diffraction into stretched philosophical premises, and we will learn about their own transformative journeys (in *Ch. 10, Premise: educators’ transformative learning*). Their transformative learning has created an onto-epi-axi-etc. worldview ‘bouquet’ (see Joy’s vignette below) that allows them to engage with stretched ways of perceiving, acting, being, such as those espoused by the preceding-philosophers. The preceding-philosophers were arguing about the need for awareness of the dominant-cultural-paradigm, and because of their own deep transformative learning, these vignette-educators were able to hear, and listen, and then were prepared to enact from a broadened worldview (described in *Process chapters 14 and 15*).

Vignette: Agential realist (food) pedagogy

This vignette provides an example of a paradigmatically-aware educator who has engaged with the philosophical premises of transformative sustainability learning.

During the course of her PhD, Joy O’Neil developed a broad critique of the dominant-cultural-paradigm, across many of its meaning-systems. She also perceived, contemplated and described the relationships between the dominant paradigmatic beliefs and the consequences of enacting this worldview. *Visual 21* illustrates the relationships Joy identified between the dominant-cultural-paradigmatic beliefs and the systemic implications towards which these beliefs tend.

¹²¹ I acknowledge that it is not easy to see beyond one’s own worldview. Before I undertook my own PhD inquiry, I had been working in a transdisciplinary action research institute, using ‘systems’ and ‘complexity’ methods, and attempting to recognise and address the history of colonisation. And I did push beyond the dominant norms, in many respects. However, after taking time to engage with the above preceding-philosophers, read deeply about their philosophical premises for experiential education, critical pedagogy, systems, complexity, and transdisciplinarity, and recognise the patterning of philosophical critique across all of them, and then reflecting on my own practice, I can ‘perceive’ how the inquiry I was previously doing could be described as shallow or weak forms of these inquiry/learning/action methods. I can also see why inquiry that ‘felt’ more meaningful, was in fact intuitively ‘deeper’, relational processes of inquiry. This doctoral inquiry was part of my own decolonising process.



Visual 21. Joy's critique the dominant paradigm and its implications

These systemic manifestations (*Visual 21*) represent the *experiences* and *contexts* of living within the dominant-cultural-paradigm. We experience these ‘messages’ in studying things in parts, or industrialisation of our communities, or change planned in linear ways. And people within the dominant-cultural-paradigm unconsciously absorb the beliefs manifest within these contexts. By Joy being aware of both the dominant meaning-systems and their systemic, experiential manifestation in society, she is able to design transformative sustainability learning experiences in a profoundly different way that addresses these critiques (see *Process Segment*).

Conversely, some authors in the literature review invoke the term ‘transformative sustainability learning’ but do not discuss this pedagogy in terms of how it materialises from a different, diffracted worldview.

Shared litanies across the literature review

The review of articles with ‘transformative sustainability learning’ in their title or abstract have a pattern of shared litanies of the systemic manifestation of the dominant-cultural-paradigm. That is, they share criticisms of the global socio-environmental trends, the role of education and learning systems acting as a microcosm of these trends, and the role of learning, and learning institutions, in both perpetuating and addressing these trends. Across the wide swathe of journal articles publishing recently with ‘transformative learning’ and ‘sustainability’ in their abstract, there was a repeated call for changes in our consciousness, worldviews, frames of mind, to be more pro-environmental, and planetary in order to develop sustainable, peaceful societies co-existing in a life-supporting environment. They all shared a strong agreement that overly simplistic linear views of cause and effect, manifest in our views that learning “about” will lead to behavioural and social transformation.

But what is the DNA under the litanies?

However, beyond the litanies, the justifications of the courses were qualitatively different. Those who included their worldview-reflections did not just critique the systemic manifestation of the dominant-cultural-paradigm, but also the onto-epi-axi-etc. melange that permitted these problematic manifestations (e.g. *Visual 21*). The ‘content-process’

papers justified their courses more reductively.¹²² For example, their justification might be:

Universities are disciplinary yet the challenges we face are complex, THEREFORE we need to deliver subject content to students in an interdisciplinary way.

This justification can be contrasted with a more philosophically rich premise of the third-order (reflective/diffractive) papers:

The dominant-cultural-paradigm privileges reductionist, rationalist, separatist ways of interpreting and thus creating reality, in which humans are segregated from the mystery and relationality of the universe, nature, communities and ourselves, THUS the physical and institutional design of universities embody these disciplinary and cognitive beliefs THEREFORE we need universities that are transdisciplinary, involve action-learning and multiple ways of exploring meaning and making meaning, recognising our radical interconnectedness, and thus our inability to dominate nature without severe repercussions.

I pose these justifications, or premises, to reiterate a primary question of this inquiry: how do philosophically richer (and worldview aware) premises change the way we seek to create change? I also pose these premises to heed a warning about adopting new terms without delving into historical and philosophical intentions (e.g. a sometimes-challenging experience of third-order learning).

As with all new and shiny labels, this signifier - transformative sustainability learning- runs the risk of being empty; i.e. that it becomes a myth or narrative of salvation, but with little or no inherent meaning (Gonzalez-Gaudiano 2005, 2006 in Jickling & Sterling, 2017).¹²³ This signifier of transformative sustainability learning does at times refer to

¹²² Content-process papers were those that did not engage with a philosophical, third-order reflection or diffraction. Two times in the inquiry, I make points which could be interpreted as critiquing someone's deeply personal worldview-in-action, and thus I do not include the reference. I have made the ethical choice to withhold the reference because either *it was a person I had interviewed but did not include*, or a single journal article by an author who I hadn't engaged in a dialogue on their philosophical premises. By recognising that their worldviews-in-action are so much larger and more complex than a single reference, I instead end the point with a footnote of 'reference withheld'. I am acting on the I believe that we can learn from each other as a collective, without having to inflict potential harm. Thus, references are withheld for this reference point, but are available in a dialogue with the reader.

¹²³ For example, this could also be the case with the increasing popularity of the term 'regenerative'. The philosophical critique embodied in the term 'regenerative' (see for example Hutchins & Storm, 2019) is very similar to the critiques cohered in *Ch. 6, Premise: meaning-systems*. Yet, the term risks being bandied about without the necessary worldview shifts to meaningfully unlock and express its potential (Ethan Gordon, personal communication, April, 27, 2020).

processes still enacted within the dominant-cultural-paradigm, in part because it is tempting to adopt new terms because of an allure of their freshness and perhaps because we all perceive the work that we are doing as special. And it is in many ways. And yet, new signifiers, when coming from a place of deep philosophical critique are like a strand of DNA, we can adopt it (or use it at the litany level) but a deep transformative engagement with the deeper layers, philosophical premises-in-action, is what allows the increasing potentiality of this new DNA to be expressed.

Differences in practice exist depending on whether one engages with the philosophical intentions: those with shallower premises tended to focus on behaviour change and cognitive change, and describe worldviews as content or accepting other people's views

In reviewing recent literature that includes the terms 'transformative learning' and 'sustainability' in the title or abstract, paradigmatic variations emerged in how the term was described and enacted. Some writer-authors who invoke the terms 'transformative learning' and 'sustainability' in their work (title or abstract) do not discuss their own philosophical premises, nor describe their attempts to help others reorganise and complexify their worldview, arguably a basic premise of transformative sustainability learning.¹²⁴ These authors, such as Patricia Cranton and Jack Mezirow, tend to draw only on more cognitive definitions of transformative learning. They tend not to reference articles before the 1970s or engage with philosophical works. A few did describe transformative learning as an experience triggered by dissonance, and reflection on assumptions, that change our worldviews, but there is no further discussion of what a worldview is, why that dissonance might occur, nor how that dissonance might relate to broader cultural paradigms. The discussions remained at the litany level and within the beliefs of the dominant-cultural-paradigm, such as 'problem /solution' framing and action.

Other educators recognise the intra-actions between transformative learning, worldviews, and the dominant-cultural-paradigm.¹²⁵ However, in the 'content-process' papers, worldview is still largely described only within 'content' terms (e.g. interdisciplinary knowledge about sustainability) or 'as accepting other people's views'. For example,

¹²⁴ References withheld (see footnote 122).

¹²⁵ For example, they conceptualised transformative learning as a process where individuals encounter learning situations that elicit a reflective response of how sociocultural beliefs impact one's worldview, thereby influencing them to challenge their personal worldview. Reference withheld.

several articles provided feedback from their students. In their feedback, students reflect that listening to other points of view is a new competency for them. But going beyond this insight, are the students encouraged to explore second and third-order reflections on such as:

- Why this is something new for them? How does this relate to their previous beliefs about knowing?
- Why is this not something that they have learned before in school, from media, or leaders?
- What does this learning have to say about assumptions of who is the authority of knowing and why?
- And how does this all relate to dynamics of society that are more or less helpful in moving towards socio-ecological resilience? What can they do with these new beliefs?

Those with shallower premises tended to focus on behaviour change and cognitive change, e.g. improving learners thinking beyond instrumental rationalism towards critical, reflexive, interdisciplinary problem-solving. While conceptualisations of transformative sustainability learning as ‘increasing interdisciplinary and multiple views’ offer important epistemological development’, they don’t appear to engage in the breadth of third-order learning necessary for being and creating resilience.

Worldview as a deep shift in basic premises within learners

In contrast, some authors had a specific intention to create the conditions for worldview awareness and shift in consciousness, as offered in Edmund O’Sullivan’s definition of transformative learning: a deep structural shift in basic premise of thoughts, feelings and actions or a shift in consciousness that dramatically alters our way of being in the world (O’Sullivan, 2002). Throughout their writing, these educators further evidenced this assertion in several ways. For example, the authors they drew upon, attempted to stretch beyond tendencies of the dominant-cultural-paradigm, such as Gregory Bateson or Edmund O’Sullivan. And/or these educators offered a very strong *critique of the tendencies of the dominant-cultural-paradigm* (Premise chapters 6, 7), as well as *vision for alternative worldview meaning-systems* (Premise chapters 11, 12). And/or the authors described more ontologically, epistemically, axiologically aware experiences of transformative learning, for example, including other epistemologies such as sensory, intuitive, emotional,

experiential and spiritual experiences that contextualised the tendencies of dominant cultural practice.¹²⁶

Summary of discussion and next steps

This chapter traced and mapped critiques of meaning-systems from the dominant-cultural-paradigm. It demonstrated educators who offered greater philosophical reflection and diffraction, by recognising more meanings-systems in their learning designs. This selection of educators can be compared with the articles with less or no philosophical reflection. Those with shallower premises tended to focus on behaviour change and cognitive change, e.g. improving learners thinking beyond instrumental rationalism towards critical, reflexive, interdisciplinary problem-solving. Again, this is a valiant aim, and experiencing this type of learning, by its very nature, has epistemological stretching capacity: it challenges the belief of learning as disciplinary, individualistic, and absolute. But these courses do demonstrate third-order reflection on why, for example, interdisciplinary learning, might be an epistemological stretch different from the patterning of the dominant-cultural-paradigm, and why this difference matters.

Generative questions raised by this tracing of the critique of the dominant-cultural-paradigm

This chapter on a critique of the dominant paradigmatic beliefs generates many questions within the holarchical areas of this inquiry. Therefore, before moving on to expose the myth of the dominant paradigm (it's separatist logic-of-perception), I want to raise the questions now, and continue their contemplation through the inquiry.

If we are limited by our 'meaning horizons', and the horizons of the dominant-cultural-paradigm are limiting our capacity to be regenerative:

- How can we draw our attention to the beliefs within ourselves and awareness of how they manifest in society?

¹²⁶ Conversely, some who label their work as environmental education and education for sustainability are aware of the presence and implications of this unconscious logical operator (see Sterling 2003, p. 320 or Beeman & Blenkinsop, 2019 for example). I mention this as a reminder of the fluidity of these labels. Labels usually represent an attempt to highlight a distinction in evolution, but not everyone who uses that new label will truly embody that distinction, and some who don't use that label already embody and enact what the new label is trying to convey. I also recognise, as mentioned before, that not all journal articles are interested in, or have time to link back to philosophical premises. In my experience, it is precisely those sections of philosophical positioning that external reviewers of articles suggest (or require) be removed.

- What other meaning-systems might we become aware of that unconsciously influence us? What 'meaning-systems' are we still blind to? What 'meaning-systems' do the other 6,900 languages groups perceive and conceive of?
- How can each meaning-system offer entry points into an experience to awaken an expanded consciousness, or facilitate worldview reflection and diffraction?
- How can experiential, emotional, dream, intuitive, aesthetic and/or cognitive knowledge of these deep beliefs provide places to focus our attention to strengthen awareness about the nature of our deep beliefs and how they might manifest in actions? What other ways of knowing can we use to explore these beliefs?
- What are the implications of using the entire breadth of these meaning-systems to develop an awareness of these unconscious beliefs in our own teaching and living (as opposed to only focussing on a few meaning-systems)?
- What does it mean that critiques about the dominant perceptions of 'aesthetics', arguably an important influence of our behaviours and actions in the world (and an important part of philosophy), were not present in this discussion of premises of transformative sustainability learning? Is this because aesthetics has been eclipsed in the dominant-cultural-paradigm? Or did I not pick up on these critiques because of my own unconscious bias?

Many of the chapters in this inquiry offer similar lists of generative questions. I do so because my purpose in this inquiry is to demonstrate 'knowing' also as process, rather than just 'conclusions'. That is, unearthing and imagining generative questions are just as necessary to 'scholarly inquiry' and knowing, as is demonstrating the ability to logically articulate meaning and wisdom to 'stand on'.

Chapter 7:

Critiquing the myth of separateness

“It is plausible that the bulk of our personal, interpersonal, international, and ecological problems arise ultimately from the simple turning of a distinction into a separation, and the separation into an opposition” (Bateson, 1991, p. xvii)

7.1 Orientation of this chapter in relation to other chapters

A second key feature of the preceding-philosophers, vignette-educators and the subset of paradigmatically-aware literature is their recognition of the ubiquitous role of the myth of separation within societies guided by the dominant-cultural-paradigm. Separation as logic-of-perception (invoked in Gregory Bateson’s quote at the beginning of this chapter) is in this inquiry conceived of as the deepest dynamic of reality, furthest from our consciousness, yet exceptionally profound in terms of influencing the reality we do create.

Philosophers preceding transformative sustainability learning are at pains to communicate as clearly as possible how the myth of separation is a foundational logic infused throughout the dominant-cultural-paradigm. In fact, each of the philosophers are often honoured as being the first one to point this out, yet collectively, they are sharing very similar messages. The purpose of this chapter is to demonstrate how preceding-philosophers and *educators* have engaged with the ‘deepest dynamic of reality’. I begin by presenting the philosophers critiques.

7.2 Philosophers' critique of separatist logic and perception

Primary critique of the dominant paradigm: separatist logic-of-perception

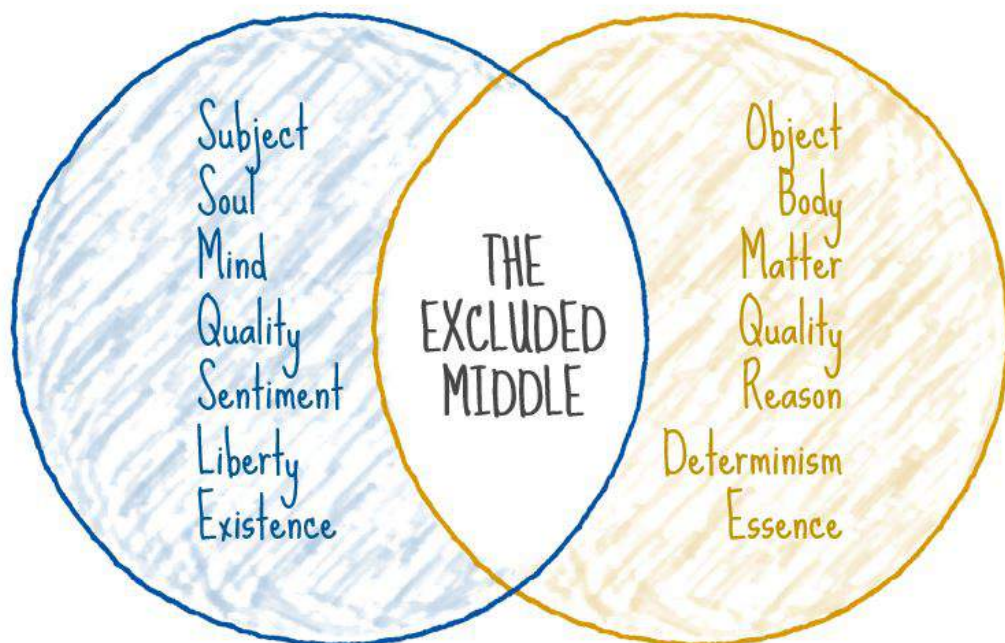
Systems and learning philosopher Gregory Bateson believes the primary logic of the dominant-cultural-paradigm is **separation**, and argues this perception of **difference** is a fundamental error (Bateson, 1972). In *A Sacred Unity: Further Steps to an Ecology of Mind*, Gregory Bateson suggests it is “*plausible that the bulk of our personal, interpersonal, international and ecological problems arise ultimately from the simple turning of a distinction into a **separation**, and the separation into an opposition*” (Bateson, 1991, p. xvii).

While some suggest Gregory Bateson first popularised a critique of **separatist** logic (Sterling, 2003, p. 119), many philosophers who contributed to the current concepts of transformative sustainability learning also fundamentally critique the separatist logic as it sits deep within in the dominant-cultural-paradigm. For example, Erich Jantsch (the original Club of Rome consultant) described this **divisionary, dualistic** logic as an inability to perceive what is actually whole (or two sides of complementarities). Instead, we perceive distinctions as separate identities (Pankow, 1976, p. 35 Jantsch, 1976a, p. 45). Erich Jantsch criticised this “original sin” (e.g. disjunctive, separatist, divisionary, binary, dualistic logic) as the basic form which now infuses linguistic, mathematical, physical and biological science (Jantsch, 1976a, p. 45). Once we recognise this ‘**severing**’ logic, Erich Jantsch suggests that we begin to perceive its uncanny coverage across all aspects of life, such as constructed oppositions between design and management, reflection and action, science and creativity, planning and intuition, intellect and eros, science and art, knowing and experience (Jantsch, 1972a, 1976a). Erich Jantsch attributes to this **disjunctive** myth the death of creativity, imagination and on-going self-organisation (Jantsch, 1980b).¹²⁷

Separatist logic is ‘systemically endemic’ in societies infused in the dominant-cultural-paradigm. This dualist divide can be found right through the universe of the “great Western Paradigm”: “*Subject/Object; Soul/Body; Mind/Matter; Quality/Quantity;*

¹²⁷ This disjunctive, binary logic enables the root metaphors of the dominant paradigm. For example, in critically appraising modernity, Stephen Sterling argues the root metaphor of ‘**mechanism**’ underlies the whole paradigmatic structure (2003, p. 26). In this inquiry, I perceive how a mechanism is an *ontological* metaphor enabled by a logic of **disjunction** (i.e. separate parts and separated from emotion and value). Conversely, Stephen Sterling argued that a re-visioning of the world and of ourselves requires an alternative ‘**living system**’ metaphor (2003, p. 36). The *logic* implicit in this *ontological* metaphor is one of **relation**, or **implication**, **inclusion**, **conjunction**, **intra-action**, **interdependence**.

Finality/Causality; Sentiment/Reason; Liberty/Determinism; Existence/Essence" (Morin, 2001, p. 23; *Visual 22*). This logic-of-perception emerges in dominant epistemologies, languages, thoughts, social institutions, policies, etc. (Nicolescu, 2002). It is evident in the way we think about and thus impact nature, governance, technology, the market, each other, and wellbeing. Separatist logic served to develop nation-states, e.g. who is national, who is foreigner (Gidley, 2016). Economists can make "pronouncements about a society's economy without reference to psychology, sociology, or any other discipline" (Montuori, 2013a). The vast swathes of technology currently tidal-waving around the globe are born of binary, separatist logic, with their own unique implications. As such, to deny separatist logic-of-perception is to "destroy the whole idea of [Western] knowledge or, in general, or human thought" (Churchman, 1968, p. 32).



Visual 22. The myth of separation at work through the dominant-cultural-paradigm¹²⁸

Living within societies born of the dominant-cultural-paradigm teaches us to 'attend' to life (i.e. perceive, conceive, act, create, be) through **separation** and **oppositional difference** (Hutchins, 2014). In other words, our contexts subconsciously teach us to perceive in terms of separatism, which leads to believing in separatism, which in turn leads to creating separatism. We fashion the world as we perceive it.

¹²⁸ This separatist logic-of-perception can be symbolically illustrated using the common Boolean "either/or" symbols, in which the middle of the overlapping circles is excluded from perception

Arguably, this separatist logic-of-perception at best confounds people with other cultural 'logics' (Meadows, 1999), and, at worst, oppresses, de-humanises and destroys (Freire, 1970). Critically speaking, this separatist logic has "fuelled slavery, imperialism, colonialism, neo-colonialism, environmental pillage, and shocking forms of patriarchy" (Obeng-Odoom, 2016), impacting our human relatives and our life-sustaining Earth systems (O'Sullivan, 2012).

Unfortunately, this logic of Separation masks the radically complex inter-connections within which we exist, and as such, we fragment the very relationships which resilient life depends on, and even more detrimental, we put them in an antagonistic relationship with one another. As Gregory Bateson prophesises, "it is doubtful whether a species having both an advanced technology and this strange way of looking at its world can endure" (1972, p. 344).

The preceding philosophers were particularly critical of how this separatist logic infuses learning. For example, Plato's separation between ideal and worldly realities contributes to the mind/body dualism, today manifesting as educational institutions still focused mainly on ideas, literacy and discussion (Lent, 2017, p. 143, 152). Similarly, Aristotle's laws of thought and the excluded middle continue to infuse separatist logic in 'good thinking' taught in schools today (Max-Neef, 2005; Nicolescu, 2010; Osberg, 2015; Lent, 2017, p. 159). René Descartes¹²⁹, Francis Bacon, and Isaac Newton's development of science, and their complete separation of the Subject from the Object also continue to infuse learning experiences (Capra, 1982; Morin, 2001, 2008; Nicolescu, 2002, 2010; Kauffman, 2016; Bateson, 1972).

This section presented preceding-philosophers' critiques of the logic-of-separation, both in terms of broader impacts and of learning. Next, I demonstrate how transformative learning educators also have similar critiques.

¹²⁹ Writing on the Cartesian split, Werner Heisenberg commented: "*Of course Descartes knew the undisputable necessity of the connection, but philosophy and natural science in the following period developed on the basis of the polarity between the "res cogitans" and the "res extensa," and natural science concentrated its interest on the "res extensa"*" (Heisenberg, 1958, p. 79 in Stamps, 1980). So, in future inquires, I would like to return to these primary sources, as a means of better interpreting today.

7.3 Articles discussing the separatist logic-of-perception

This section explores how educators of transformative sustainability learning critique the myth of separation and its diverse manifestation in our beliefs, systems and processes, in resonance with philosophers preceding transformative sustainability learning. I first reveal the few authors who explicitly engage at this level. Then I provide rich vignette syntheses that exemplify recognitions of separatist logic-of-perception manifesting in learning. I then compare the literature and the vignettes to identify the enabling conditions for both the authors and the vignette-educators to arrive at and engage with this profoundly important dynamic of reality.

Only a few educators labelling their work ‘transformative sustainability learning’ reflect in their writing on the deepest dynamic of reality (as defined in this inquiry). These educators perceive this core myth’s ubiquitous and deleterious manifestation in ways of making meaning and acting, and thus recognise it as a primary driver of the wicked problematiques we face today.

Perhaps more than other writers/educators, David Selby (2002) engages in an extensive philosophical retrospection at the manifestations of Separateness. In his paper, “The Signature of the Whole: Radical Interconnectedness and its Implications for Global and Environmental Education”, David Selby attributes the unconscious enactment of many dualities to the separatist logic-of-perception, *e.g. human-animal; mind-body; masculine-feminine; us-them; inner-outer; subject-object; reason-emotion; spirit-matter; culture-nature; teacher-learner; false dichotomies between the local and the global* (2002). The *cumulative effect* of overlaying these *dualisms* creates *the hegemonic and patriarchal* thinking, attitudes and social scaffolding of the “Western mindset”, which transformative educators must confront (Selby, 2002).

Stephen Sterling, a leader in transformative sustainability learning, agrees (Sterling, 2019). His four decades of work in this area, have led him to the view that the essence of the ‘modern Western worldview’ was (and still is) the perception of *separation* between people and nature, and other discontinuities. In other words, the Western mind shifted from some sense of identity with “the Other” in pre-1500 worldviews to a profound sense of, as well as intellectual belief in, *separateness*. This flaw is *a perception of and belief in separateness that in turn manifests separateness and fragmentation in relationships* (Sterling et al., 2018). As a result of this deeply embedded myth, fragmentation manifests in all aspects of our lives: how we manage and treat pain, how we measure the value of a country, how we define progress, how our outer selves engage our inner selves (Selby,

2002; Sterling et al., 2018).

One of the most explicitly critiqued aspects of the logic-of-separation was its manifestation within the dominant anthropological beliefs: the notion of humans as *separate from and superior to nature* (Chaves et al., 2017; Kopnina, 2014; O'Neil, 2018; Sterling, 2019). For example, M.J Barrett et al. (2016), when describing their Canadian graduate level course on "Multiple Ways of Knowing in Environmental Decision-Making" assert that one of the root causes of today's wicked problems is the perceived, and thus created, *separation between humans and the more-than-humans*. This divided stance creates not only a *hierarchy allowing for abuse and misuse, but also closes out a way of being that allows us to embrace the world in all its diverse sentience* (Barrett et al., 2016).

Arguably, the beliefs of Francis Bacon who conceived of nature as female and the role of science to "enslave" her and "torture" her secrets from her, still influences this manifestation of separateness in the dominant subconsciousness today (Selby, 2002).

Educators who reflected on this deep anthropological belief, were passionate about the need to transcend this manifestation of separateness (in terms of perceptions of humans as separate from nature). Sterling argues this notion of human/nature separation is an "erroneous perception of reality" and, to our potential demise, a "plank of illusion of Western society" (2019). Elizabeth Lange agrees that the mechanistic and reductive ontological belief that all entities in the natural world are *separate* is an assumption societies and individuals must transcend if we are to change course (2018b).

Of course, even if we are unaware of this logic of separation deeply embedded in our worldviews, it manifests in what we do, even if we think we are trying to create positive change. Environmental and sustainability education - movements seeking to transition societies towards more sustainable futures - are critiqued for their continued embodiment of separatist perceptions and beliefs. Despite their "ostensibly holistic outlook, there is a significant degree of '*residual dualism*' in the discourse of environmental and sustainability education, especially in the anthropocentric *people-environment, culture-nature, human-nature, subject-object* dualities (De Angelis, 2018; Sterling, 2003, p. 318). This separatist, dualistic operator also continues to influence environmental and sustainability *pedagogical design* (i.e. by separating *teacher from learner*, thus continuing the notion of transmissive, unidirectional learning), *educational aspects* (i.e. in continuing *value-fact, theory-practice, content-process, teacher-learner, sciences-humanities dichotomies*), and *educational content* (i.e. in notions of *developed/developing* or *Global North/Global South* programs) (Sterling, 2003, De Angelis, 2018).

Perhaps this inability to transcend the manifestation of separation explains in part why these earlier pedagogies have not been as broadly impactful as hoped (Sterling, 2003; De Angelis, 2018). If so, what does it look and feel like to develop a growing awareness of the separatist lens distorting a perception of a radically relational reality? The following excerpts unearth and convey how the premises for the vignettes included a critique ‘separatist tendencies’.

7.4 Vignette: Agential realist (food) pedagogy

Critiquing separatist myth as a premise of transformative sustainability learning

Joy O’Neil’s development and interpretation of transformative food-based pedagogy stems from a critique of the dominant *separatist* logic-of-perception, particularly within our relationship with nature, food and more generally in formal education (O’Neil, 2015).

Primarily, Joy critiques the dominant-cultural-paradigm’s *disconnection with nature* and its incarnation in the process of nourishment. Our perceived disconnection translates to actual *disconnection from our food*, e.g. as industrial eaters, our meals do not resemble anything living. When we sit down to a meal, we are confronted “by a platter beyond resemblance to any part of any living thing” (W. Berry, 2009 in O’Neil, 2018). By the time the food arrives on our plate, she argues, it is in a form so far removed from anything living, that “*both the eater and the eaten are exiled from biological reality... The result is a kind of solitude, unprecedented in human experience, in which the eater may think of eating as, first, purely a commercial transaction between eater and supplier, and second, as a purely appetitive transaction between eater and his/her food (p. 230). As one part of our disconnection from nature, we have become disconnected from our food*” (O’Neil, 2018). Food, much like the rivers her environmental science students studied, is perceived as an object to be consumed (i.e. a *utilitarian, mechanistic* view of food and water), rather than *an embodied process of learning from or with* food and water, and a *relational process where food and water also have agency* (O’Neil, 2018).

Joy critiques how the “dualist” perception appears within education systems. In her experience, formal and adult higher education tends to privilege “Cartesian, autonomous, rational-cognitive learning processes *divorced* from visceral bodily sensation and emotion”, thereby *voiding or avoiding* the senses (O’Neil, 2017b). She argues lectures or talk-based dialogues, where meaning is conceived of as subject matter knowledge, is an example of ‘voiding the senses’. Meaning that is *divorced* from real-world applications

(and thus divorced from complex emergences of feelings, emotions, content, history, and timespace) removes the conditions necessary for creating change in the person and the situation (2017a, b). During her own transformative learning journeys, Joy began to explore how to design learning experiences from and embedded with *nondualist* ways of perception¹³⁰, for example *perceiving or conceiving food, or the river, as agential* and as acting upon and providing lessons for humans.

Joy's philosophical explorations tend to gravitate around the manifestation of separatism within our personal experiences with food and the body. On a similar theme, but perhaps more macro level of reality, Richard's vignette below illustrates the manifestation of separatism in our dominant agricultural and social systems.

7.5 Vignette: Hawkesbury Bachelor of Systems Agriculture

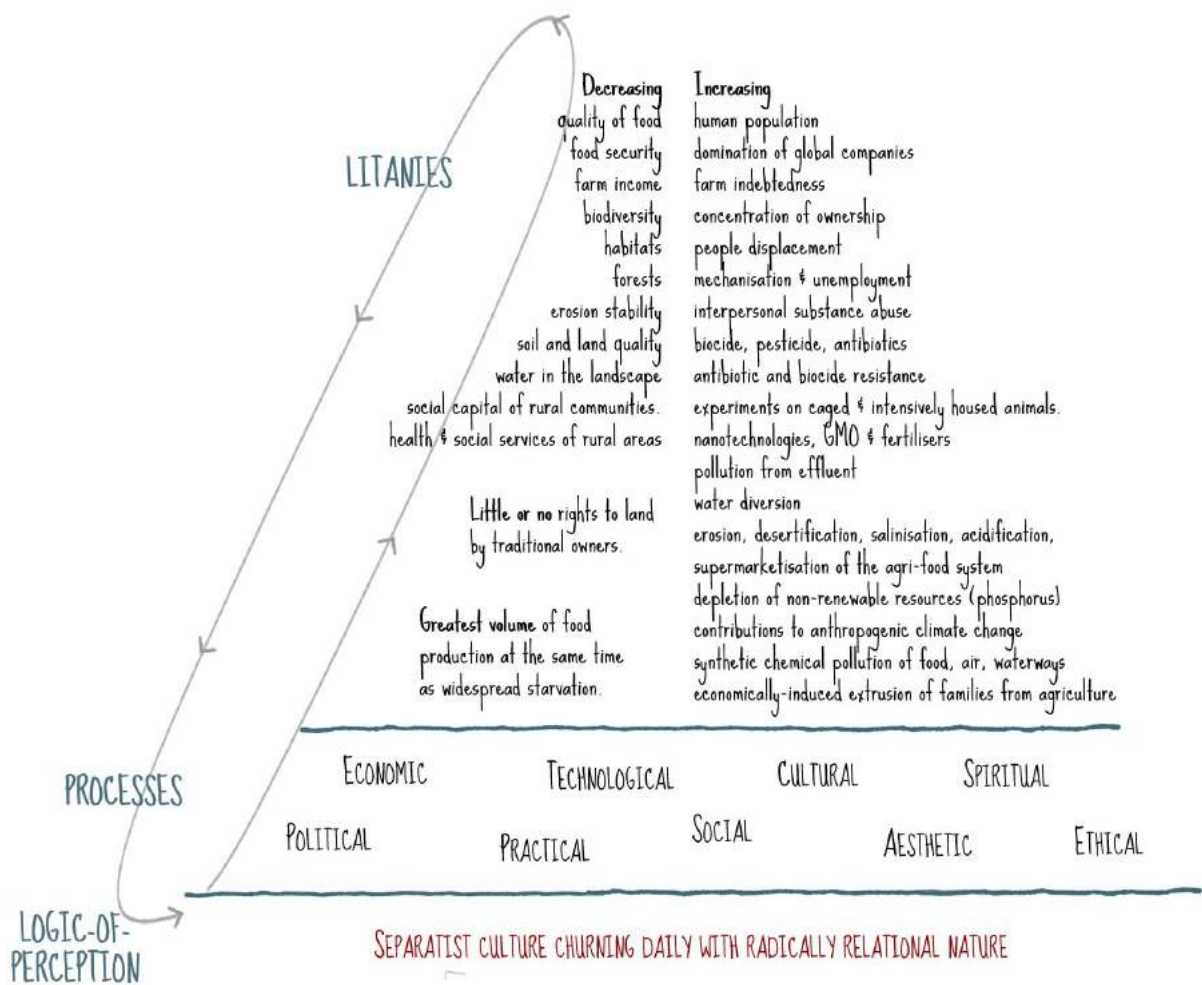
Critiquing separatist myth as a premise of transformative sustainability learning

The Hawkesbury program began with an insight into the harm of a separatist perception. As part of developing their program, the Hawkesbury faculty delved deeply into the 'litanies' of unwanted and undesirable events (2005b) that were (are) plaguing agriculture and rural areas (*Visual 23*).¹³¹ What the Hawkesbury faculty realised is that these litanies are all symptoms emerging from imbroglios of the dominant-cultural-paradigm's 'socio-cultural and bio-physical' contexts.

Furthermore, they realised that a separatist perception exacerbates these symptoms (litanies) in two major ways. Firstly, these litanies are all too often viewed and dealt with *separately*. Secondly, these symptoms are also often categorised in separate contexts (e.g. a political, or technical issues), which means even when the symptoms are dealt with at a broader level, it is still in a separatist way (*Visual 23*).

¹³⁰ Nondual herein refers to a more complex state of consciousness without dichotomies or separations (e.g. 2.9: *To what does complexifying our consciousness refer?*)

¹³¹ In fact, Richard believes it is essential to ground the critique of the dominant paradigm in a specific context. To do so otherwise is to perpetuate separatist tendencies.



Visual 23. Richard's "litany" of the dominant-cultural-paradigm resulting from separatist logic¹³²

Richard and his colleagues came to realise is that these litanies of events are **all connected** and are all indicators and influences of the daily churning of nature with the **separatist** dominant-cultural-paradigm (2004a). As Richard and his colleagues viewed all of these complex symptoms as **inseparable**, they believed that addressing any single 'symptom' through any single socio-cultural-natural context is only a band-aid, and likely to have other unintended consequences (2005a, b).

Richard's critique of the dominant-cultural-paradigm lends itself to an interpretation of the **ubiquity (and hence invisibility) of separateness** as a primary and preconscious logic. *Visual 24* traces the tendrils of separatism according to Richard's perspective. This logic-of-perception infuses meaning-systems which then manifest within our visible 'systems out there'. In the visual, the perception and action of separation is highlighted in

¹³² Compiled from Bawden 2003, 2005a, 2005b, 2010a, 2011.

red within each place of manifestation. What this interpretation exposes and illustrates is Richard's awareness of the saturation of our meaning-systems and thus societal systems with the myth of separateness.



Visual 24. Richard's critique of separatist logic infusing the dynamics of reality

These *destructive outcomes of the myth of separation* are part of the reason why Richard describes the dominant scientific-technological paradigm as ‘hopelessly inadequate’ (2005b). The primary logic of separation prevents people locked within its fog from perceiving the complexity, inter-relatedness and emergence of the world around us.

7.6 Vignette: Leadership for Sustainability Education master’s

Critiquing separatist myth as a premise of transformative sustainability learning

Heather’s program also has a very meaningful engagement with food, in this instance with community gardens (similar to Joy and Richard’s themes). However, what is unique about Heather’s work, in relation to the other vignettes, is her exploration of how this separatist and mechanistic way of being has patterned into and influenced our perception, conception and enactment of leadership. In a separatist worldview and paradigm, leadership is viewed and enacted as *individuals separate from* and superior to Others. This perception makes leadership an exclusive, *binary* state in which you either have the specific skill set, or you do not, and thus fewer people see themselves as leaders (Burns, 2016a; Burns et al., 2015; Burns & Wolf, 2014). This stance also places leaders under enormous pressure to *do things* and *fix things*, and to lead from the front. She views this *radical individualism*, or a perception of *individuals as entirely separate, distinct and autonomous beings*, as the pathology of our time (Burns & Briley, 2015).

This is not to say her recognition of the myth of separation is limited just to the concept of leadership. For example, she perceives this myth as manifesting within many meaning-systems. Ontologically, reality is composed of *separate things*, or primarily *separate and mechanistic systems* (Burns, 2015, 2016b; Burns & Briley, 2015; Burns et al., 2016). Epistemologically, the dominant-cultural-paradigm tends to believe a correct answer to a problem can be arrived at with scientific objectivity (related to a right and wrong *opposition*), thus prioritises rationality, and individual intellectual rigour (related to *an opposition* between rationality and emotion; and prioritises individual learners *over* collective learners) (Burns, 2016a, 2016b; Burns et al., 2016). Anthropologically, the dominant-cultural-paradigm perceives the future as predictable and controllable by humans (Burns, 2016a, 2016b; Burns et al., 2016) (related to an opposition of *humans as separate and superior* to all other forces).

7.7 Sources of perspectives presented above

The primary insight revealed from the above analysis and synthesis of educators' perspectives is that a critique of the myth of separateness, as relevant to one's theme or area of interest, is a premise of transformative sustainability learning. Joy perceived this myth within our engagement with food and areas of study as a scientist; Heather perceived this myth in relation to leadership; Richard perceived this within rural and agricultural development. Other authors describe this myth manifesting in our learning systems (De Angelis, 2018; Selby, 2002; Sterling et al., 2018). *Recognising our logics-of-perception in actions helps us transcend our deepest beliefs.*

But I noticed that not every educator who uses the signifier 'transformative sustainability learning' has a recognition of the implications of this logic-of-perception. So, how did other educators begin to sensitise themselves to a separatist logic-of-perception? To shed light onto this question, I identified and now proffer in this section what enabled educators to perceive, describe and complexify the myth of separation, including the sources or experiences that led some educators to an awareness of, or critical stance on, the separatist logic of the dominant-cultural-paradigm. As not all recent articles on transformative sustainability learning engaged with a critique of the dominant-cultural-paradigm, these sources I synthesise below may benefit those in the field who are seeking to develop their awareness of the logic-of-separation.

Insight: Historical review builds an awareness of the ubiquity and profound impact of the myth of separation

In the selected transformative sustainability learning literature, several authors investigated the origins of dualistic thought. Elizabeth Lange mentioned the Ancient Greek debate - about the essential nature of things - as a contributing factor to the primacy of separatism: "Dualist thought first emerged with the Ancient Greeks in the debate about the essential nature of things: those who thought matter *is alive seeing no distinction between animate and inanimate and seeing the world as perpetual change and eternal becoming*, and those who thought *being was invariable and constant, where change is an illusion*" (2018b). Several educators also suggested that dualistic being originated with the Scientific Revolution through Descartes (Lange, 2018b; O'Neil, 2018; Selby, 2002; Sterling et al., 2018, De Angelis, 2018), Francis Bacon (Selby 2004; Lange, 2018b), and Sir Isaac Newton (Selby 2004; Lange, 2018b).

David Selby (2002) specifically highlights René Descartes' division of the world into *res extensa* (mechanical extended substances or matter occupying space) and *res cogitans* (things of the mind neither limited by nor occupying space)." René Descartes' powerful binary is then perceived and enacted within divisions between mind/body, emotion/cognition, self/other, subject/object, nature/culture, life/matter (O'Neil, 2017b, O'Neil 2018). This separation of knowing is in part the legacy of René Descartes' search for foundational beliefs; he distrusted bodily senses and experiences (Lange, 2018b).

Insight: Engaging with Gregory Bateson to build awareness of the saturation and impact of the myth of separation

Educators from Schumacher College explicitly invoke systemicist Gregory Bateson's philosophy as a source for building awareness of the myth of separation, or the perception and belief that humans are separate from the rest of creation (Sterling et al., 2018, Sterling 2019). Specifically, they draw upon Gregory Bateson's theorising of what he termed the deep and partly unconscious 'epistemological error' of our consciousness, particularly in terms of disrupting relationships and individualising learning: "*When you separate mind from the structure in which it is immanent, such as human relationship, the human society, or the ecosystem, you thereby embark, I believe, on fundamental error, which in the end will surely hurt you*" (Bateson, 1972, p. 461 in Sterling, 2019).

Stephen Sterling and colleagues invoke Gregory Bateson's philosophical musings to argue that the perception of discontinuities or separateness – ***poles such as subject/object, mind/body, people/nature*** - is the essence of the modern worldview (2018; Sterling, 2003, p. 33). And Stephen Sterling articulates why Gregory Bateson's point of view is so poignantly relevant to understanding our predicament today (2019): "*Bateson's prescient insight – not least in the light of climate change – stands as a radical challenge to the individualism, anthropocentrism, and dualism of most Western philosophic traditions. Seen this way, there is no **separate environment or nature**. Rather, in reality **we and the creatures of the nonhuman world are all endogenous actors embedded within the Earth system whereby the ecosphere and burgeoning technosphere are in constant interplay, and where all actions have consequences.***"

Invoking postmodernism to critique dualism and separatism

Other educator authors were influenced by and drew on *postmodernism* - in particular the work of Karen Barad, Giles Deleuze, Felix Guattari, and Bruno Latour - to develop a critique of disconnection, separatism, dualism. Joy O'Neil and Elizabeth Lange highlight

Karen Barad as a seminal figure in moving beyond the dualist impasses of “*realism versus social constructivism, agency versus structure, subject versus object, idealism versus materialism, individual versus social, nature versus culture, and human versus nonhuman*” (Vint, 2008 in Lange, 2018b). In addition, Joy O’Neil references Bruno Latour, as well as Giles Deleuze and Felix Guattari’s critique of the Cartesian separation between material as only a passive Object and humans as the superior, agential Subject (2018). Martha Chaves too draws on Bruno Latour. Martha Chaves and her colleagues (2017), in describing their informal and experiential sustainability gatherings in Colombia, invoke Bruno Latour’s “We Have Never Been Modern” (1993) view of the reality as much more heavily entwined than the dominant view perceives or believes.

Noticing the pattern across many non-Western philosophies that critique separatism

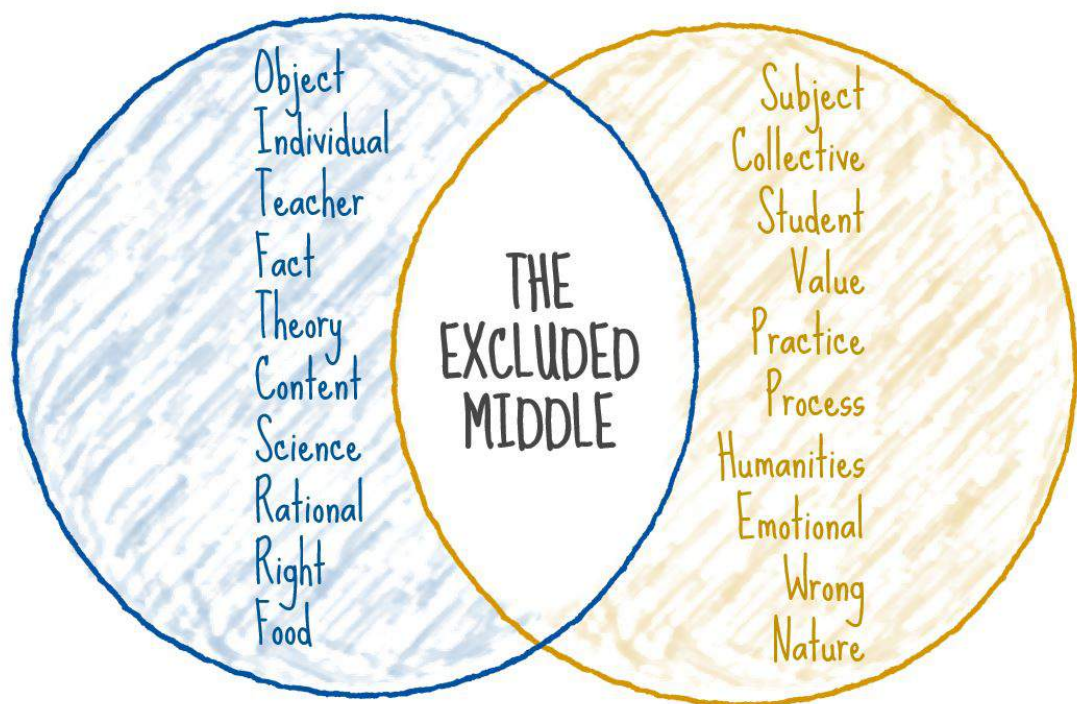
In addition to a historical review of the Western paradigm, and engaging with Gregory Bateson and postmodernism, many other philosophies also enabled educators to perceive and conceive of the myth of separation. Elizabeth Lange (2018), M.J. Barrett et al. (2016), and David Selby (2002), noticed this critique of separatism and dualism arising across a wide spectrum of theories and philosophies sitting beyond the dominant-cultural-paradigm: quantum physics (i.e. David Bohm), systems theory (i.e. Fritjof Capra), eastern mysticism, ecofeminism, and North American Indigenous philosophy. Hence *these are all sources of expanding one’s logic-of-perception* and these patterns of more relational logics-of-perception suggest that this more complex logic is more relevant for life on Earth.

7.8 Summary

In this chapter, I explored the myth of separation through its representations in philosophers’ critiques, educators’ literature and vignettes. This chapter demonstrates *that if the underlying myth (and logic) of the dominant-cultural-paradigm is Separateness, Separateness is what people and societies create.*¹³³ This chapter also demonstrates a premise of transformative sustainability learning is educator awareness of and critical

¹³³ The Australian bush fires this summer, born from the belief of economies rooted in fossil fuels as separate from nature, and human social living as separate from bush regeneration, meant many areas had to spend their summer inside to avoid hazardous air quality. We can’t swim or drink from freshwater lakes because we have polluted them so much. We are creating an actual need for separation because of what our perceptions of separation have created.

reflexivity on the implications of this separatist logic-of-perception. The above educators engaged in a critical reflection on its manifestation in how we perceive, conceive, and enact: leadership, agriculture, learning, food sourcing, etc. Richard Bawden's work demonstrated his awareness of the prevalence of separatist logic of perception within our onto-epi-axi-anthro-self meaning-systems, and the influence of this logic on many processes within university learning (*Visual 24*). At a societal and global perspective, author-educators were aware of the 'abuse' enabled under a separatist logic, both of nature, and through enabling hegemonic and patriarchal structures. Many enactments of dualism in learning were critiqued (*Visual 25*).



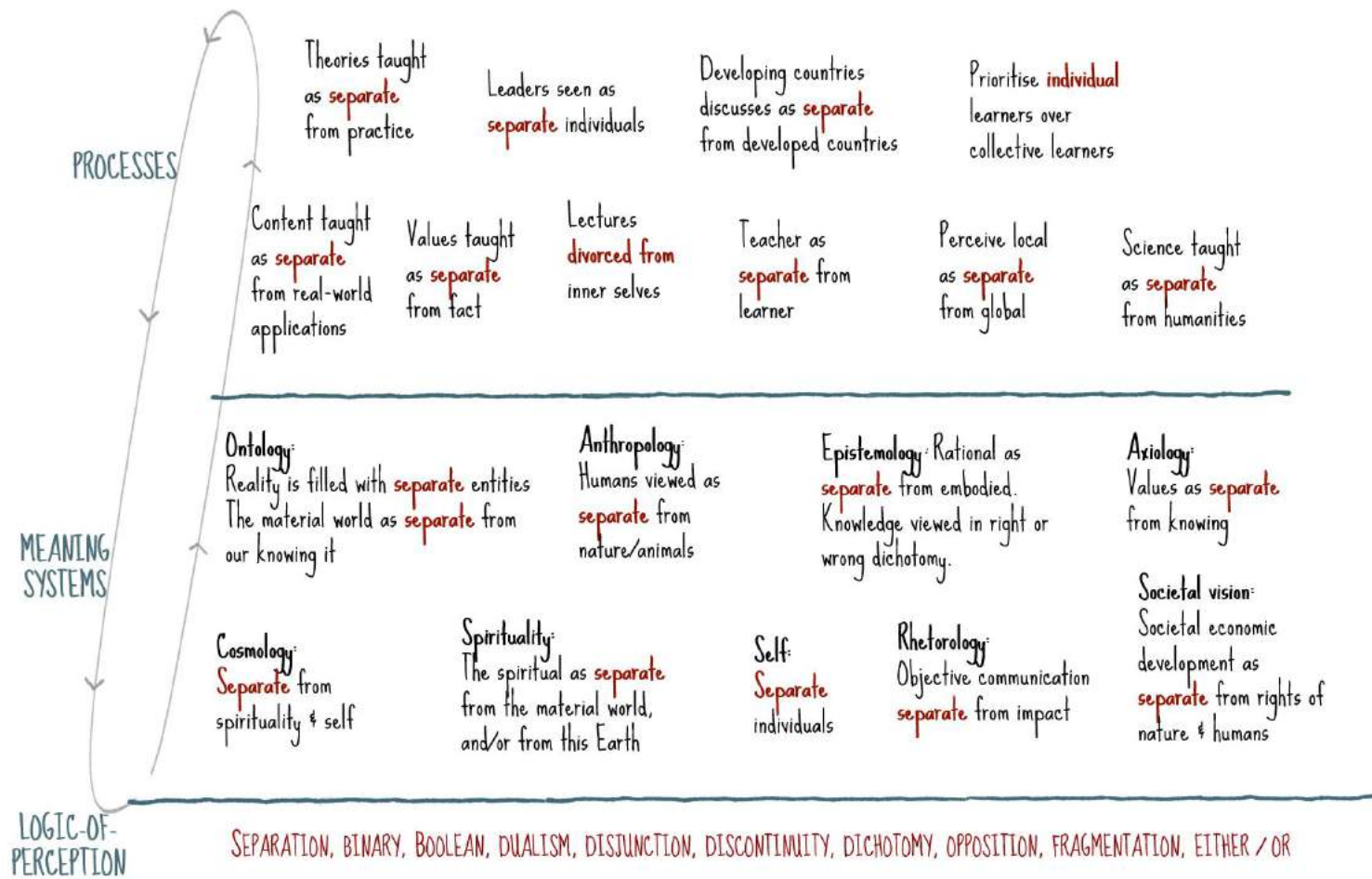
Visual 25. Separatist manifestations critiqued in sustainability learning

If our logic-of-perception lies furthest from our consciousness (at least in the dominant-cultural-paradigm), it might be conceived of as being the hardest to notice. So, I sought patterns in the vignette-educators and authors work that might provide insights for paths that others could follow in creating transformations for themselves. Authors tended to engage in historical reviews of the origins of the dominant-cultural-paradigm (e.g. its evolution through religion and science) and discourses that sit in contrast to the dominant-cultural-paradigm (e.g. postmodernism), as a means of unearthing and critiquing this underlying separatist myth.

Critique of the dominant paradigm and its logic-of-perception as premises of transformative sustainability learning

I would like to bring together the discussion of preceding chapter 6 (*Premise: meaning-systems*) and this chapter 7 (*Premise: myth of separation*).

The separatist logic-of-perception is ubiquitous. It can be perceived as patterning within all of the meaning-systems analysed in this inquiry. *Visual 26* summarises the critiques of separation presented within this chapter, and the infusion of **fragmenting** tendencies in the meaning-systems of the dominant-cultural-paradigm. Every meaning-system creates beliefs based on a perception of separateness: *ontologically*, reality is composed of independent objects; *epistemologically*, rational is separate from intuitional/embodied; *anthropologically*, humans are separate to nature; in a *sociology*, we employ dualistic perception such as 'the haves' and 'the have nots' or see difference between refugees and the citizens.



Visual 26. Separatist logics infusing meaning-systems which inform educational processes

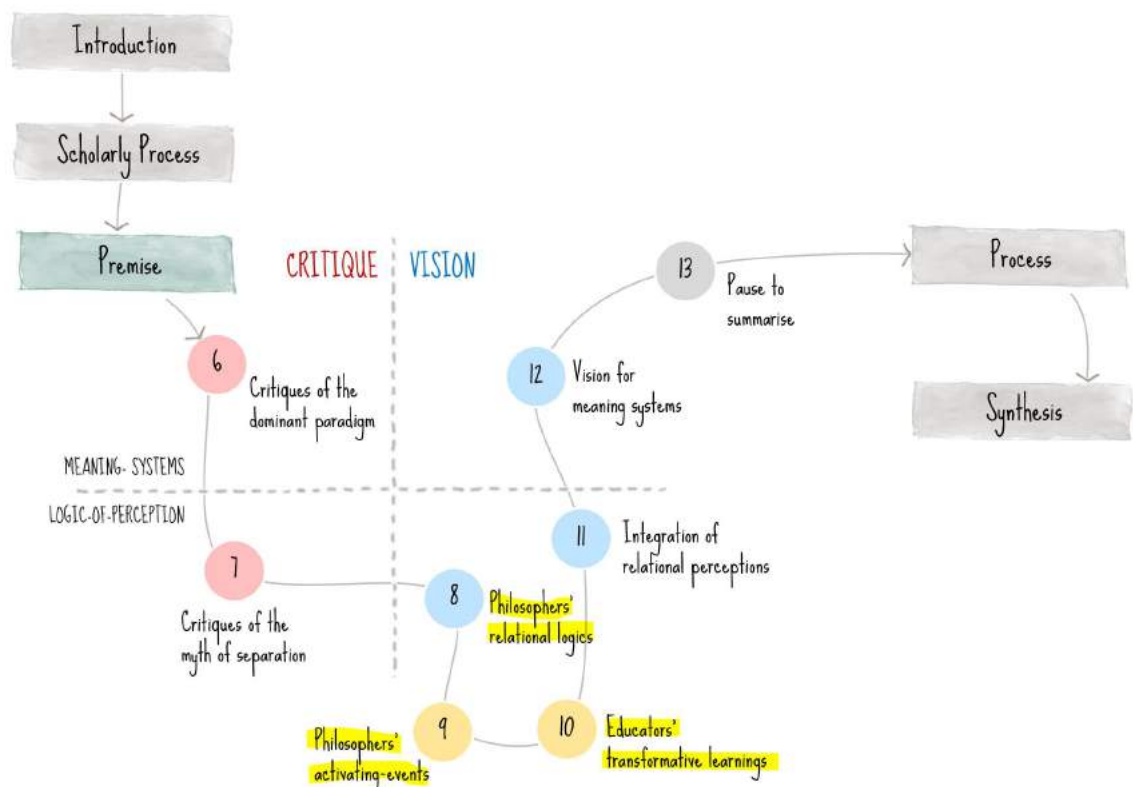
In sum, *Ch. 6, Premise: meaning-systems* and 2 (*Critiquing separatist myth*) demonstrated resonance between critiques of a) philosophers preceding 'transformative sustainability learning' and b) more recent educators of transformative sustainability learning. The intention of this interweaving is to demonstrate the resonance between *preceding-philosophers* and *educators* as a means of encouraging more practitioners of transformative sustainability learning to engage with an expanded awareness of the power and influence of our subconscious worldviews and perceptions in manifesting the world all around us, which in turn mirrors our beliefs. In other words, if we only pick up the terminology infused with different paradigmatic beliefs without a holistic, felt understanding of their deep onto-epi-axi-etc. significance, we might be still operating within the myth of separation and other dominant Newtonian-Cartesian perceptions (Salner, 1986).

So ends the critique portion of the *Premise*. As ubiquitous as this logic-of-perception is, philosophers preceding transformative sustainable learning, and vignette-educators, demonstrate how they *have included and transcended* the dominant-cultural-paradigm. I now explore and illustrate their learnings and efforts of *to create a more complex, nuanced, relational logic-of-perceptions to infuse the beliefs and actions of the dominant-cultural-paradigm*.

Transforming our premises

After traversing and critiquing two largely unconscious dynamics of the dominant-cultural-paradigm (*Premise chapters 6 and 7*), I next demonstrate over the next three chapters how preceding-philosophers and vignette-educators expanded, shifted and transformed their worldviews to reflect more relational paradigms.

Firstly, I distil how the preceding-philosophers integrated more complex perceptions into their philosophies and actions (*Ch. 8, Premise: [philosophers' logic](#)*). Next, I reveal and compare the philosophers' moments that lead to these more complex perceptions (*Ch. 9, Premise: [philosophers' activating-events](#)*). Lastly, similar to the philosophers, I demonstrate the importance of transformative moments in expanding, restoring, and transforming educators' worldviews and perceptions (*Ch. 10, Premise: [educators' transformative learning](#)*). Each of these chapters demonstrates how our premises could potentially be shifted, expanded, transformed (highlighted in yellow in *Visual 27*).



Visual 27. Pilgrimage of premise: through examples of transforming our premises

Chapter 8:

Philosophers' beyond-separatist perceptions

"Today, a significant minority have abandoned the Newtonian-Cartesian belief system in favour of some elaboration of a systems theory worldview. But it may be that they, and certainly the majority of people, still see the world in Newtonian-Cartesian terms. It is a big shift for concepts to move from being simply beliefs held in the mind to beliefs that inform and transform the very act of perception" (Heron, 1992, p. 251).

8.1 Orienting this chapter within the inquiry

The inability to see the dominant-cultural-paradigm contributes to the wicked unsustainability faced by global society. Crucial for the preceding-philosophers I read and interpreted was a robust critique of the myth of separation and the dominant meaning-systems (Ch. 2, *Spheres of inquiry*; Ch. 6, *Premise: meaning-systems*; Ch. 7, *Premise: myth of separation*).

Each philosopher sought to interweave more complex, nuanced, relational paradigmatic logic within their perceptions, worldviews, mean-making and thus actions. These philosophers are examples of minoritarian¹³⁴ views seeking to "inform and transform the

¹³⁴ A postmodern concept, here referring to those trying to escape a dominant-cultural-paradigms'

very act of perception”, as John Heron in the quote above, suggests is possible.

8.2 Content and purpose of chapter

This chapter presents and compares the manifestation of relational logics-of-perception of the preceding-philosophers. Part of what alerted me to the significance of their proposed logics-of-perception is that each one is heralded, within their own scholarly circles, as being the person who most significantly highlighted the need to move beyond dualist logics. Yet, this patterning of relational perceptions across each philosopher and their ‘discipline’ is not recognised broadly.¹³⁵

Therefore, a key purpose of this chapter is to present a sufficient illustration of each of the philosopher’s relational logics-of-perception in action in order to surface and advance their unifying message. Beginning with John Dewey, and then moving to Paulo Freire, Basarab Nicolescu, Edgar Morin, and Erich Jantsch, I expose their beyond-Boolean logic. I articulate the diverse contexts within which their relational perceptions manifest. I demonstrate this variety to illustrate the innumerable ways modern culture can become aware of how separatism dominates our ways of being and perceptions. Interspersed in the writing below, I also supplement the different logics-of-perception using images, as this level of reality requires more than rational cognition (Inayatullah, 2005, p. 7). I must reiterate, though, I am not a ‘scholar’ of these philosophers, thus much more work could be done to nuance these interpretations and comparison.

That caveat aside, my engagement with each of these philosophers is sufficient to contribute to the over-arching argument that complexifying the logic-of-perception is an urgent and necessary task. To continuing building this argument, this chapter provides the foundation for *Ch. 11, Premise: relational perceptions*. In this chapter, I integrate the logics-of-perception of preceding-philosophers and vignette-educators to create a symbolic image of relational logics-of-perception. In other words, **the discussion at the end of this chapter is brief, as its integration** happens in *Ch. 11, Premise: relational perceptions*.

This chapter also supports another over-arching argument I am building, which is: within the premises (philosophical level), the differences in transformative sustainability

assemblage of separatist perceptions and beliefs and destructive enactments.

¹³⁵ Neither in their disciplinary literature nor in integrative literature, such as transformative sustainability learning.

learning pedagogies blur because their pioneering philosophers share similar critiques of the dominant-cultural-paradigm. Thus, the pedagogies that emerge, as influenced by the contributions of these five philosophers, exhibit what I describe as ‘unity in critique, distinction in proposed action’. And engaging with their diversity only strengthens the understanding and achievement of the unifying intent, be it John Dewey’s wholism, Paulo Freire’s dialectics, Basarab Nicolescu’s included middle, Edgar Morin’s complexity, or Erich Jantsch’s unity. I now explain these perceptions and their manifestation in the *pedagogical* work of each philosopher in more detail.

8.3 John Dewey’s process philosophy

The pedagogy of experiential education is critical for transformative sustainability learning (Burns, 2009; Bawden, 2016; *Ch. 14, Process*). The main forebear of Western theories of experiential learning is John Dewey. John Dewey’s philosophy of experiential education and the meaning-systems of his worldview are infused with a beyond-dualist logic, the profoundness of which is not always carried forward in its enactments. This separation of philosophical intent from pedagogical enaction demands a deeper investigation into his relational logic.

Whether inquiring into the nature of our biology, our actions, our social intelligence, our pedagogies, our truths and knowledge, morality, psychology, philosophy, democratic institutions, and our morals, John Dewey held a firm belief that reality and all ‘processes’ are integrated and in a state of flux. *Dynamic interaction* and *process* is a key ontological characteristic, rather than ***static materials separate from one another*** (Seibt, 2016). Due to his prolific writing from within this worldview, he is recognised as one of the earlier contributors to the incubation of systems thinking theories (Ison, 2017) and process philosophy (Seibt, 2016).

John Dewey’s interpretation of reality as a relational process was one of coordination and adaptation (Seibt, 2016). All living processes, he believed, strive to maintain a dynamic equilibrium, while cycling through processes of disequilibrium and equilibrium (Garrison et al., 2012, pp. 42-43). This *dynamic equilibrium* is not an adherence to stasis, but is one which maintains that evolution requires disruption and renewal. In John Dewey’s ontology of relationships, this disruption can be encouraged or facilitated by ***opposites, which work simultaneously together to create something qualitatively better, or to achieve a higher purpose***. I interpret his approach as an appreciative perspective, which finds the value, or inherent good, in opposing factors – and perceives the two seemingly opposing

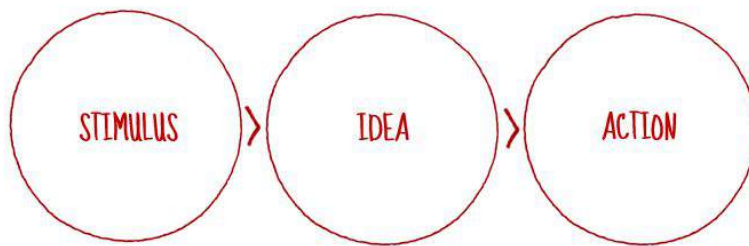
forces as sub-functions or sub-contexts of an emergent higher purpose. In other words, John Dewey did not dualistically define opposites in a way such that they are seen as a rejection of the other, but rather to move beyond separatist logic, he started with an appreciative, integrative question of 'how do dualisms work together to form another emergent process'?

Example of beyond-separatism as it manifests in John Dewey's perceptions

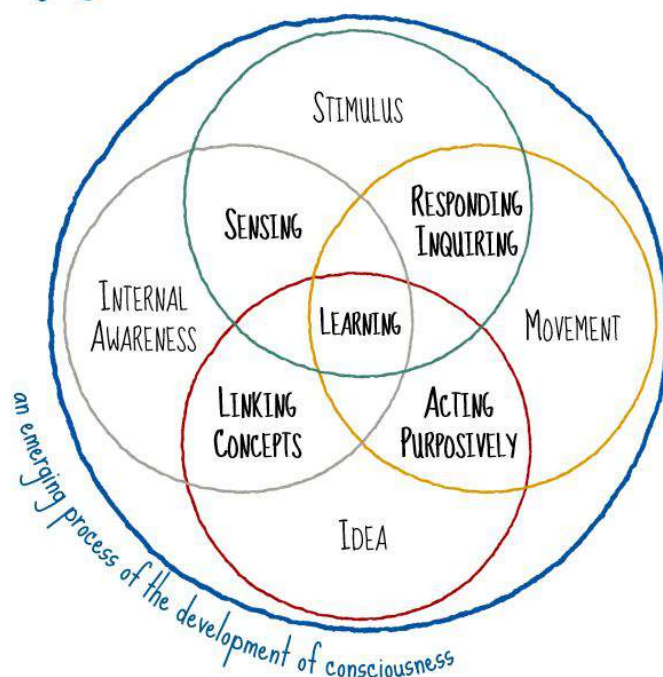
Before the turn of the 20th-century, John Dewey developed a momentous departure from engrained, foundational perceptions of basic Western psychology. From his relational worldview, John Dewey was able to argue that the traditional psychological conceptualisation of human behaviour, that of the "*reflex arc*", defined as ***stimulus>idea>response***, is a ***disjointed series of fragments*** devoid of context (*Visual 28*).

Instead of the reductionist 'arc' interpretation, John Dewey put forth the radical idea of a ***coordinating circuit***. In this conception, *sensing* and *acting* are recognised as complex, interacting sub-functions within a continual, mutually constitutive process of physiological and psychological coordination, overseen by the "body" (*Visual 28*). In other words, the *reflex arc* interpretation of human perception and action manifests from an unconscious ***separatist*** logic. John Dewey's interpretation manifests from an ***integrated, relational*** logic-of-perception (*Visual 28*).

Disjointed Reflex Arc



Unifying Reflex Circuit



Visual 28: Traditional reflex arc compared with John Dewey's reflex circuit

We can compare these two interpretations of human perception using a simple example of a baby reaching for a candle. This thought experiment was originally explored by William James (a collaborator with John Dewey) in his first volume on the Principles of Psychology (James, 1890) and reinterpreted by John (Dewey, 1896). In the *separatist* view of behaviour, a candle burns (stimulus) and a baby reaches for it (response). As an alternative, John Dewey proposed that the reflex process starts *simultaneously* with the sense of *seeing* (awareness of) *and* *thinking* (questioning/curiosity). That is, the stimulus alone does not determine a response, but rather the *context* and *relationality* of the stimulus and the body do, including its previous habits, worldview, and types of

perceptions, etc.¹³⁶ In a similarly integrative approach, the act of grabbing for the candle is the *coordination of thinking and movement* (*Visual 28*).

When John Dewey offered his relational interpretation in *Psychological Review* (1896), the separatist notion of stimulus-response was popular in Western societies. To explain his new interpretation, John Dewey powerfully argues how the separatist conception is merely a manifestation of residual, unconscious beliefs. John Dewey maintains that rather than being a case of science, this pre-existing notion of a 'reflex arc' is a vestige of the **dualism** introduced by Plato.¹³⁷ Importantly, John Dewey encourages the reader to also engage in third-order reflexivity; that is to not view the world through the unconsciously embedded separatist lens, but instead to stand back from their worldview and critique the underlying logic of separatism. In the following quote, John Dewey demonstrates how this error of perception infuses the dominant interpretation of behaviour:

*The older **dualism** between sensation and idea is repeated in the current **dualism** of peripheral and central structures and functions; the older **dualism** of body and soul finds a distinct echo in the current **dualism** of stimulus and response. Instead of interpreting the character of sensation, idea and action from their place and function in the **sensory-motor circuit**, we still incline to interpret the latter from our preconceived and preformulated ideas of **rigid distinctions** between sensations, thoughts and acts. The sensory stimulus is one thing, the central activity, standing for the idea, and the motor discharge, standing for the act proper, is a third. As a result, the reflex arc is not a comprehensive, or organic unity, but a patchwork of **disjointed** parts, a mechanical conjunction of **unallied** processes. What is needed is that the principle underlying the idea of the reflex arc as the fundamental **psychical unity** shall react into and determine the values of its constitutive factors. More specifically, what is wanted is that sensory stimulus, central connections and motor responses shall be viewed, not as **separate** and **complete** entities in themselves, but as divisions of labor, function factors, within **the single concrete whole**...*

*It will be urged, there is a **distinction** between stimulus and response,*

¹³⁶ For example, a loud noise may create a different bodily coordination depending on whether a person is quietly studying or in a loud café.

¹³⁷ Such as **sensation vs idea** and **body vs soul** (as opposed to inquiring into their relationality).

*between sensation and motion...but we ought now to be in a condition to ask of what nature is the distinction, instead of taking it for granted as a distinction somehow lying in the existence of the facts themselves. We ought to be able to see that the ordinary conception of the reflex arc theory, instead of being a case of plain science, is a **survival of the metaphysical dualism**, first formulated by Plato, according to which the **sensation is an ambiguous dweller on the border land of soul and body**, the idea (or central process) is purely psychical, and the act (or movement) purely physical. Thus the reflex arc formulation is neither physical (or physiological) nor psychological; it is **a mixed materialistic-spiritualistic assumption**¹³⁸" (Dewey, 1896).*

Whereas the 'arc' psychological response was based in **reductive, fragmented** perception, John Dewey presents a much more complex view of reality, which recognises the importance of the context of the stimulus and the context of the person, and their mutual creation. This interpretation foregrounds the **inter-relationships and importance of context**.

John Dewey's observation is simple in the sense that it is only a matter of changing the primary logic-of-perception, from a separatist myth to one which perceives relationality. Yet this change is profound: it completely re-interprets reality, and was used to conceptualise a more complex, integrated interpretation to learning and pedagogy. Arguably, this is one of the most important papers published in the history of American psychology (Garrison, Neubert, & Reich, 2012, pp. 48-51).

Important in the context of this inquiry, each of the four vignettes integrated these philosophical perceptions of John Dewey's in their enaction of experiential learning (*Ch. 14, Process*).

8.4 Paulo Freire's dialectics

In addition to 'experiential learning', 'critical pedagogy' is foundational to transformative sustainability learning (Burns, 2009). Paulo Freire is the most celebrated exponent of this pedagogy.

¹³⁸ Meaning it is a deeply embedded, unconscious worldview belief (in the languaging of this inquiry).

My main purpose in this very brief introduction to Paulo Freire's ideas is to demonstrate that, similar to John Dewey, Freire's philosophy is enabled by a beyond-separatist worldview logic. An enduring logic-of-perception throughout Freire's evolving philosophical development is the notion of productive, or beneficial *dialectical relationships, or relationships between seemingly opposite ideas* (Darder, 2015; Morrow, 2013). Simply stated, a dialectical approach commonly seeks out, values and explores the relationships between contradictions, tensions or opposites, as they appear in ourselves and our world, as it is from these tensions that evolution is enabled (Buchanan, 2010). By grasping the unity of opposites, for example, seeing 'the positive' in 'the negative', we are able to overcome an illusion of separateness.

Paulo Freire developed his critique and dialectical methodology in part through engaging with the ideas of Karl Marx. A shared assumption between them is the notion that *contradiction, truth-and-non-truth, are the basic principles* explaining both our history of human socio-political development and social reality (as opposed to *absolute, unquestionable Aristotelian and Cartesian right-or-wrong certainty*) (Gadotti, 1996). According to Antonia Darder, Professor Emerita and student of Freire, she believes *dualisms were "debilitating" and binaries were "untenable"* (Darder, 2015, p. 102). Thus, Paulo Freire used the logic of 'the necessary existence of opposites for progression' to interpret many phenomena, a few of which I briefly illustrate.

Paulo Freire used this idea of contradiction to explain the phenomena of one's worldview. He believed that prior to the development of critical consciousness, our personal worldviews are *anti-dialectical* (Darder, 2015, p. 20), meaning, the most deeply held, unconscious beliefs and assumptions engrained in our psyche exist beyond the realm of critical thought, existing in a *static* and therefore *dangerous realm of absolute truth*. These unexamined assumptions, or our own unconscious worldviews, manifest in dualistic beliefs, attitudes and practices about, for example, the difference between man and women, or God and spirituality (Darder, 2015, p. 20). By uncovering these assumptions and *embracing the tensions* brought forward by contradictions in other viewpoints, Paulo Freire argues we engage in dialectical processes, which have the potential to help us develop more integrative habits of mind, and collectively move towards *liberation, justice and equity*.

Paulo Freire's philosophy was one of liberation (Irwin, 2012; Morrow, 2013). While his theories evolved over his lifetime from "liberation as revolution" towards "liberation as radical democracy" (Morrow, 2013), the central purpose was always to create societies in

which it would be easier to love and reach our full expression of humanity (Schugurensky, 2001). Thus, a fundamental purpose of his philosophy and actions were to enable liberation, and freedom from oppression, *for all* 'classes' of people (Freire, 1970, 1974; Horton & Freire, 1990).

Within Freire's philosophical practice of '*education as liberation*', the notion of 'beneficial contradictions' (or dialectics) is a foundational logic of relation. One of his primary learning characteristics in moving towards *liberation* is a "flexible, critical spirit" to *perceive and simultaneously hold "marked contradictions"* (Freire 1974, p. 6), for example, by becoming aware of how the ways of yesterday (i.e. of being, understanding, knowing, behaving, and valuing) might be in tension with the ways of today (Freire, 1974, p. 6). He considered finding and exploring these contradictions, collectively through dialogue, as necessary for developing *critical consciousness* about how the world constantly reproduces inequality, racism, sexism, cultural genocide, etc. (Darder, 2015).

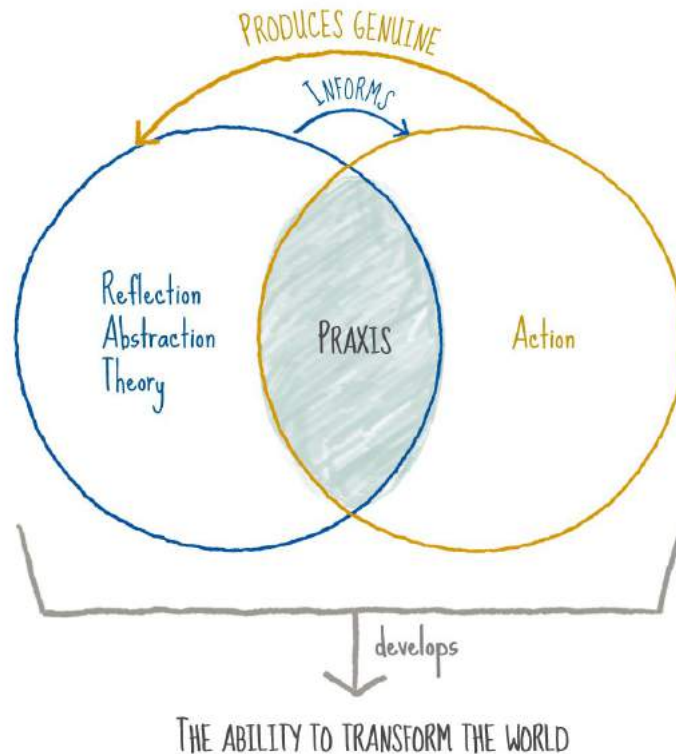
Paulo Freire's processes of critical pedagogy often begin with critical dialogue for 'problematization'. Engaging 'oppressed' classes in this process of problematization, in his case through literacy classes, is to foster an awareness of the oppressive system within which they exist (Freire, 1974). Hence, people become critically 'conscious'¹³⁹ of the dynamics of oppression, then collectively resist these forces and struggle to create social change (Cruz, 2013).

As described by Freire, conscientisation is a rigorous reading of the world, in which one recognises oneself dialectically *as simultaneously both an object and a subject* in a larger historical process (Freire, 1970). As individual subjects, we have self-determination and agency to transform the world into a more equitable place; *yet we are also* objects shaped by the forces of external determination (Darder, 2015, p. 86). Once individuals recognise this *dialectical tension* of structural constraints and individual will, the space is opened for increased criticality about, and agency to determine, how society runs and how to improve it (Darder, 2015, p. 70; Freire, 1974, p. 4).

Paulo Freire asserted that conscientisation can neither be only an intellectualist effort, nor arrived at by a psychological, idealist or objectivist road (Freire, 1974, p. 148). Rather, it must be a process of group reflection *and* critical action, in which rational thought *and*

¹³⁹ *Conscientisation* or *Conscientização* in Portuguese.

emotions, minds, bodies *and* spirits (the whole human) are recognized and engaged in acts of transforming reality (*Visual 29*).



Visual 29. Paulo Freire's dialectical conception of praxis

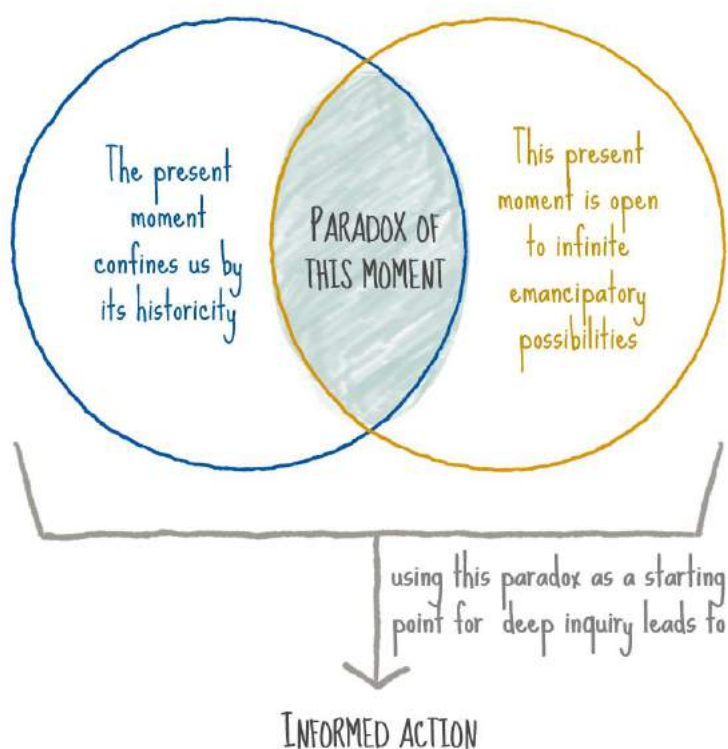
The split between theory and action was untenable for Freire (Winchell & Kress, 2013). Similar to John Dewey, if thinking is just theoretical, it is no better than mental gymnastics (Dewey, 1933, p. 227). And if it is just action, it can potentially do more harm than good (Dewey, 1933, pp. 277-279; Winchell & Kress, 2013). Praxis as a dialectic is 'theory-informed action and reflection'; and 'action/reflection-informed theory'. Hence, praxis is important to moving beyond just a critical reflection of how the world is and how it might be different (problematization) towards social transformation (*Visual 29*).

The process of *problematization* is also infused with the logic of 'beneficial contradictions'.¹⁴⁰ Problematization involves a vigorous: a) *re-thinking of historical and contemporary conditions to highlight the hindering historicity and power of cultural*

¹⁴⁰ Paulo Freire's "problematization" was antithetical to the "technocrat's" reductionist approach of resolving problems in the most efficient way (1974, p. vii). The 'technocrat's' reductionist orientation towards problem solving strips out the radically complex natural, social, historical reality within which 'problems' are immersed. Conversely, when engaged in processes of problematization, co-learners open up space for as much complexification and as many perspectives as necessary to engage fully with the context of the challenges.

constructs embedded within our own views of the world and in our shared societal paradigm **as well as** b) a rigorous contemplation about what is **valid** in both these ideas (Cruz, 2013).

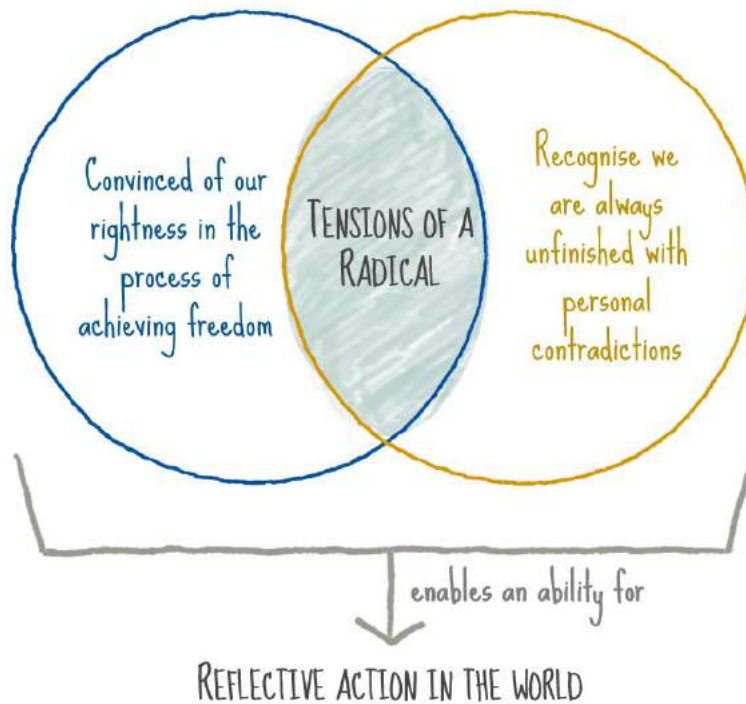
Engaging with an all-encompassing complexity through the processes of 'problematization' can potentially create feelings of overwhelm and helplessness; thus these processes also require the collective of learners to perceive and feel another dialectic tension - that of relationship between individuals within their social reality - so that they can move beyond a profound sense of overwhelm (Freire, 1974, p. 30). In other words, we as humans in this present moment are both: a) *contained within an unbelievably complex systemic interaction of historically "particular and contingent" dynamics that explain our limited movement and freedom (or ability to ask our own questions)* **and** b) *this exact moment of our social reality presents powerful emancipatory possibilities* (Freire, 1985, p. xxv). Through this productive tension, informed action emerges (*Visual 30*).



Visual 30. Paulo Freire's contradicting and synthesising interpretations of the present.

Today the world 'radical' often has pejorative connotations, but these negative connotations can perhaps be reversed by engagement in two more of Paulo Freire's tensions. Radically conscientised people must balance liberation as a process of *violating conventional norms* **and** *respecting democratic societies* (Darder, 2015, p. 102). Radicals must also balance the tension between *being convinced of his/her rightness* **and** *listening to*

other contradictory points of view with a feeling of love and kinship. Thus, it is important to note that for Paulo Freire, the notion of 'rightness' of a radical, does not come from a "fanaticised consciousness" (Freire 1974, p. 15), but rather one who recognises their own un-finishedness, as well as their rightness, and uses both of these in the pursuit of praxes of understanding and creating change in the world (Lake and Kress, 2013, p. 3) (Visual 31).

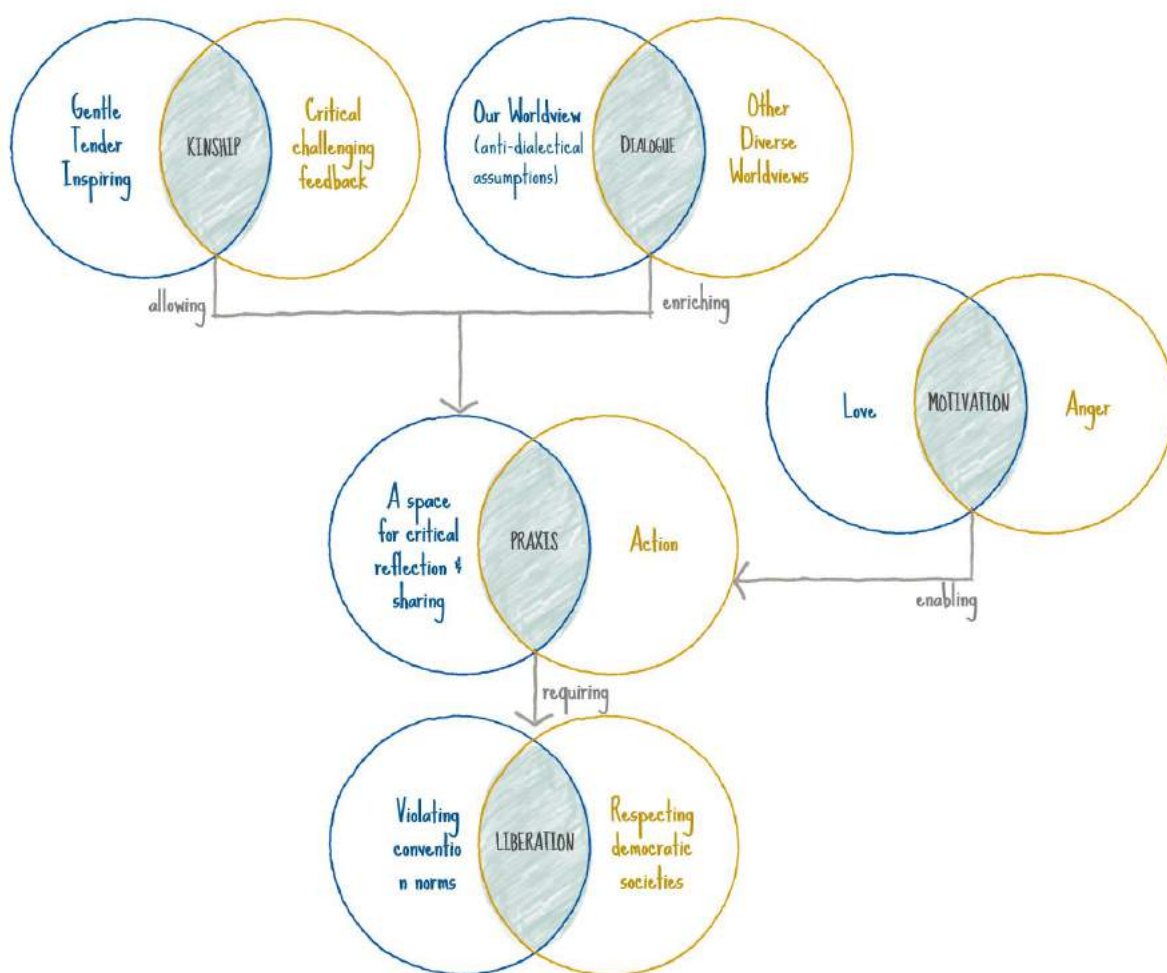


Visual 31. Paulo Freire's paradoxical tensions of a radical.

The role of the facilitator in liberation learning is also necessarily infused with productive tensions. For example, a facilitator must: *have the utmost and ultimate respect for the history of the people and their own life world – their worldview in its entirety – when engaging with them **and** the facilitator must also believe in the possibilities for participants to expand beyond their experience* (Horton & Freire, 1990).

Related to this, facilitators and all humans, as life-long liberatory learners, should both *recognise our inability to be neutral **and** remain open beyond certitudes or dogma* (Darder, 2015, p. 96). This dialectic highlights the espoused tensions of facilitators being both facilitator<>learners and the participants as both learner<>facilitators. In these co-learning situations, Paulo Freire embodied yet another dialectical notion of kinship and love, meaning we engage with others in ways that are *gentle, tender, inspiring **and** critical, challenging, and strategic* in “unveiling follies” (Darder, 2015, p. 48, 58).

These examples of Freire’s dialectic approach highlight how he sought to overcome the myth and perceptions of binary *either/or* logic, by encouraging a complexification of perception and thought. This more complex logic-of-perception patterns throughout Paulo Freire’s philosophies. Practicing his dialectics strengthens the ability to hold paradoxical perceptions within the same space or process, towards a generative outcome. In fact, he perceives reality as a field of paradoxical tensions and contradictions: in emerging from one contradiction, you’ll find another (Darder, 2015, p. 157). It is within this field of tensions and contradictions that we develop movement, transformation, and evolution towards liberation and well-being.



Visual 32. A small example of Paulo Freire’s never-ending field of tensions

These productive tensions (for example, between rational and emotional, abstract and action, trust and challenging feedback) are engaged in the final chapters on transformative learning processes (*Process chapters 14 and 15*).

8.5 Basarab Nicolescu's transdisciplinary philosophy

Thematic, or transdisciplinary pedagogies are also an integral part of transformative sustainability learning (Burns, 2009). Basarab Nicolescu is one of the most well-known philosophers of transdisciplinarity. Similar to John Dewey and Paulo Freire, the intention of Nicolescu's philosophy was to transcend the separatist myth embedded within the dominant-cultural-paradigm, and manifesting 'destruction' across the world (Nicolescu, 2002). Whereas my previous vignettes of Dewey and Freire explored their beyond-separatist logics-of-perception in specific examples of psychology and learning, Nicolescu's contributions to the *non-binary, 'middle way'* remain largely in the philosophical realm.

Basarab Nicolescu argues that Aristotle's logic for thinking (and perceiving) is the foundation of the dualistic and mutual exclusive perception in the dominant-cultural-paradigm, which plagues our decision-making and governing (Nicolescu, 2006). He explicitly juxtaposes and justifies his 'axioms' for transdisciplinarity as a means of transcending Aristotle's three rules of quality thinking (Bernstein, 2015).¹⁴¹

In accordance with to his mathematical background, Basarab Nicolescu builds an axiomatic¹⁴² justification and approach for transcending the separatist myth.¹⁴³ His axiomatic approach is also inspired by (but counter to) the approach of Galileo's Axioms for Human Mathematics (2006). Nicolescu argues that the *violent separation between 'science' and 'ethics'* has engendered a split between Subject (the scientist/person of power) and the Object (the Other/the objectified), and this objectification has facilitated many atrocities: exploitation, experiments, massacres, terrorism, wars (Nicolescu, 2014b). In other words, the dominant reductionist ways of knowing (epistemology) misperceive the complexity we are in relation with (ontology) and this misalignment is responsible for the incredible harm we inflict upon each other and our environment (2002). Thus, Nicolescu's quite abstract but profound purpose of these three transdisciplinary axioms is to 'reintegrate the Subject and Object', and thus create an integrated knowing

¹⁴¹ Aristotle's laws being those of identity, non-contradiction and excluded middle, described in *Premise 6.1 Philosophers' critiques of the dominant-cultural-paradigm*.

¹⁴² Axiom here refers to a set of self-evident rules, principles, laws or propositions, e.g. see for example Sue McGregor's discussion of transdisciplinary axioms, building on Basarab Nicolescu's transdisciplinary methodology (McGregor, 2011).

¹⁴³ Basarab Nicolescu's set of three axioms - the definition and methodology of transdisciplinarity - were developed based on his experiences in quantum physics and the mathematical formulism of Stephane Lupasco and Kurt Gödel (Nicolescu, 2010).

(epistemology) and being (ontology).

Basarab Nicolescu clarifies that his proposed axioms are not to be hypothetically proven, but rather should be judged by the results of their integrated application (Nicolescu, 2014b), a sort of Deweyian pragmatism. Through the contemplation and application of his axioms, Basarab Nicolescu hopes techno-scientific cultures can complexify their worldview logic and thus perceptions and interpretations of realit(ies), and thus approaches to creating change. To reintegrate the Subject and the Object, and prevent further destruction, his three axioms propose different 1) *ontological*, 2) *beyond-binary logical*, 3) *epistemological* foundations (2002, 2006, 2010), which I now briefly introduce.

Axiom 1. The ontological axiom

There are, in Nature and in our knowledge of Nature, different levels of Reality of the Object and, correspondingly, different levels of Reality of the Subject (Nicolescu, 2006).

Nicolescu's first axiom for transdisciplinary philosophy and inquiry asserts that there are different levels of reality, each with a unique set of laws, principles, or norms. These levels of reality might be natural systems (superstrings, cyberspace time, micro-and macro-physical), social realities (geographical, historical, community, planetary), or individual realities (spiritual, psychical, biological, physical), etc. Importantly, he believes that *no level of reality constitutes a privileged place* from which to understand other levels, and that these different levels of reality are knowable because of our different types of perception.

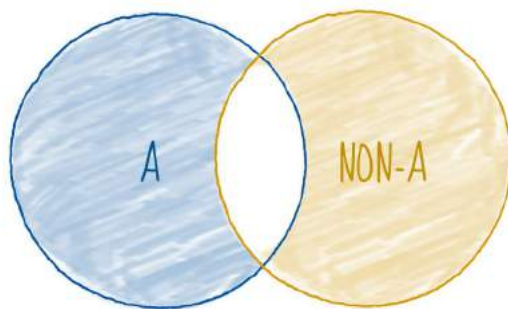
The co-existence of these different levels of Subject/Object realities, and their varying set of laws (e.g. macro-physical laws verses quantum physics laws) create incompleteness in each level, and thus *contradictions*. But, unlike Aristotle's logic of the excluded middle, enabled by a Separatist myth, Nicolescu argues that the contradictions should be embraced, using *the logic of the included middle* or *Hidden Third*. So, what is his logical axiom that seeks to perceive beyond the Separatist myth?

Axiom 2. The logical axiom

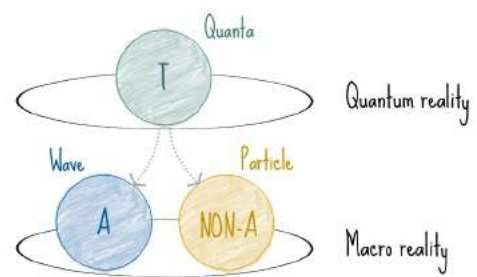
*The passage from one level of Reality to another is insured by **the logic of the included middle** (Nicolescu, 2006, 2010).*

Similar to Paulo Freire's dialectics and John Dewey's sub-functions, Basarab Nicolescu believes contradictions represent an opportunity for integration and improving 'truth'

(Nicolescu, 2006, 2010). For example, classic Aristotelian logic tells us that distinctions are **mutually exclusive** (Visual 33). Nicolescu’s logical axiom, however tells us that the **integration** of “A” and “non-A” is facilitated by **the logic of the included middle**, or the middle third (“T”) via the passage from one level of reality to another (e.g. macro to quantum levels).¹⁴⁴ In other words, the logic of the including middle is an integrative process which allows unification of ‘opposites’, but also preserves their distinction. In Visual 33), the middle third (“T”) is both A and non-A at the same time. The ‘T state’ represents unity of the two (preserved) contradictions.



Mutually exclusive perception



Perception of unification & distinction

Visual 33. Aristotle’s exclusive logic compared with Basarab Nicolescu’s logic of the included middle.

An important implication of Basarab Nicolescu’s logic of the **included middle** is the ongoing consequences to resolving any contradiction. For example, when contradictions between A and non-A are resolved by T, then T, in its new level of reality will create contradictions with another A1, which will need to be resolved again in another level of reality and this process continues infinitely. He interprets these ever-present contradictions as knowledge being forever open (Nicolescu 2006, 2010), in agreement with John Dewey’s notions of contextual, pragmatic ever-growing knowledge, and Paulo Freire’s notion of fields of contradictions, creating perpetual movement and growth.

Nicolescu maintains that **fragmenting logic** is unhelpful in economic, social, cultural, religious and political spheres, and that the inclusion of the **middle third (T)** provides processes for overcoming Aristotle’s reductive truths. However, he also that argues we shouldn’t abandon Aristotle’s rules of good thought. He acknowledges that exclusionary,

¹⁴⁴ Basarab Nicolescu cites mathematician Stephane Lupasco’s (1900 - 1988) work as mathematically proving that A, non-A, and the synthesising middle third (T) exists (2006, 2010).

separatist logic benefits certain simple situations, for example, driving rules or moments of extreme danger/survival, a synergising approach between the included middle and reductionism that he calls trans-reductionism (Nicolescu, 2014c).

Axiom 3. The epistemological axiom regarding complexity

The structure of the totality of levels of Reality is a complex structure: every level is what it is because all the levels exist at the same time (Nicolescu, 2010, 2014c).

Nicolescu's third axiom draws on the ancient principle of 'universal interdependence' in which all levels of reality are simultaneously interacting and thus operating together as a larger **totality** (2014c). Each level has a unique identity and existence *precisely* because of the existence and interconnectedness of all other levels.¹⁴⁵

This complex structure of reality, requires a similarly complex, beyond-separatist epistemological approach to inquiry and knowledge development. Nicolescu summarises the complex nature of transdisciplinary knowledge as being **simultaneously exterior and interior**. Exterior refers to the study of the universe and interior refers to the study of the human being, and "knowledge of each sustains the other because they are interconnected" (2014c).

Yet, does transdisciplinarity learning also engage with the philosophical reasons for the existence and need of transdisciplinarity (third-order learning) and its implications for knowing? How many enactions of transdisciplinary undergraduate courses (the few that exist today) focus on simultaneous exterior and interior knowing, and why that might be important for (second and third-order) learning? The vignettes in the *Process segment* provide insights to these questions: all of the courses engage with exterior and interior knowing (*Ch. 14, Process*), and an explicit purpose of the Hawkesbury pedagogy was to undertake the type of complexification espoused by Basarab Nicolescu.

8.6 Edgar Morin's complexity paradigm

Through his decades of intellectual activism (*Ch. 5, Perspectives*), Edgar Morin developed

¹⁴⁵ Basarab Nicolescu distinguishes between vertical complexity (knowledge and inquiry integrating several dynamics of reality) and horizontal complexity (knowledge and inquiry integrating across a single level of reality) to explain the different types of learning, in essence paralleling the discussions distinguishing transdisciplinarity (the former) and inter-disciplinary (the latter) (e.g. Jantsch, 1972b, 1980b)

the theory and inquiry/learning processes of general complexity. His work is often considered a postmodernist metatheory and included in the integral education literature (Hampson & Rich-Tolsma, 2015; Hedlund, Esbjorn-Hargens, Hartwig, & Bhaskar, 2015).

Distinguishing between general complexity and restricted complexity

Edgar Morin is very intentional in distinguishing his '**general complexity**' from **restricted complexity**. Restricted complexity manifests in the disciplinary field of dynamic systems modelling (Morin, 2006). This discipline has often been described as a "hard systems" approach, in which 'systems' are assumed to be an 'ontological thing' (Alhadeff-Jones, 2008; Ison, 2017).¹⁴⁶ In other words, 'restricted complexity' operates within the dominant-cultural-paradigm of 'predict and control', in which experts look at the world and see systems to map, quantify, model, and successfully manipulate (Checkland & Poulter, 2010; Morin, 2006). Morin argues and illustrates how this field of 'complex dynamic systems' has not yet gone through the epistemological and paradigmatic 'revolution' offered by **generalised complexity** (2006). This is the type of revolution curated in the courses discussed in this inquiry (*Process segment, pp. 435-519*).

Generalised complexity as a meta-theory can stretch perceptions beyond these simplistic black and white categories, towards interdependence and relationality (Esbjorn-Hargens, 2016, p. 110). Classic science is infused with logics of **disjunction** (*Ch. 7, Premise: myth of separation*), whereas generalised complexity offers logics of **distinction and conjunction** (Morin, 2006). This philosophical perception has the potential to enhance all disciplinary fields – including transformative learning (Alhadeff-Jones, 2012), as well as our experience of being human:

*"Generalized complexity not only concerns all fields, but also relates to our knowledge as human beings, individuals, persons, and citizens. Since we have been domesticated by our education which taught us much more to **separate** than to **connect**, our **aptitude for connecting is underdeveloped** and our **aptitude for separating is overdeveloped**; I repeat that knowing, **is at the same time separating and connecting, it is to make analysis and synthesis. Both are inseparable**, and our atrophy of the capacity to connect is increasingly serious in a globalized, complexified mode, where it is a matter*

¹⁴⁶ Dynamic systems modelling also parallels David Snowden's complicated 'concept' (verses his 'complex' concept) (Snowden & Boone, 2007), and Paulo Freire's critique of the 'technocrats' approach.

of generalized interdependence of everything and everyone” (Morin, 2006).

In the quote above, Edgar Morin reiterates Nicolescu’s point about not discarding separatist thinking. They both agree that we must contextualise dominant-paradigmatic logic within much more complex ways of perceiving, thinking, and acting. However, where Morin differs from Nicolescu is in avoiding defining Laws (or axioms) of complexity. Morin believes this approach remains in the paradigm of classical science: “When one searches for the “laws of complexity”, one still attaches complexity as a kind of wagon behind the truth locomotive, that which produces laws” (2006).¹⁴⁷ Instead of an axiomatic argument in the vein of preceding mathematicians, Morin articulates and applies principles for perceiving and interpreting, and he acknowledges principles are meant to be broken. Edgar Morin often presents examples where these principles do and don’t hold, thereby, demonstrating his ability to think complexly as well.

Edgar Morin’s development and application of the principles of general complexity in over 100 books and articles represents “*a radically different way of thinking that is **not disjunctive (either/or)***” (Montuori, 2013a). His perceptions of complexity include: a) emergence, b) hologrammy, c) recursion, d) dialogics and e) ecology in action. Next, I illustrate these principles, as each provides additional logics-of-perception for stretching our senses and conceptions beyond the separatist myth.

a) Perceiving emergence

In the 1950’s and 60’s with the development of cybernetics, systems methods and General Systems Theory, the concept of emergence was more widely introduced across academic and social spheres. Even so, Morin believes this has become a litany, and has not been fully digested and embodied to the point where it is a logic that infuses our perception; in a word, *grokked*. To Morin, ‘emergence’ represents a “conceptual bomb”, with the power to completely reorient our perceptions of the world and ourselves beyond separatist and reductionist logic (2006). He defines emergence an *irreducible* event:

“The emergence is a new quality that arises once the system is constituted and therefore has the property of event. The emergence presents as irrefutable phenomenon. It is empirically irreducible because it cannot be reduced to the qualities of the organized elements. It is not logically

¹⁴⁷ Perhaps evidencing how Edgar Morin and Basarab Nicolescu were each influenced by their own life’s context.

deducible because it cannot be deduced from the sum of the qualities of the organized elements” (Morin, 1999).

In other words, if one is able to perceive *emergence*, we instinctively feel its corollary of *irreducibility*. If one views an event or phenomena through a reductive lens, then emergence and relationships disappear. Breaking water into two hydrogen atoms and one oxygen atom, makes the ‘wetness’ disappear. When relying on disciplinary approaches alone, emergence properties of the phenomena disappear. Emergence and irreducibility are the counter narrative (and perception) to the legacy of René Descartes.¹⁴⁸

One example of emergence in Morin’s writings is the mind as an emergent process from the brain and culture. The brain on its own cannot provide spirit, language, or consciousness, and neither can culture. It is in their mutual constitutive-ness that these emerge. Reductionists ignore the culture and look at the neurons. Spiritualists ignore the constitutive process and view consciousness ‘as a kind of television’ (Morin, 2001, 2006).

To help solidify and contextualise the notion of emergence, Morin’s descriptions of general complexity often bring the reader back to the Latin ‘complexus’, or that which is woven together, in order to make the “capital” point: that that which is “*woven together cannot be torn apart without losing the overall pattern, without losing the connection, the inter-relationships, the interactions, **the emergent properties***” (Morin, 2006; Montuori, 2013a).

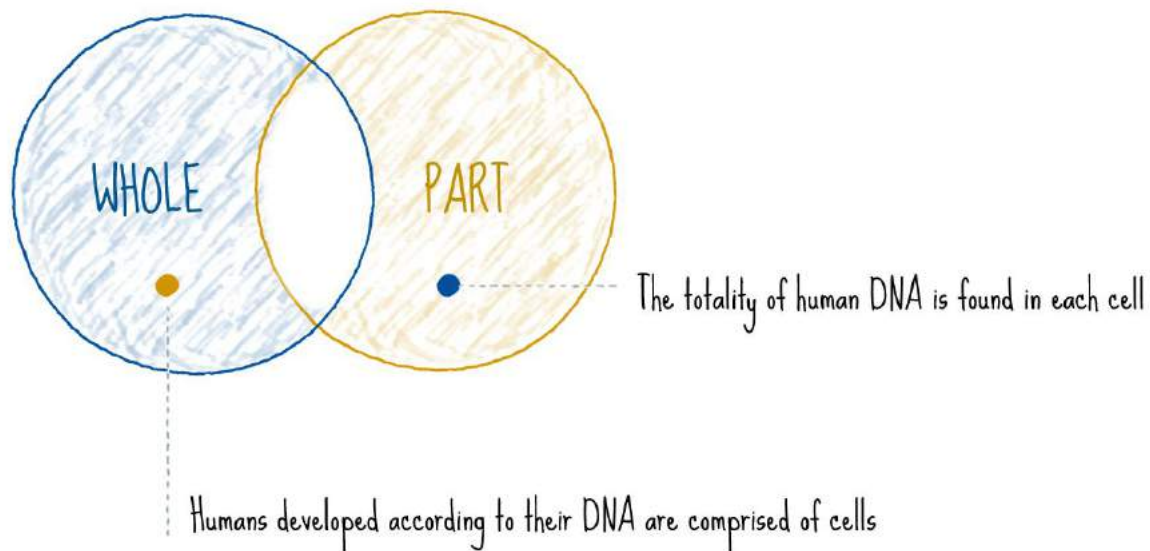
b) Perceiving a hologrammic relationship

Hologrammic (or hologrammatic) perception also encourages us to perceive more deeply into the relationship between seemingly opposite phenomena (Morin, 2006).

Hologrammic perception is a perception of symmetry. Perceiving hologrammically (or symmetrically) unveils how opposites or contradictions actually constitute each other. For example, the totality of human physical development is found within each cell of the

¹⁴⁸ As mentioned in *Premise ch., 6.1 Philosophers’ critiques of the dominant-cultural-paradigm*, René Descartes reportedly instructed his medical students to dissect live animals and to ignore the pain of their screams, because according to his worldview enabled by a separatist logic, the animals were “after all, just machines breaking down” (Heacox, 2014, p. 45). I can’t help but imagine that some of his students would have felt intuitively, emotionally and even rationally that these instructions (and paradigmatic framing) was incompatible with their experiences of reality. Surely some students felt they were literally destroying the emergent (and sacred) property of life? (This anecdote is very profound for me. I reference it elsewhere as I think this story so powerfully demonstrates what a mechanistic perception enables. Even though we think and know this act to be barbaric now, what other acts are currently justified within a mechanistic perspective that in 100, 50, 5, 2 years might also seem barbaric? How we raise and slaughter animals for food? How we use pesticides and herbicides? How science uses pesticide 1040 to ‘reduce’ invasive species? Forcibly holding asylum seekers on remote islands away from medical and mental support?)

human body in the form of DNA; and yet humans are also physically comprised entirely by instructions of DNA (Morin, 2006; *Visual 34*).

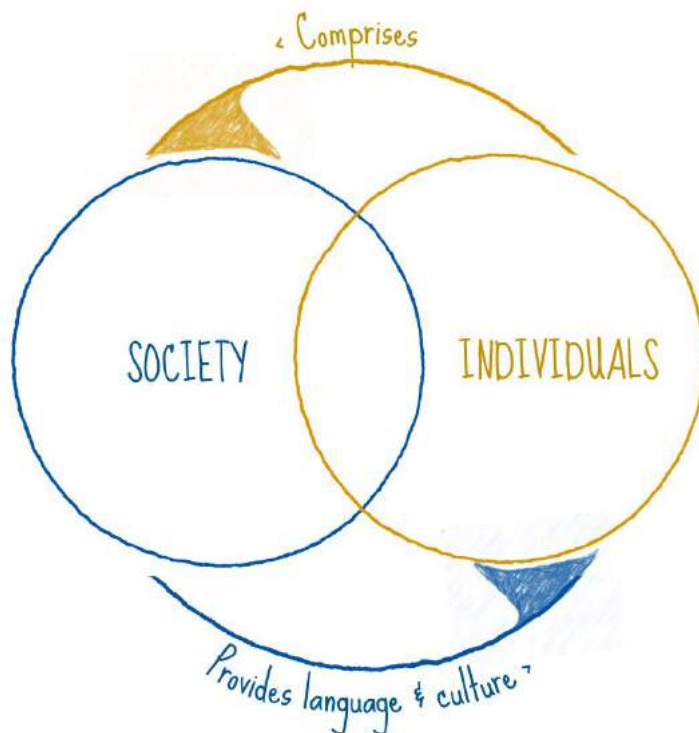


Visual 34. Example of Edgar Morin's hologrammic principle

The hologrammic principle is reminiscent of one aspect of the yinyang symbol. The yinyang is an ancient and complex Chinese symbol of the ultimate principles of cosmologies, life and self-improvement. This symbol is now commonly known across the globe although intellectual inquiry into the deep, embodied philosophies within the symbol is rarely undertaken (Wang, 2012, pp. 2-3, 203). In the archetypal yinyang symbol of two opposing sides, a presence of one side is also contained within its opposite, precisely because this presence is necessary in the constitution of each opposing phenomena, concept, process, etc. (Wang, 2012, p. 222). For Morin, the hologrammic principle reminds us to enrich our perception of the parts to make sense of the whole, and we must also enrich our perception of the whole to make sense of the parts. In other words, we avoid the simplification caused by perceiving only reductively or perceiving only holistically (Morin, 2008).

c) Perceiving recursive relationing

In perceptions of general complexity, Edgar Morin's recursive principle recognises that *cause and effect are not linear*, as often is assumed within a reductive approach. Rather recursive logic recognises that variables or phenomena *can be, and in some events must be, both cause and effect*. In a recursive loop, the "products are necessary for their own production" (Morin, 2006). *Visual 35* demonstrates a recursive relationing between society and individuals.



Visual 35. Recursive relationing among society and individuals

As shown above, the perception of a recursive loop can be grounded in examples of human and social relations: individuals are both influenced by (cause) and influence society (effect):

We are the products of a process of reproduction, but this process can continue only if we, individuals, couple to continue the process. Society is the product of interactions between human individuals, but society is constituted with its emergences, its culture, its language, which retroacts to the individuals and thus produces them as individuals supplying them with language and culture. We are products and producers. Causes produce effects that are necessary for their own causation” (Morin, 2006).

Perception of how recursive relationing can cause deviations and transformations

Recursion can be referred to as ‘feedback loops’ within (often hard) systemic inquiry. Feedback loops can be both balancing (cancelling) deviations or reinforcing (amplifying) deviations. When systems within feedback loops move beyond the bounds of resilience, we can perceive an evolution. For example, socio-environmental-economic systems often experience a change in state when the dynamics of reinforcing deviation disrupt the balance (Dewey, 1927; Maruyama, 1963 in Morin 2006). We can perceive cultural history

through the logic of deviation:

The birth of capitalism is itself deviating in a feudal world. The birth of modern science is a deviating process from the XVIIth century. Socialism is a deviating idea in the XIXth century. In other words, all the processes start by deviations that, when they are not suffocated, exterminated, are then able to make chain transformations” (Morin, 2006).

In this sense, deviations are similar to Paulo Freire’s dialectical notion of bringing opposites together in order to create a progress third state, or synthesis.

d) Perceiving multiple and contradictory logics-of-relating

According to Morin, another logic of the complexity paradigm is the *dialogic* principle (Morin, 2008, p. 49). The Greek prefix ‘*dia*’ often refers to ‘passing through’ and ‘opposed in a moment’. Thus here, ‘dialogic’ refers to the perception and meaning-making of phenomena through multiple and opposing logics. For example, perceiving dialogically recognises a simultaneous logic of *distinction and conjunction* (e.g. unity and diversity). Perceiving *dialogically* allows us to recognise the “productive” and “vital play” of multiple logics-of-perception, and views this complex perception as *necessary to* increasing our understanding (Morin, 2008, p. 49). Indeed, argues Morin, all of these relational logics-of-perception must be taken together in order to form or explain complex phenomena (Askegaard, 2017).¹⁴⁹

We can illustrate dialogic perception¹⁵⁰ through re-considering the distinctions between life and death. Life and death are clearly defined as *disjunctive* (opposites) in the dominant paradigm. And in certain parts of society life is valued much more than death, as manifested in the sheer economic value of the youth and beauty industry.

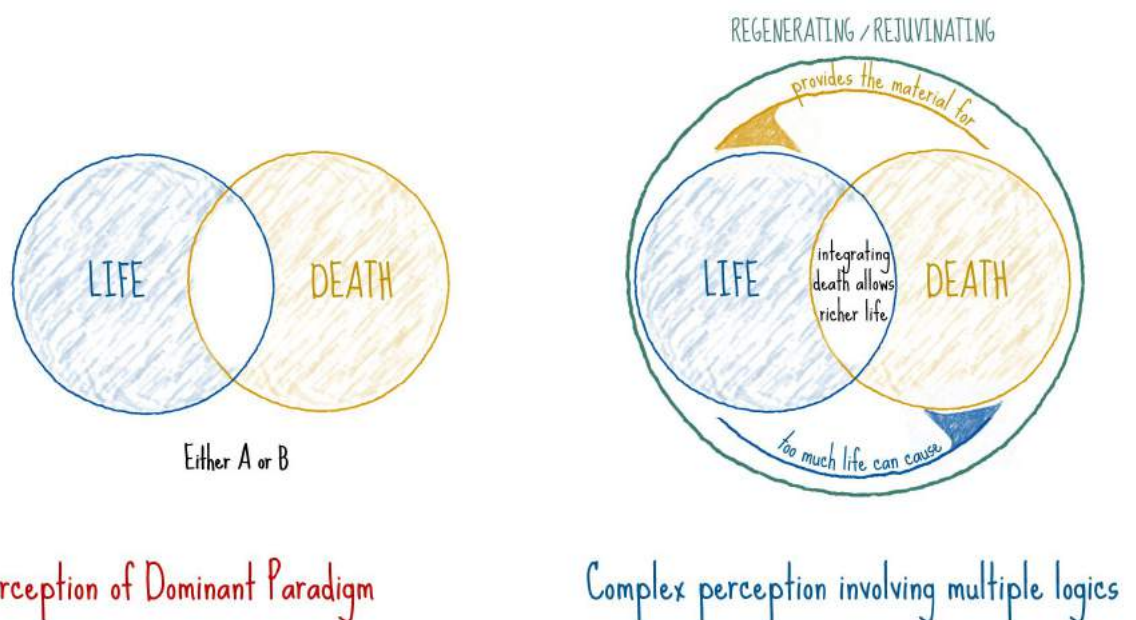
However, instead of opposites, we can conceive of their simultaneous disjunction (life *or* death) and *relating*. For example, the notion of apoptosis recognises that life *requires* death. Our cells need to die often and early so that proteins within our bodies can regenerate. On the other hand, death *can be created by* too much life, such as unchecked division of cancerous cells. Thus, the *mutual co-arising* of life and death can be restated as:

¹⁴⁹ Edgar Morin inspired my multiple definitions of individual worldviews and paradigms (*Ch. 2.5 Multiple ways of interpreting worldviews and paradigms*).

¹⁵⁰ E.g. Simultaneously perceiving disjunction (x OR y); concurrency (BOTH x AND y), and negation (NEITHER x NOR y); or “uni-duality” (simultaneous unity and duality) (Morin, 2008).

our bodies are “integrating death to better fight against death” (Morin, 2006). Or integrating death, for a richer life. To dissect their relationing, and focus only on life, erases the emergent process of rejuvenation

The figure on the left-hand side (of *Visual 36*) demonstrates a disjunctive view using *Boolean symbols*. In this instance the Boolean symbols demonstrate how A is perceived as separate from B because the space where any overlap could be (in the middle) is a white void. A disjunctive view sees no ‘grey’ in the middle. Conversely, on the right-hand side, a dialogical view perceives how life and death are *distinct, and also* an important phenomena emerges from their interactions (in the middle of the diagram, and on the outside of the circles).



Visual 36. Comparison of separatist myth (left) versus complex dia-logics (right).

Edgar Morin offers many examples of the dialogic principle, to complexify many ‘givens’. For example: a system is more complex than its sub-systems (emergence) *and* a system is less complex than its sub-systems (disappearance). We need to think *and* act both locally and globally because global thinking can cause local errors (e.g. wars on terror), and local action can cause global errors (e.g. our immune system can reject a new heart). Human diversity includes cultures and psychological features; *and* human unity includes cultural and biological features.

The dialogic principle in essence removes *reductionist ‘good’ or ‘bad’ characterisations* to instead perceive *what is in relation, and in how many ways* (i.e. antagonistically, complementary, co-arising, etc.)? By perceiving the many different types of relations at

play in between these ‘opposites’, we create much richer and less exclusionary descriptions and meanings of the phenomena (Montuori, 2013; Morin 2001; Morin 2006, Morin 2008).

e) Principle of ecology of action

The principle of ‘ecology of action’ is one of warning, similar to the precautionary principle in the planning and development world. Morin’s principle of *ecology of action* states:

“From the moment an action enters a given environment, it escapes from the will and intention of that which created it, it enters a set of interactions and multiple feedbacks and then it will find itself derived from its finalities and sometimes even go in the opposite sense” (Morin, 2006).

To illustrate this point, one must only reflect back to the outcomes of nuclear science, manipulation available after DNA mapping, development and overuse of antibacterial medicine, everything the Russian revolution wanted to destroy but then manifested to even greater degrees, the addictive perpetual scroll in social media.¹⁵¹ The purpose of the principle of ecology of action is to remind us to remain open in our interpretations of phenomena and our own creations. We are encouraged to develop our sensitivity towards complexity, rather than develop strategies to predict, intervene and control, or label our actions simply as good or bad. This is a “deep reform” of the dominant way of being (Morin, 2006).

Practice of questioning and disputing principles

Unlike the transdisciplinary axioms, these principles of a complexity paradigm are not (according to Morin) meant to be applied to everything in prescriptive ways. These principles are to be experimented with to deconstruct the ‘givens’ and see what insights emerge. Thus, all of these principles are open to testing, reforming and improving our perceptions and conceptions of our own experiences and critical reflections.

To what degree are these relational perceptions of transdisciplinarity and complexity engaged in university courses, let alone questioned and disputed? The citations in academic literature of Basarab Nicolescu and Edgar Morin on learning processes are

¹⁵¹ The inventor of which now regrets because of the addictive behaviour it enables (See England’s The Times article “I’m so sorry, says inventor of the endless online scrolling”, Saturday 27, 2019).

surprisingly few. Nicolescu is recognised as a key transdisciplinary philosopher, yet he is only cited in less than a third of my 200 collected papers on transdisciplinary learning, suggesting fewer authors engage with philosophical origins in their writing about transdisciplinary learning.¹⁵² Similarly, Morin is recognised as one of the foundational philosophers in regards to the complexity paradigm, yet he is much less frequently mentioned in papers of learning processes for complexity.¹⁵³ The vignettes explored in *Process segment* engage with resonant notions of breaking down certainty, in order to engage with the world more complexly, as well as respecting when certainty is beneficial.

8.7 Erich Jantsch's systems philosophy

Erich Jantsch (a protagonist in Club of Rome story, *Ch. 2, Spheres of inquiry*) is an often-unrecognised leader in the formation of systems and transdisciplinary philosophies. His process-oriented philosophy transcended mechanistic, separatist beliefs by infusing a perception of *unity and wholeness* into his worldview. His logic of wholeness went further than the other philosophers in transcending the separatist myth, in that he included spiritual meaning-systems (Jantsch, 1980c, 1981).

Erich Jantsch's absolute values

Based on Jantsch's cosmologically encyclopaedic grasp of the world and knowledge,¹⁵⁴ he sought to make sense of the historical patterns infused within the evolution of the cosmos

¹⁵² I recognise the enormous potential for bias in this statement, but I am illustrating a question more than a statistic point.

¹⁵³ Even less common is for Nicolescu and Morin to be recognised together in the same paper. This 'separation' is also surprising because even though Nicolescu is recognised as a transdisciplinary scholar and Morin is recognised as a complexity scholar, they work in similar academic circles. They were both council members for the International Centre for Transdisciplinary Research (CIRET, Centre International de Recherches et Etudes Transdisciplinaires), accessed 13 March 2020: <http://ciret-transdisciplinarity.org/organization.php>

The main philosophical branch to recognise the resonance between Basarab Nicolescu's and Edgar Morin's work is integral philosophies and educational theorists (Molz, 2010), and the many works of scholars like Jennifer Gidley, Gary Hampson, Alfonso Montuori. Perhaps this is unsurprising because this group of scholars has a deep integration with philosophical premises in their learning practices. I mention this to reiterate the opportunity to engage with the philosophical premises of the pedagogies we work with. In future inquiries, I would like to compare the processes of Integral Education, with the processes explored in the Process segment, to inquire if the deep philosophical engagement of Integral Educators has led to similar pedagogical processes of the 'scholar-educators' profiled in this inquiry. Integral learning is resonant with the descriptions and intentions of transformative sustainability learning, and I suggest both fields should be aware of each other, to engage in diffractive integration.

¹⁵⁴ Erich Jantsch's command of knowledge was humbling, and hermeneutic interpretation of his work was challenging for several reasons. He presented his process philosophy with a broad and deep integration of cosmological evolution, Eastern cultures, all branches of sciences, philosophy, mythology, spirituality,

generally, and in life/environment dynamics more specifically. Of particular relevance for this inquiry, is the patterning he observed within the evolution of the human systems. He argues that both human societies (phylogeny) and individuals (ontology) move through various levels of perception over time, which are guided by what he terms absolute values, translated in this inquiry as 'logic-of-perception', which infuses our own worldview and shared paradigms. Over time, Jantsch argues, human societies - particularly Western societies - have moved from logics of dynamic interplay (relational) to the logic of separation, and eventually back up to the logic of *wholeness* and *oneness* (Jantsch, 1976a, 1976b). Erich Jantsch believed that of these three different logics, which can underpin and in-form all that we do.

What does Erich Jantsch mean by wholeness and oneness?

Erich Jantsch describes his perception of wholeness and oneness as similar to those revered in ancient times and more recently by many different cultures. Often, he refers to this logic-of-perception as the Hermetic Law of Correspondence (Jantsch, 1975b, 1976a), which Erich Jantsch summarises as:

As above, so below. As below, so above;

As within, so without. As without, so within.

Named after the ancient Greek god/spirit Hermis Trismegistus, Hermetic Laws are part of a mystical philosophy that is said to have begun in Ancient Egypt, and are said to describe the universe and its creation (Collins, 2009, pp. 458-460). According to *The Kybalion: Hermetic Philosophy*, the Law of Correspondence is one of seven laws (1930).¹⁵⁵ The law or principle of correspondence, states that:

There is always a correspondence between the laws and phenomena of various places of Life and Being... There is correspondence on the various places of the material, mental, and spiritual universe. There is a correspondence manifested among all planes or levels. Understanding on one

literature, and art. So, to deepen one's understanding of Erich Jantsch's ideas sends the interpreter on diverse and surprising lines of inquiry. Additionally, his philosophical writing is dense. More than the other philosophers, I felt challenged to step into his unique languaging. However, I am asking the postmodern question of what do these collective interpretations of overcoming the myth of separation allow us to do (e.g. see upcoming *Ch. 11, Premise: relational perceptions*).

¹⁵⁵ Originally published in 1908, by a group of anonymous authors known as the Three Initiates.

level aids in understanding other levels” (Collins, 2009, p. 460).

At first glance, the Law of Correspondence is consistent with Edgar Morin’s hologrammic principle. The underlying logic is hologrammatic in the sense that it can describe how the ‘whole is reflected in the parts’ and the ‘parts are reflected in the whole’, (Collins, 2009, p. 18). But through Jantsch’s eyes the Law of Correspondence integrates the cosmological, spiritual, ontological and epistemological, rather than the onto-epistemological meaning invoked by Morin’s principle. For example, another interpretation of only a small selection of Hermis Trismegistus’s words alludes more to the ‘unity of the whole’ (Von Franz 2006, p. 168 in Norton & Smith, 2011):

Truth! Certainty! That in which there is no doubt!

That which is above is from that which is below and

that which is below is from that which above, working the miracles of the One [Thing].

The following visual illustrates one of Jantsch’s interpretations of ‘dynamic wholeness’, in which Earth, humanity, and everything is a manifestation of the singular creative self-unfolding wholeness. Once we grasp a profoundly nondual perception, the dynamics of the universe and of the human mind appear “no longer as separable and somehow linked” (e.g. recursive relationing), but as complementary expressions of an underlying dynamic wholeness” (Jantsch, 1981, p. 12). In other words, the dynamics of the universe and the dynamics of the mind may appear to be ‘separate’ processes, but Jantsch would argue that they emanate from the same dynamic wholeness (centre of *Visual 37*).



Visual 37. Illustration of Erich Jantsch's perception of an underlying wholeness, or unity

Why does Erich Jantsch focus on this perception of wholeness and oneness?

I interpret Jantsch to be drawing on the Law of Correspondence in at least two ways. Firstly, he explores how our *internal* logics-of-perception are replicated, reflected and created within the *external* world. He often refers to the *internal* space as the Vedic notions of *atman* (authentic inner self) and the external space as *brahman* (the external reality, or history in some cases). Thus, if a logic-of-perception of *separateness* is within us, *this is what we create outside of us*. Conversely, if the worldview logic of *interdependence* and *unity* is within us, and is used to make sense of all of the spaces we inhabit (our physical world, our social relations, and our cultural, spiritual, philosophical, worlds), then unity is what we create. By perceiving and integrating our essences within and essences without (*Visual 38*), Erich Jantsch considers this a true 'religio' or 'linking back to our origins', in which *atman* and *brahman* become one (1976).



Visual 38. An example of Erich Jantsch's perception of wholeness

Secondly, I think Jantsch is also using the Law of Correspondence, to argue that **unity** and **wholeness** is the more beautiful, moral, sacred and true logic of relation that actually does infuse, underpin, and govern the evolving relations within our world and universe (1976b). He suggests that this perception, awareness and belief in oneness has been recognised, not just in ancient Hermetic philosophy, but in Buddhism (*shunyata, the Void as the source of all qualities*), in process philosophy (*A.N. Whitehead's "extensive continuum"*), in Indian mysticism (*the divine is within you*) or cosmopsychology (*Carl Jung's pleroma, the nothingness which has all qualities*) (1976a, 1976b, 1975).

Jantsch argues that modes of learning (perception and inquiry) and evolution of consciousness (both individuals and societies) move towards this ultimate oneness that governs the universe and our reality. At the beginning of our lives, we are indoctrinated into dualistic perception, in which the observer is **separate** from the subject, and social relations are comprised of 'multiple dual relationships' (1976a). Over time, we move towards a form of perception, in our physical, social and spiritual realms, in which it is recognised that the subject and object *influence* (i.e. are in relation to) each other in interactive ways (1976a, 1975). Both of these two styles of learning (dualistic and subjective), however, are within the ego-consciousness, in which we still perceive our individual selves as separate (1976a, 1975).

Over time, we can enter a "superconsciousness", as humans experience "transpersonal" learning, in which we perceive an awareness of **wholeness** in which human life is

embedded. These learning experiences can lead to what he describes as the ‘death of the ego consciousness’, or *transcendence of the personal boundaries*, towards ecological wisdom, harmony with the well-being and evolutionary thrust toward a healthier life on this Earth, and even integral awareness of evolution (Jantsch, 1976a; Norton & Smith, 2011).

The implications of recognising *oneness* as a principle at work in the cosmos, means that our sense of ethics and morality zooms out from the focus on the individual, to a focus on the ‘whole system’ and a belief in its continuing flourishing (Churchman 1968 in Jantsch, 1979). However, Jantsch implies that, in the current state of human-socio-cultural-planetary evolution, our values (particularly those in the dominant-cultural-paradigm), as manifested in our laws, norms, knowledge and society creation, do not actually enhance the evolution or dynamics of our macro-systems. The values that he observes, associated with the dominant *disjunctive* logic and thus ways of being, are ones of *individualism, ownership, unlimited techno-ecological system progress* at the expense of socio-ecological systems (1970). Erich Jantsch maintains that we must develop a set of evolutionary values that instead, enhance, or perhaps *regenerate the evolution of the web* of processes that we are embedded within (1975). For example, he argues that at the level of human consciousness:

“the enhancement of evolution implies more than simple self-reproduction and evolution of species. It goes beyond altruism and process symbiosis which are basic to the evolution of life at all levels. What comes into focus now is self-transcendence through assumption of responsibility by the individual for the design and evolution of the macrosystems in which they participate. We design not only the physical, biological, and social aspects of the systems of human life – using the power inherent in man-made technology – but also our systems of knowledge and belief, the epistemology of our relations with the world. We design our own culture, even if we are not fully aware of it” (Jantsch, 1980a).

Erich Jantsch’s last point is the purpose of this inquiry: how are we designing our culture, in the contexts of the way we think about and design learning experiences, and how can we become more aware of it?

To support our enactment of responsibility in the design of our own culture, he proposes evolutionary ethics based on his *unitary* logic (which infuses his onto-epi-axi-cosmo-anthro-spirituality meaning-systems). His unitary logic-of perception, manifesting in many

of his meaning-systems, results in his calls for: a) transcendence of the boundaries of individuals and indeed of mankind, b) evolutionary principles of openness, non-equilibrium, fluctuations, engagement, and non-attachment, and c) a refutation of the purely rational approach.

Yet I wonder how many university courses engaged with 'systems thinking' pick up on these philosophical provocations? The engagement with the philosophical underpinnings of Jantsch's systems thinking would profoundly influence everything in our teaching of 'systems': what, how, why it was taught. One of the vignettes engages learners specifically with this type of philosophy (see *Process segment*, pp. 435-519).

How does Erich Jantsch view the dominant logic-of-perception and paradigm?

Similar to Basarab Nicolescu and Edgar Morin, Erich Jantsch does not discount the separatist logic. In fact, in his broader view of both cultural evolution and individual evolution, Jantsch discusses the need to experience, learn and expand consciousness through all paradigmatic logical operators - dualism, subjectivity, unity (1972a). On one hand, experiencing *wholeness and unity* is his articulated aim of learning, consciousness development and self-realisation. This oneness might manifest in, for example, *awareness of*: an integrated mind, body, soul; participation in all-pervading life-force; the existence of one humanity; or the oneness of the search within (*atman*) and the search without (*brahman*).

Yet, he also argues that we need to experience (*dialogically, as Edgar Morin might say*) the dualistic *and* unitary logic in order to evolve. Jantsch's concern, however, is that the dominant-cultural-paradigm is stuck within this constricting binary logic. In not progressing to a phase of also perceiving the 'wholeness', perceptions of 'wholeness and integration' and 'dualism and differentiation' are not able to work in tension to allow the dominant-cultural-paradigm to evolve (1976a).

How does Erich Jantsch enact the unitary logic-of-perception in practical ways?

In practical terms, Erich Jantsch tries to design systems and processes in an 'integrated and wholistic' way. For example, he suggests universities should have an integrative functioning in which teaching is learning-is-research-is-service to society, *all in one* (1969). Later, he suggested the design of learning systems should be based on the *total* of human experiences (i.e. what we are, know, feel, can do, want), as opposed to the organisation of rational knowledge towards a purpose (Jantsch, 1972a). In the process of

inquiry, Jantsch views transdisciplinarity and systems inquiry as the same processes in which “an overall dynamic outlook corresponds to an attempt at grasping the *total dynamics of reality as a whole*...an ideal that will always be beyond the complete reach of science, but may guide in important ways the direction of evolution” (Jantsch, 1980b). As a result of engaging with this holistic inquiry, ‘learners of the future will deal with entire systems in an *integral* way’ (technologically, socially, environmentally regenerative) (1969).

8.8 Summary, discussion, synthesis

The purpose this chapter (*Ch. 8, Premise: philosophers’ logic*) was to reveal and illustrate how the preceding-philosophers all sought to move beyond the separatist myth, as the primary logic-of-perception, meaning-making and actions. Each philosopher is heralded by their subsequent scholars as being the one who most significantly highlighted the need to move beyond separatist logics. Yet academia very rarely recognises the many philosophers in different areas of focus who are all struggling to grab the attention of the populace within the dominant-cultural-paradigm, to change the deep, internalised myth of separation. One of my contributions in this inquiry is to compare and integrate the message of these five philosophers around transcending the dominant myth of perception.

Perhaps what is most poignant about the patterning of this move beyond separatism within the preceding-philosophers is that they sit outside of the eco-philosophy realm (exemplified by Arne Naess’s deep ecology) in which we would expect the paradigm’s meaning-systems and concepts to be infused with a logic of relationality and dynamic process. Even outside deep ecology philosophy, their writings are replete with examples of how non-separatist onto-epi-axiology perceives the world, and thus the philosophers’ role within the world, much differently.

The five philosophers encourage us to loosen boundaries that confine our perceiving, thinking and ways of being today. In their own ways, each of these preceding-philosophers encourage us to *include and look beyond* notions of difference/other/separateness, and engage with relational perceptions of many types: antagonism, contradiction, paradox, tension, influencing, supporting, mutual causality, emergence, transforming, etc. What happens in this space is a perception of creative, continual evolution. It is a space of verbs, of action, of doing, of intertwining, of becoming. It complements the dominant paradigmatic focus on nouns, certainty, stasis, and Cartesian grids, Boolean and binary ones and zeros.

Looking across the set of philosophers, the terminology, theories, and contexts they invoke are diverse, yet there is sonorous resonance in terms of transforming the underlying and interpenetrating Separatist logic of the dominant-cultural-paradigm. Together they offer examples of how to enable more relational, process perceptions within psychology, learning, facilitation, designing university systems, interpreting world history, evolution, biology, etc. Dewey is more hopeful and optimistic, as is typical of modernist philosophers. Freire is more critical (as well as hopeful), expanding into questions of power beyond what Dewey wrote about (at least in the selections I read). Nicolescu and Morin offer interesting juxtapositions of Nicolescu's ontological, axiomatic approach to as compared to Morin's epistemological, principled approach to relational complexity. And Jantsch reminds us of the resonance of this type of perception across many diverse cultures beyond the Western paradigm. Jantsch's interpretation of wholeness as an underlying logic of the universe means this logic-of-perception for him explicitly integrates notions of Self, humanity, cosmos, and spirituality. A relational logic infuses and informs these philosophers' meaning-systems and actions in diverse ways.

Below I synthesise their contributions in the form of questions that prompt or develop more relational perceptions. I also present many examples of binaries, dualisms and contraries that each philosopher, using the perceptions explored in this chapter, sought to overcome. I present these binaries as a prompt for contemplation: how differently would our world feel if the dominant-cultural paradigm perceived and enacted these as relational processes? ¹⁵⁶

¹⁵⁶ John Dewey noted as 1 in the questions and his binaries are in orange; Paulo Freire as 2, binaries in pink; Basarab Nicolescu as 3, binaries in purple; Edgar Morin as 4, binaries in green; Erich Jantsch as 5, binaries in blue. The black binaries are from other philosophical scholars I engaged with (Gregory Bateson, Joanna Macy, Fritjof Capra, and Charlene Spretnak).

In perceiving **distinctiveness**, we observe and experience:

How are these 'opposites' distinct? Why is their 'diversity' important? How is knowing their distinction insightful or relevant? (3, 4)

In perceiving a **recursive relationing**, we observe and experience:

How is 'that which is perceived as separate' actually both cause and effect of each other? How do 'dualities' influence each other, or react to each other; antagonistically, beneficially, or both? (1, 2, 4)

In perceiving an **including middle**, we observe and experience:

How are aspects of a paradox both true, yet alone insufficient? Why must opposites or dualities exist concurrently? What allows their *immediate unification*, while preserving their distinction? (1, 3)

In perceiving symmetry, or a **hologrammic relationing**, we observe and experience:

How do 'those which are perceived as separate' actually internalise each other in their existence? How is A part of non-A, and vice versa? How do both of these opposites only actually exist as embedded in each other? (2, 4)

In perceiving a **radical intra-action**, we observe and experience:

How do 'those which are perceived as separate' actually not exist independent of each other? How is it only in their coming-together that they can be perceived as existing? (1)

In perceiving **emergence**, we observe and experience:

What irreducibility emerges from the vital play of opposites, when they are brought together? How can distinctions be seen as inter-acting in the service of a higher, emergent process? (1,2)

In perceiving **Wholeness**, we observe and experience:

How are these distinctions actually manifesting from the same underlying, unifying Oneness? How is my existence part of the same Whole? How do I recognise the external is the internal 'externaling' and the internal is the external 'internaling'? (5)

Science morals
Sensation idea
Peripheral center
Body soul
Stimulus response
Means ends
Traditional progressive
Imagination fact
Emotional intellectual
Implicit explicit
Play serious
Process product
Near far
Easy difficult
Projection Reflection
Personal social
Subject object
Soul body
Hate love
Oppressor oppressed
Self other
Diversity unity
History Possibility
Wave particle
Local global causality
Continuity discontinuity
Separability Non-separability
Nature homo sapiens
I They / it / we
We It / they
Individual Individual
Reason Reason
Brain mind
Individual species
Rooted uprooted
Cultural biological
Order Disorder
Prudence Audacity
Timorous Bold
Precaution Invention

In perceiving or **pursuing transformation**, we observe and experience:

What productive tensions, contradictions, or distinctions can be brought together to encourage deviations, or a synthesis *over time*? (2, 4)

In perceiving broad-scale **evolution**, we observe and experience:

How are many contradictions interconnected and influencing each other? What are the fields of these never-ending tensions? How do we recognise this unpredictable, self-organising, creative field of evolution, and thus care and pay attention to the ethics of the whole? (2, 3, 5)

And in the spirit of **critical reflexivity**, we could ask:

When are these perceptions not relevant? When is a relational logic, or a synthesis of opposites not necessary? How do we hold multiple, conflicting perceptions at the same time? What are we integrating into a whole, and what are we separating as different, and why, and why does that lead to?

Are all of these principles just human constructs (an epistemological invention), and/or is there actually a logic within which all life is embedded? How do we hold in tension the views of '*logic as a human construct*' and '*wholeness as a logic within which all life is embedded*' to better design our own cultures and relations with the world?

What does it mean to have different logics-of-perception unconsciously dominating distinct meaning-systems in one's worldview or our shared paradigms? (4, 5)

What would it be like to fundamentally re-imagine the plethora of common dichotomies through many logics-of-perception? How would the moments of our lives feel and meaning-make differently?

| | |
|-------------------------|------------------------|
| Human | divine |
| Reflection | action |
| Design | management |
| Scientific | creative |
| Scientific practitioner | Spiritual practitioner |
| Techno | Eco-systemic |
| Knowledge | experience |
| Knowledge | myths |
| Short term | long term |
| Informal | formal learning |
| Chance | necessity |
| Atman | Brahman |
| God | devil |
| God | human |
| Elite | people |
| Chosen race | others |
| Political right | Left |
| Feminine | masculine |
| Quality | quantity |
| Liberty | determinism |
| Spiritual | material |
| Relative | absolute |
| Knower | known |
| Agency | structure |
| Relational | substance |
| Self | other |
| Ordinary | sacred |
| Suffering | bliss |
| Disaster | opportunity |
| Beautiful | difficult |
| Connectedness | autonomy |
| Receptive | aggressive |
| Maths | art |
| Matter | memory |
| Prudence | audacity |
| Life | death |
| Whole | Part |
| Intellectual | sensual |

In sum, the purpose of the detail in this section was to demonstrate the evident unity in diversity of the philosophers' beyond-separatist logics-of-perception. Each of the preceding-philosophers made unique and convergent advancements in acknowledging and transcending the dominant separatist logic-of-perception to similar and distinct manifestations of 'binary constructs'.

Not every educator who invokes the term 'transformative sustainability learning', and its common pedagogies (experiential, critical, systems, transdisciplinary, complexity) has an awareness or engagement with these deeper intentions of the philosophers. However, the four vignettes in this inquiry had resonant intentions. In *Ch. 11, Premise: relational perceptions*, I will further synthesise these questions, born from a diffractive reading of the philosophers with the relational logics-of-perception of the educators.

Generative questions

This chapter also raised generative questions that I touch upon in the inquiry, but do not have time to address fully in a direct way:

- If the shared aim of the philosophers is recognised, how might it be easier to see beyond 'disciplinary' labels, and make our shared goals that much more achievable (unity in diversity)? Why aren't these shared goals of beyond-separatist logics-of-perception more commonly recognised in sustainability education?
- As John Heron so aptly noted in the quote at the beginning of this chapter, it is one task to write and talk about using these relational logics-of-perception, but how do we recognise their sublime profoundness? How do we write about these ideas without reducing them to a term or a reification (e.g. losing meaning as they progress towards a litany)?
- And, perhaps more importantly, how can we recognise when our perceptions start to change, and we begin to manifest a sense of oneness, which becomes apparent in our shared experiences or social institutions and relations?

Towards providing insights into these questions, the following chapters identify and compare what enabled this complexification of perception for the preceding-philosophers (*Premise chapter 9*) and vignette-educators (*Premise chapter 10*), e.g. what transformative moments led to this stretch, shift, nuance? In the following two chapters I explore the experiences that have led to a beyond-dualist perception towards appreciation of context, tension, paradox, relationing, emergence, wholeness, dynamic process, evolution.

Chapter 9:

Sources of philosophers' views

In explaining their 'beyond common sense' perceptions (*Ch. 8, Premise: [philosophers' logic](#)*), the preceding-philosophers wrote and reflected on their own transformative moments in which their perceptions were stretched beyond the separatist, dualist, Boolean logic-of-perception. I believe the shared threads patterned across the preceding-philosophers suggest both: a) expected and unexpected avenues for others to explore as a means of prompting third-order reflections on the dominant-cultural-paradigm, and b) contexts to delve into to better grasp the philosophical kaleidoscope through which we can create and curate learning experiences.

9.1 Contents of this chapter

In this chapter, I surface and curate similarities and differences of their third-order reflections. These diverse sources of 'disorienting dilemmas' or 'activating-events'¹⁵⁷ offer insights into how to bring consciousness to the depth of the separatist perception. This chapter traverses the engagement of these philosophers with several disorienting dilemmas or 'activating-events', including: the 'high terrain' of philosophies of change (via Georg Hegel, Charles Darwin, and Ilya Prigogine), and experiences of other realms of

¹⁵⁷ Concept created by John Mezirow, and further defined by many, as part of Transformative Learning Theory in which events in life cause dissonance between an individual's fundamental assumptions of the world and their new experiences.

reality (via quantum physics and psychedelics). I also offer preliminary insights into the power of networks (e.g. similar personal and professional connections) as a means of demonstrating social diffusion of third-order change. For each disorienting dilemma, or 'activating event', I introduce and contextualise the disorienting dilemma, and its *paradigmatic stretching potential*, in order to be able to understand its significance and impact on the philosophers.

I also compare the diversity of responses of philosophers to these 'sources of third-order activation'. For example, Charles Darwin offered quite a worldview shift for John Dewey, but other preceding-philosophers critiqued Charles Darwin as still operating within a reductionist paradigm. In other words, I attempt to demonstrate how the same 'activating event' provoked some philosophers towards a worldview shift, while other philosophers criticised the same 'activating source' as still containing separatist tendencies hidden in other worldview beliefs.¹⁵⁸ These comparisons *demonstrate that not every 'concept' represents a transformative disorientation*, as it depends on one's unique worldview.

This chapter requires a few caveats. Firstly, these moments of transformative realisations for the philosophers, are curated from readings that I engaged with primarily for the purposes of understanding each person's work. In other words, I did not specifically search for writing that demonstrated their awareness of their own worldviews. Rather the presence of their third-order reflections was an unexpected patterning I noticed across their writing. Implications of this process mean that I am only including a selection of their third-order reflections, and not everyone's story is included. For example, I did not come across any discussion of 'activating-events' within Erich Jantsch's writing.¹⁵⁹

9.2 Philosophies of process and transformation: Dialectics

Worldview-stretching-potential of Georg Hegel

In the footsteps of Heraclitus, Georg Hegel (1770-1831), a German philosopher, felt that the tendency of Western metaphysics towards 'substance' was not a full or accurate

¹⁵⁸ That said, I do not claim to be a scholar on George Hegel, quantum physics, Charles Darwin, Ilya Prigogine or psychedelics. Rather I am comparing and contrasting how the various philosophers preceding transformative sustainably learning discussed being changed or influenced by these 'third-order activating sources'.

¹⁵⁹ Again, this is not to say reflections on his own transformative learning doesn't exist, but they did not in the articles I read (see References).

description of reality (Capra, 1982, p. 10; Maybee, 2016). Hegel is described as one of the first in the Western tradition to criticise scientific materialism (Gare, 2002). In his first book “Phenomenology of the Spirit”, Hegel presented arguments and anecdotes to convince readers of the dynamic, interdependent, self-unfolding nature of reality, in direct contradiction to René Descartes (1596-1650). Hegel’s process philosophy represented a radically new recognition in Western thought of the importance of context and history. In fact, Johanna Seibt (scholar of process philosophy and metaphysics) considers Hegel, after Heraclitus, to be the first notable process philosopher (2016).

Georg Hegel’s methodology is a close investigation of consciousness. His descriptions seek to demonstrate that if we pause long enough to observe our consciousness, we will see how the belief in a *solitary object* is less real than the *mutually-influencing relationship between what we observe and how we think about it* (Seibt, 2016). This process is very similar to Vedic and yogic methods of developing a ‘self-witness’ of consciousness, as a means of transformation. Hegel referred to this method of witnessing the ‘self-unfolding of reality’ as a ‘dialectical movement’ between the inner world and the outer world, where through reflective thought we can actually observe how reality is our *own internal “reason” articulating itself as and within the world*. This dialectical movement between inner and outer worlds “differentiates itself into mental, natural, socio-cultural, and institutional processes” (Seibt, 2016). In other words, Hegel recognised the profound mutual co-arising between what we believe about the world and the world we observe and create around us.

Hegel’s interpretation of reality is just one example of his ‘process through dialectics’ philosophy and method (Maybee, 2016). He applied this dialectic to many other topics under his investigation, using an epistemological process of investigating relations between opposing sides. His approach developed out of a dissatisfaction with traditional reductive arguments and dominance of linear reductive logic as a method of proving truth. “Foundational philosophy”, one term for the broader Greek philosophy, maintained that for knowledge to be true and valid it has to be justified with premises, but recognising that this process of justification could regress in ad infinitum, they conceived of basic beliefs or premises to provide a solid foundation. However, Hegel, perhaps a postfoundationalist, felt that premises could be arbitrarily chosen and, similar to Gregory Bateson (Capra, 1988), argued that linear logic will always and automatically generate contradictions (Maybee, 2016):

According to the logic of a traditional reductio ad absurdum argument, if the

*premises of an argument **lead to a contradiction, we must conclude that the premises are false**—which leaves us with no premises or with nothing. We must then wait around for new premises to spring up arbitrarily from somewhere else, and then see whether those new premises put us back into nothingness or emptiness once again, if they, too, lead to a contradiction...Hegel believed that reason **necessarily generates contradictions.***

So, Hegel proposed the logical and methodological approach of dialectics as an improved version of science, that will lead to more accurate truths of reality (Maybee, 2016; Torres, 1996, p. xix). Hegel's dialectics are often simplified as the tenet: [thesis+antithesis=synthesis]. This tenet can be further elaborated in three logics:

- Perceiving distinctiveness
- Perceiving how distinctions are relating to both simultaneously cancel **and** preserve each other
- Perceiving an emergent synthesis through their unity

The adoption of an integrative, **reconciliation of opposites** (rather than separatist logic) via an engagement with the philosophy of Hegel can be traced through several of the preceding-philosophers. While Hegel's work provided a transformative 'activating or disorienting' source for some, other's critique Hegel as still embodying undesirable aspects of the dominant-paradigm.

How were the preceding-philosophers engaged with Georg Hegel?

There was a diversity of engagement with aspects of Georg Hegel's philosophies. Paulo Freire, Edgar Morin, and John Dewey were powerfully and positively influenced by Hegel. And yet, these philosophers *also* continued to push beyond the bounds of Hegel's 'mechanistic' dialectics.

Paulo Freire and Georg Hegel

In the circle of reading that I undertook of Paulo Freire, discussions of Hegel's positive influence on Freire were more prevalent than discussions of his negative influence on Freire. Freire came to Hegel, both in his own reading of Hegel and indirectly through his

engagement with Karl Marx (Gardener et al., 2013; Lange, 2012).¹⁶⁰

Freire engaged with Hegelian ideas in several ways. Firstly, he adopted Hegel's notions of consciousness and *praxis*¹⁶¹ as a simultaneous way of thinking and acting (Lake & Kress, 2013, pp. 15, 35). Secondly, Freire adopted Hegel's theory of dialectical relationships between people. For example, whereas Hegel referred to the contradictory processes that create the relationship between master and slave, Freire adapts this to the parallels that he sees between the oppressed/oppressor and teacher/student relationships (Gardener et al., 2013). Thirdly, Hegel's process of dialectical progression confirmed to Freire that much is to be learned in investigating the historical process of mutual evolution of consciousness and societies, to understand how reality is "constituted through and an outcome of historical struggles" (Torres, 1996). And finally, Hegel and Freire share hope in overcoming a human-perceived-and-thus-created alienation between one's self and others, by moving towards a more complex awareness of "differentiated unity" (Gould, 1978, pp. p. 7 in Lange, 2012). This is a perception and consciousness of one's uniqueness as well as one's connectedness to 'social and natural relations' (Lange, 2012).

Edgar Morin and Georg Hegel

Similar to Freire, Edgar Morin's initial exploration of a paradigm of General Complexity was also influenced by Hegel's writings (Morin, 2006). In alignment with Hegel, Morin recognised the deeply *embedded dualisms* within Western thought<>action, such as the *human/nature divide* or *us/them divide* (Morin, 2008). In fact, an acolyte of Morin, Sean Kelly, interpreted Hegel as "*the spiritual father of the new scientific paradigm*" and Morin (as well as David Bohm) as the leading exponents of this new paradigm (Bohm, Kelly, & Morin, 1996). Arguably, it was Morin's Hegelian roots that encouraged him to pursue a transcendence of disjunctive, either/or polemics, before he was introduced to and influenced by systems, complexity, cybernetic and chaos theories (Hampson & Rich-Tolsma, 2013; Montuori, 2013a). However, it has been recognised that Morin's relational logics differ from Hegel's dialectic in that Morin does not demand any guaranteed synthesis or "synthetic resolution" (Hampson & Rich-Tolsma, 2013; Montuori, 2013a).

Kernels from Georg Hegel also grew into Morin's ethical arguments for General

¹⁶⁰ Arguably, Karl Marx based his own scientific approach to society and history based on Georg Hegel's views (Redding, 2016).

¹⁶¹ For Paulo Freire, *praxis* is the dialectical unity between thought and action in order to transform it.

Complexity. Morin believes that when we judge ‘the actions’ of a person, without understanding their context and complexities and that they can ‘be differently’, **we are actually guided by incomprehension**. For example, if the “*feature is favourable, the person’s negative aspects are ignored; if it is unfavourable, the positive features will be ignored. In both cases, there is incomprehension*” (Morin, 2001).

The consequences of this ‘reductive, dominant mode of thought’ is that when “*knowledge of a complex is brought down to knowledge of just one of its elements, deemed to be the only significant one, the consequences in ethics are worse than in physical knowledge*” (Morin, 2001). Morin quotes Hegel to articulate the point: we should not “*confine or reduce a human being to his crime or, if he has committed several crimes, to his criminality. As Hegel said: ‘Abstract thought sees nothing in the murderer but that abstract quality, and with that single quality [destroys] the rest of his humanity*” (Hegel cited in Morin, 2001, p. 81).

In essence, Edgar Morin and Georg Hegel are perceiving the inextricable link, and need for alignment, between our onto-epistemological stance and our axiology. This is a reoccurring theme that resonates deeply across the work of all five of the preceding-philosophers and within the following learning vignettes (and will be picked up again in *Ch. 12, Premise: [meaning-systems](#)*).

John Dewey and Georg Hegel

Similar to Hegel’s influence on Freire and Morin, one of Hegel’s principles that “left a permanent deposit” in John Dewey was the notion of unification through **the relational and contextual positioning** rather than **binary positioning** of good and bad, subject and object, matter and spirit, the divine and the human (Dewey, 1930).

John Dewey’s 1930 submission to *Contemporary American Psychology* – entitled *From Absolutism to Experimentalism* – details his memories on the development of his own personal philosophical views. Within this paper, Dewey reflected on the therapeutic, intellectual salve Hegel provided for his internal disconnect (see words I bolded in the quote below). Dewey’s reflections in this paper suggest he had been stifled and oppressed by the mechanistic and separatist thinking within which he had been trained, but Hegel offered quite a transformative, process perspective for Dewey to view the world afresh:

*There were, however, also "subjective" reasons for the appeal that Hegel's thought made to me; it supplied a demand for **unification** that was doubtless an **intense emotional craving**, and yet was **a hunger** that only an intellectualized subject-matter could satisfy. It is more than difficult, it is*

impossible, to recover that early mood. But the sense of **divisions** and **separations** that were, I suppose, borne in upon me as a consequence of a heritage of New England culture, divisions by way of **isolation of self from the world, of soul from body, of nature from God**, brought a painful **oppression**—or, rather, they were an **inward laceration**. My earlier philosophic study had been an intellectual gymnastic. Hegel's **synthesis of subject and object, matter and spirit, the divine and the human**, was, however, no mere intellectual formula; **it operated as an immense release, a liberation**. Hegel's treatment of human culture, of institutions and the arts, **involved the same dissolution of hard-and-fast dividing walls**, and had a special attraction for me (Dewey, 1930).

Later within the article, however, Dewey explains how he moved beyond Hegel. Even though he still maintained that Hegel had a “greater richness and greater insight” than “any other single systematic philosopher”, he came to believe that ultimately Hegel’s **philosophical system appears to be a mechanical dialectics** and “artificial to the last degree” (1930).¹⁶² In other words, as our perceptions of relationality increase and nuance, we are better able to perceive vestiges of the myth of separation in other ways and manifestations.

Critiques against Georg Hegel

Dewey’s eventual conclusion is resonant with Erich Jantsch’s perspective. Jantsch argued that in Hegel’s description of evolution and change, the *processes* are only ever perceived as one-way logic, rather than mutually encouraging (Jantsch, 1976b). Jantsch believes that his own much deeper, wholistic process ontology transcends Hegel’s mechanical dialectics (Jantsch, 1980a):

*Process oriented thinking does not know any sharp separation between opposite aspects of reality. It transcends a dialectical synthesis of opposites, that clumsy Western attempt at making a rigid structure of notions move and overcome its dualism. In process thinking, and therefore evolutionary ethics, **there is only complementarity in which the opposites include each other.***”

¹⁶² This is not dissimilar to Noam Chomsky’s critique (who coincidentally attended a John Deweyian experimental school), when Noam Chomsky referred to Hegel’s analysis as rubbish (Gardener et al., 2013)

In other words, Jantsch is arguing that the perception of wholeness is what allows process thinking (whereas the Hegelian synthesis still prioritises a primary perception of difference).

Basarab Nicolescu also believes that Hegel's dialectics is a mechanical synthesis of opposites, although, his interpretation is primarily because of Hegel's beliefs about the role of time. Hegel describes how the passage of time overcomes the tensions of opposites. However, influenced by his background in quantum physics, Nicolescu argues the synthesis of opposites co-exists *at the same time*. He argues that in fact, if we treat the transcendence of dualism as a linear process over time, this can actually lead to incredible harm:

*In the hands of Marxist-Leninists, the Hegelian synthesis appeared like the grand finale of progressive development on the historical plane: primitive society (thesis) -- capitalist society (antithesis) -- communist society (synthesis). Alas, it has metamorphosed into its opposite. The unexpected fall of the Soviet empire was in fact inexorably inscribed in the binary logic of its own system. A logic is never innocent. It can even cause millions of deaths. The entire difference between a triad of the included middle and a Hegelian triad is clarified by consideration of the role of time. In a triad of the included middle, the three terms coexist at the same moment in time. This is why the Hegelian triad is incapable of accomplishing the reconciliation of opposites, whereas the triad of the included middle is capable of it. **In the logic of the included middle the opposites are, rather, contradictories: the tension between contradictories builds a unity that includes and goes beyond the sum of the two terms**" (Nicolescu, 2002, p. 30).*

Nicolescu's interpretation is that 'Hegelian dialectics' does not include the simultaneous existence of all three components, but considers Hegel's triad to still to be a form of linear, separatist thinking, and thus dangerous logic-of-perception. He asserts that only his logic of the included middle can truly achieve the unity of opposites, because A, non-A and middle T (the synthesis) all exist simultaneously. (Conversely, this inquiry asks, *how can all of these diverse perceptions work together*, as in the summaries of *Ch. 8, Premise: philosophers' logic* and upcoming *Ch. 11, Premise: relational perceptions*).

Reflections and provocations on Hegel

Why does this discussion on the various relationships and critiques of Georg Hegel

matter? To pause and look back that the landscape we've traversed, the vistas I'd like to point out as relevant right now are *the benefits of engaging with these historical, philosophical roots to improve our consciousness of our perceptions, thoughts, and ways of becoming with the world.*

This exploration demonstrates that while we might become aware of parts of our unconscious absorption of the logics-of-perception embedded within the contexts of our societies, as did Hegel, it is very challenging to become fully aware of the embeddedness of our logics-of-perceptions. What do I mean by this? Each of these preceding-philosophers *resonated with the main flux of Hegel's move beyond separatism*, but there are nuances of each philosopher's adaptation. For example, Morin, influenced by his desire to avoid blind application of preconceived rules of thought, critiqued the *epistemological* assumption that a unity of opposites is always and necessarily guaranteed; however, he did adopt Hegel's more complex *axiological* approach towards making-meaning of 'others'. Nicolescu, influenced by quantum physics, critiqued Hegel's *cosmological* role of time delay in achieving the unity of opposites. Jantsch, presumably due to a deep engagement with the *ontology* of mutual co-arising within mystic and Eastern philosophies, felt that Hegelian philosophy still haven't moved far enough beyond views of mechanistic materialism.

In other words, knowing our onto-epi-axi-etc.-ologies (or gaining sanity as Gregory Bateson once referred to it) is not a binary state of 'getting it or not getting it', but perhaps rather a process of continual life-long learning. We can continue diversifying our practices for complexifying our consciousness, and improving our third-order meaning-making on diverse perspectives and experiences.¹⁶³ Perhaps it is a weaving of more rivulets towards some great, estuary. An infinitely spiralling shell. An incomplete, continually-nuanced painting.

When philosophy and practice come closer together, the implications are profound. Yet, in this life-long journey, engaging with philosophy may not resonate with everyone. The typical way of 'learning philosophy' in the dominant-cultural-paradigm is to focus on intellect, primarily by reading a book and discussing (which as we saw in the arguments of *Ch. 6, Premise: meaning-systems*, the dominant culture already focuses too much on rational intellect). However, making conscious and expanding one's worldview through philosophy does not have to - and should not - be a form of only intellectual study of

¹⁶³ E.g. this is an committed on-going journey for leading thinkers, let alone the rest of us mere mortals.

scholarly texts; rather it can be embodied as an integral part of praxis (abstraction-in-forming-action-informing-abstraction); a study of one's own consciousness. A vignette in the *Process segment* explicitly engages with philosophy in an embodied way to develop worldview awareness, as a study of one's own consciousness.

9.3 Philosophies of process and transformation: evolution

Other philosophies of process and transformation were influential in the third-order reflections and transformations of the preceding-philosophers. In particular, the philosophies of evolution offered 'threshold experiences' for several of the preceding-philosophers. In general, *theories of evolution* are considered another prompt within the dominant-cultural-paradigm for more complex perceptions of reality (Jantsch, 1980; Seibt, 2012). From these observations, the Western concepts of emergence and self-organisation first arose and provided foundations for cybernetics, systems, complexity, chaos theories (Morin, 2006; Seibt, 2012).

However, different paradigms of evolution were available to the philosophers depending on their timing on Earth. Charles Darwin was the most celebrated evolutionary theorist during John Dewey's time, whereas Ilya Prigogine and his theory of dissipative structures offered a subsequent theory, inspiring Edgar Morin, Erich Jantsch and Basarab Nicolescu. In comparing Charles Darwin's and Ilya Prigogine's perceptions<>conceptions of nature, we can again see how steps might be made in transcending the myth of separation, but yet there is always more that can be re-perceived in terms of relationings and evolvings.

Worldview-stretching offered by Charles Darwin's theory of evolution

According to John Dewey, Charles Darwin's theory of evolution was another conceptual bomb for Western thinking, a disorientation towards third-order change. John Dewey suggested that Charles Darwin's concept of evolution, was an "intellectual revolt" (Dewey, 1910), causing a seismic shift in the paradigm of knowledge. John Dewey exclaims the significance of Charles Darwin's paradigm shift within his book, *The Influence of Darwinism on Philosophy*:

*In laying hands upon the **sacred ark of absolute permanency**, in treating forms that have been regarded as types of **fixity** and **perfection** as originating and passing away, the *Origin of Species* **introduced a mode of thinking** that in the end was **bound to transform the logic** of knowledge,*

and hence the treatment of morals, politics and religion" (Dewey, 1910).

In the period of his life, Charles Darwin may have provided an intellectual revolt to societies within the dominant-cultural-paradigm by addressing one of the epistemic assumptions foundational to Enlightenment thinking, that of **absolute, permanent, unchanging hierarchy of species and knowledge**. John Dewey's perceptions of renewal (origin, passing, regrowth), inspired by Charles Darwin's evolutionary thinking, is common across many Deweyian philosophies (Garrison, et al., 2012).

Awareness of Charles Darwin as perpetuating separatist perceptions

However, subsequent critics argued that aspects of Charles Darwin's perceptions still remained within onto-epi-axi-anthropological norms of the Cartesian-Newtonian paradigm. For example, even though all life may have evolved from slime and much later humans may have evolved from apes, there is still the common unconscious belief and perception arising from interpretation of Charles Darwin's work, that evolution stopped with humans as the apex of the chain of both species and knowledge-holders, e.g. Erich Jantsch critiques the inherent belief within interpretations of Charles Darwin's work that we humans are the sole purpose and end (*telos*) of evolution (Jantsch, 1976a,b).¹⁶⁴

Erich Jantsch was very critical of the continuing manifestation of the separatist myth within Charles Darwin's theory of evolution. Even though Charles Darwin's theory was process-oriented in how it viewed causal change over time, Charles' conceptualisation of evolution viewed species **as separate from** context (Hutchins, 2014, pp. 27-34). Charles Darwin's reductive view of evolution was based on **reductive** perceptions and observation of a single group species, and even single interactions between two individuals, and thus developed a theory based on competition and chance, and ability of individuals to adapt themselves to certain situations (Jantsch, 1980c).¹⁶⁵ In other words, the implication of Charles Darwin's separatist logic prevented the perception of creative and complex co-evolution of many species with each other and the environment (Jantsch, 1980a,c).

¹⁶⁴ This dominant belief can be contrasted with that of some Indigenous societies who view humans as the youngest, and most recent, thus those with the most to learn from our flora, fauna and spirit elders (Little Bear, 2016).

¹⁶⁵ For example, if a Noisy Miner bird chases and eats a moth, this 'zoomed in', binary view, can be perceived as competition, i.e. one against the other. What 'zooming out' provides is a perception of other additional, more complex, non-binary relations; how, for example, the Noisy Miner birds and the moths as larger processes might both need each other to co-exist in intricate relationships with their environment.

Edgar Morin concurred with Erich Jantsch's critique of the separatist tendencies still within Charles Darwin's theories, although not as passionately or extensively. He argued Charles Darwin's conceptions of variation and competition as "motors of evolution" were still within the reductive paradigm, excluding the role of cooperation, creativity and change (Morin, 2006).

A more relational perception of evolution, beyond Charles Darwin

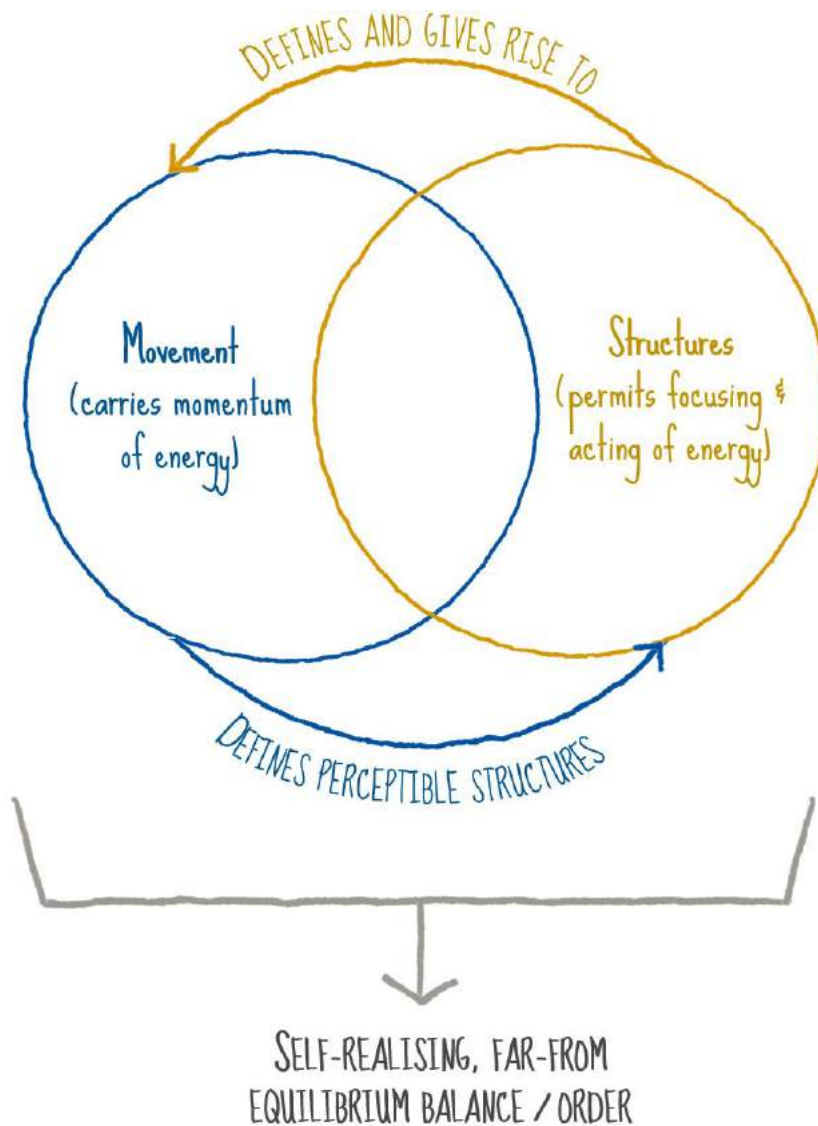
As opposed to Charles Darwin's reductive, binary application of the principle of evolution, Erich Jantsch perceived how the living *and* the environment *co-evolve together*, within the simultaneous and complementary processes of *chance and necessity*, meaning that not only can life and environment co-evolve, or learn together, but a meta-evolution happens as well: the evolutionary mechanisms and principles also evolve (Jantsch, 1980c, pp. 7-8):

The one-sided application of the Darwinian principle of natural selection frequently leads to the image of "blind" evolution, producing all kinds of nonsense and filtering out the sense by testing its products against the environment. As if this environment would not itself be subject to evolution! Evolution, at least in the domain of the living, is essentially a learning process.

Erich Jantsch argued that Charles Darwin only took our perceptions a small step away from static, materialist perceptions. According to Erich Jantsch's interpretations, Charles Darwin's theory of evolution was based on natural rules of competition, and assumed these rules did not change. Instead, Erich Jantsch and Edgar Morin credit Ilya Prigogine (and his notion of dissipative structures) as bringing in a more accurate perception, which greater potential to unseat beliefs of the *perfectly ordered* and *determinist vision* (Morin, 2006; Jantsch, 1980c). To move beyond what Erich Jantsch described as 'nonsense', towards a broader and contextualised view of evolution, in which even the values and rules evolve, Erich Jantsch looked to the insights of Ilya Prigogine.

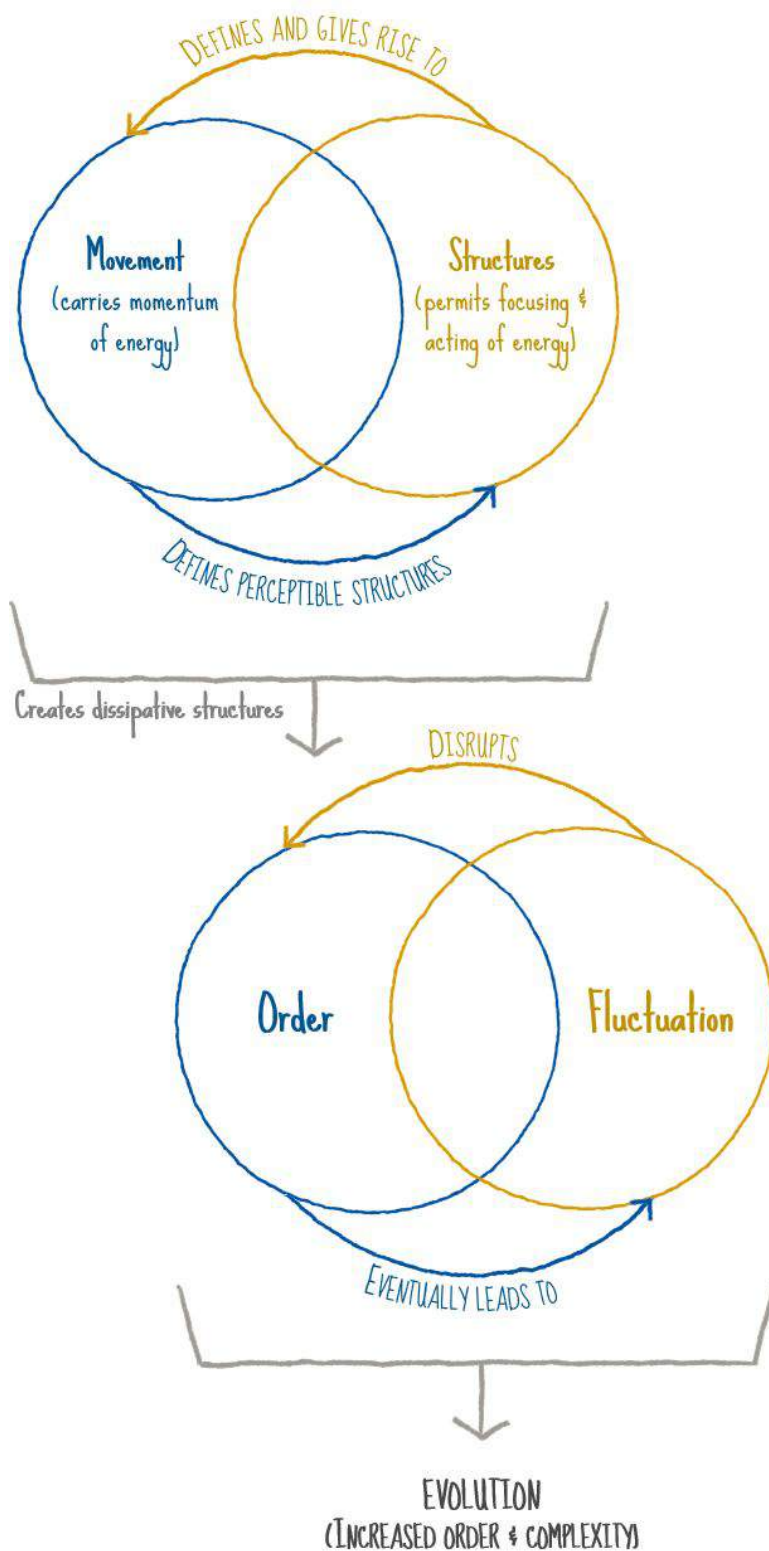
Worldview-stretching of Ilya Prigogine's dissipative structures

In 1967, Ilya Prigogine, physical chemist and Nobel Laureate, was credited with leading the development of the theory and later empirical confirmation of the *dissipative structures* (Prigogine, 1973, 1976, 1977; Stengers, 2004). A simple example of dissipative structures are whirlpools, where, paradoxically, an open system maintains itself in a *structure made of dynamic movement* (Visual 39).



Visual 39. Perception of reality as 'dissipative structures'

In essence, Ilya Prigogine's work extended the second law of thermodynamics. The second law of thermodynamics hypothesises how energy dissipates and disorder is created over time, which in itself is a break from classic physics in that it highlights the irreversibility of time (Morin, 2006; Prigogine, 1973). However, this second law of thermodynamics applies in scenarios of (or close to) 'equilibrium' *where the role of fluctuation is not considered* (Prigogine, 1976) or **the coupling of processes is ignored** (Stengers, 2004). This is precisely what Charles Darwin's reductive approach missed in his theory of evolution - the coupling of processes, context of context (Visual 40).



Visual 40. Creative evolution based on vital play between processes (order and fluctuation)

Visual 40 attempts to abstractly demonstrate the perception that evolution is not of *entities*, but *processes* (Jantsch, 1980a). The relation principle underlying dissipative structures is one of '*order through fluctuation*' (Jantsch, 1980b; 1980c, p. 6; Prigogine,

1977). *Order-through-fluctuation* is perceivable through a logic of **complementarity of opposites** (rather than **separation of opposites**).

In Ilya Prigogine's work with phenomena that exist as *far-from-equilibrium*, he demonstrated how, through fluctuations, new order and complexity can be created in new spatio-temporal dissipative structures (Prigogine, 1976; Stengers, 2004).¹⁶⁶ This transformative concept (about transformation) won Ilya Prigogine the Nobel Peace prize in 1977 (Prigogine, 1977).

The paradoxical concept of order-through-fluctuation facilitates the re-perception and definition of what the dominant-cultural-paradigm perceives and defines as a 'thing'. For example, instead of viewing cells as a material or object, the perception of dissipative structures allows us to conceive of cellular **processes**, where 'cells' are both decaying and restoring in a state or process of equilibrium (Capra, 2002). Instead of a 'thing' we have a far-from-equilibrium (*fluctuation*) yet stabilizing (*order*) **process** over **time**; in other words, a productive paradox, a simultaneous unity of opposites, which through time evolves to process-structures of greater complexity.

In sum, several of the philosophers agreed that philosophies of evolution, through observations of nature, could lead to transformations or stretches in one's logic-of-perception. But different opinions exist on the degree to which these two theories pushed the dominant-paradigm beyond separatist perceptions. John Dewey felt that Charles Darwin *transformed the logic* of thinking. However, Edgar Morin and Erich Jantsch felt that Charles Darwin was only tinkering around the edges, e.g. they could perceive how Charles Darwin was still perceiving predominantly from separatist logic. Instead, Edgar Morin and Erich Jantsch herald Ilya Prigogine as perceiving nature from a much more profoundly relational logic: a coupling of 'oppositional processes' - **processes born of many diverse relationings** - from which emerges the process of evolution.

¹⁶⁶ So beyond our dominant perceptions of reality, where we look out the window and see 'trees', and think we are sitting on this 'chair', assume these trees and this chair are the static reality; beyond these dominant macro-material perceptions of reality, isn't everything always in a state of 'far-from-equilibrium', when we zoom out and include more context (Jantsch, 1980c)? And if reality is process, and processes of processes, does it make sense to even use the word or concept of 'sustainability'? Do the historical connotations of this concept imply a desire to keep things and processes stable? How does the concept of sustainability miss the value of disruption, and continual creativity and evolution of processes of processes? Do we really mean 'transformative sustainability learning'? Or do we mean: transformative learning for regenerative becoming? Transformative learning for whole of system flourishing?

Reflections on the transformative potential of observations of nature as evolution

What does the preceding discussion mean in relation to transformative sustainability learning? Perhaps it is through these perceptions that one is able to access diffracted meaning-systems of self, cosmology, and spirituality. If we unconsciously perceive humans as entities who are the apex of a competitive evolution where we have to fight to maintain our status and survival, what types of actions and behaviours does that enable?

Conversely, if we perceive humans as a process, an inseparable aspect of self-organising evolution, what types of action does this enable? Erich Jantsch argues this perception of ‘humans-as-process-in-larger-evolutionary-process’ means we have an ethical imperative to work to enhance evolution (1980). Also, perhaps of profound and consummate relevance to transformative sustainability learning, might it be that an ethics of becoming “does not know possession” (Jantsch, 1980a).

How often are these philosophical questions, and alternative ways of perceiving enabled in university courses? As we’ll explore, observations of nature, particularly in a meditative or child-like state, can offer perceptions of relationality, and even unity (*Ch. 11, Premise: relational perceptions*). And one vignette in particular includes recurring ‘nature sits’ to create the conditions for these perceptions to emerge (*Ch. 14, Process: models*).

Experiences of evolution are also prompted in learners explicitly being asked to be mindful of their own learning and evolutions in the courses.

Beyond process, evolution, and transformation philosophies, what other ‘activating sources’ did these preceding-philosophers experience as opportunities for third-order awareness, reflection and diffractions of their worldviews? The following two sections explore experiences of other realities, via quantum physics and psychedelics.

9.4 Other realities: quantum physics

Quantum physics was another disorienting dilemma or activating event. The exploration of sub-atomic levels of reality has created significant insights that challenge the premises of the mechanical, separatist paradigm (Alhadeff-Jones, 2008). Indeed, the number of quantum physicists who have entered the various fields of “process” philosophy and made contributions to envisioning beyond-separatist ways of being – Basarab Nicolescu, Fritjof Capra, Werner Heisenberg, Niels Bohr, Wolfgang Pauli, David Bohm - is telling of the types of paradigmatic shifts that quantum physicists experienced (Malin, 2001).

In an attempt to better imagine what it must have been like for these physicists to undergo this disruptive experience of a beyond-dualist reality at the time and milieu of these quantum discoveries, I provide a summary of early quantum insights. Specifically, I present these insights in terms of their potential to ‘stretch, transform, complexify’ our logics-of-perception, ontology and epistemology.¹⁶⁷ I then summarise these insights by comparing them with classic Newtonian beliefs (*Table 9*). After this, I reveal the influence of quantum physics on these preceding-philosophers relevant to transformative sustainability learning, focusing on physicist Basarab Nicolescu.

Perception-stretching offered by quantum physics

During the early 20th century, when physicists began exploring quantum levels of reality, the separatist myth was repeatedly challenged. Every time scientists asked a question, it was answered paradoxically with a *simultaneous* superposition of both ‘yes’ and ‘no’ (Nicolescu, 2014c). From a dominant-cultural-paradigm of anti-dialectic¹⁶⁸ and anti-dialogic¹⁶⁹ absolutes, quantum scientists were challenged to accept wildly different yet *co-existing polemics*:

wave><corpuscle;
continuity><discontinuity;
separability><non-separability;
local causality><global causality.¹⁷⁰

These changes from a classic paradigm to one of paradoxical perceptions (Nicolescu, 2005; Nicolescu, 2006, 2014; Capra, 1982, p. 71), disrupted many principal concepts of the techno-scientific paradigm (Malin, 2001; Montuori 2008; Morin, 2006). Scientists had to learn that their concepts, ways of thinking, unquestioned beliefs, logic-of-perception *and language* was inadequate to describe atomic phenomena. As a result, scientists joined

¹⁶⁷ I am not a physicist, let alone a quantum physicist. My college physics class was entirely based in the Newtonian laws. Thus, I reiterate, this section is focused on identifying and illustrating the patterns of how those who engaged in quantum physics found it to be a disorienting and transformative event.

¹⁶⁸ E.g. Paulo Freire’s description of unquestioned worldview beliefs.

¹⁶⁹ E.g. Edgar Morin’s description of using a singular separatist logic-of-perception.

¹⁷⁰ In this inquiry, the symbols ‘><’ invoke a separatist perception of opposites.

forces across borders and cultures, and learned to ask different questions that rose above the contradictions (Capra, 1982, p. 65).

Ontological-stretching offered by quantum physics

Quantum experiments also fundamentally shifted deep ontological beliefs. In the initial experiments into sub-atomic levels of reality, x-rays and radioactivity were used to fire “alpha particles” at atoms, and the path of their deflection would provide insight into the atom’s structure (Capra, 1982, p. 64). As a result, scientists learned atoms are actually composed of vast amounts of space, as opposed to dense bodies. This insight challenged the dominant materialist interpretations of reality (Capra, 1982, p. 67).

At a quantum level, ‘matter’ can be understood only in a dynamic context of *movement, interaction, patterns, transformation* (Capra, 1982). In other words, particles are satisfactorily considered as wave-like probability patterns. This initial ontological realisation of the dynamic aspect of ‘matter’ shook the foundation of scientists who were raised and trained in the object/matter focused paradigm (Capra, 1988). To accept that all material objects are made up of dynamic patterns that link up in various ways to form an enormous variety of molecular structures, which vibrate according to their temperatures and in harmony with the thermal vibrations of their environment – i.e. to perceive and accept there is *dynamic stability* in nature, but *there is no static structure in nature, nor isolation from context* - was a huge paradigmatic transformation (Capra, 1982, p. 78-79).

In fact, many of the scientists’ ontological concepts and metaphors for interpreting reality were ‘shattered’ (Capra, 1975, p. 61):

[T]he notion of absolute space and time, the elementary solid particles, the fundamental material substance, the strictly causal nature of physical phenomena, and the objective description of nature -- none of these concepts could be extended to the new domains into which physics was now penetrating.

Epistemological-stretching offered by quantum physics

The role of humanity in creating knowledge in this new paradigm also changed significantly. Quantum physicists were confounded to discover that the role of the observer drastically influences the results of what is observed. Instead of being *objective observers safely outside the arena of investigation*, humans were now *indivisibly*

[linked to this “world as network”](#), where human observation, awareness, participation and consciousness had empirically verifiably implications for experiment results. These experiences led the founders and scholars of quantum mechanics to fundamentally rethink the validity of Western science’s complete separation of the subject and the object (Nicolescu, 2006).

Summary of paradigmatic stretching potential

The above summary and table below is just a glimpse into the profound paradigmatic-shifting potential of quantum physics, e.g. the premises of classic physics and the dominant cultural paradigm challenged by quantum experiences.

Table 9. Examples of how quantum insights stretched dominant logic-of-perception and beliefs

| Concept | Classic premise | Quantum interpretation | Implications | Shift towards: |
|------------------------|---|--|--|---|
| Particle substance | Physical objects exist independently of consciousness (<i>ontological realism</i>) ^{*, +} | An electron can have characteristics of a wave <i>and</i> particle depending on context (Bohr’s <i>ontic</i> notion of complementarity) ^{*, +} Particles are wave-like probability patterns ⁺ | Each interpretation can be partially correct, but not <i>totally correct</i> on their own ^{^, ~} Multiplicity is necessary for a more real understanding of nature/reality. | Ontological realism and subjective realism Either/or and both/and logic |
| Particle location | Every event can be accounted for as the effect of past causes ^{*, ~, ^} Particles exist at definite places ⁺ | The more we know about the locality of the particle, the less we know of its momentum, and vice versa (Heisenberg’s <i>epistemic</i> uncertainty principle) [*] | Humans cannot predict an atomic event; we can only predict ‘probabilities of interconnections not things’. ⁺ “Quantum randomness” (indeterminism) rules at the sub-atomic level [#] | Epistemological determinism and indeterminism Absolute and multiple knowledges |
| Causality ⁺ | An event A can only affect an event B <i>if</i> there is time (e.g. the speed of light) for a signal to travel from one to another (<i>local realism</i>) [*] Local variables and laws can predict outcome of an event ⁺ | Quantum entities continue to interact no matter what their distance from one another ^{*, `} Each event is influenced by unpredictable, instant, non-local connections happening across the universe ⁺ | The universe is connected in instant energetic communication; things can instantly communicate across space. The universe is fundamentally inseparable ⁺ and exhibits a basic oneness ⁺ | Local (empirical) causality and nonlocal causality Separability and non-separability |

| Concept | Classic premise | Quantum interpretation | Implications | Shift towards: |
|----------|--|--|--|-------------------------------------|
| Observer | Perceived as independent ⁺ | Observer perspective determines object's qualities ⁺ Observed events must be understood as interconnections between processes of observation and measurement | Subjects and objects are intertwined; thus, the values of the observer are present and must be recognised ⁺ # | Subject / object and sub-ob-jecting |
| Metaphor | World as object/machine, which can be decomposed to basic building blocks ⁺ | World as a relationship/whole, unified and networked by sub-atomic particles ⁺ # | The world is not a collection of objects, but a network of relations of a unified whole [#] | Reductionism and holism |

* (Malin, 2001); # (Nicolescu, 2002); + (Capra, 1982, pp. 69-77); ^ (Blackburn, 1971); ~ (Barad in Stuckey, 2010)

` As suggested in the Einstein-Podolsky-Rosen (EPR) thought experiment and theorised in Bell's theorem of non-separability.¹⁷¹

How did the preceding-philosophers engage with quantum physics?

Out of the five primary philosophers within this review, both Basarab Nicolescu and Erich Jantsch were physicists by training. Although Erich Jantsch was in the realm of the cosmos as an astrophysicist, and Basarab Nicolescu studied the infinitely small. Thus, because of Basarab Nicolescu's intimate engagement with quantum physics, he justifies his axioms of transdisciplinary philosophy in terms of quantum physics much more significantly than

¹⁷¹ A very crude explanation of the EPR thought experiment and subsequent real experiments: physicists can choose to look at the spinning of two electrons, A and B. First, they set the electrons to spin in an opposite direction, e.g. A is spinning up and B is spinning down, so in effect their spin cancels each other (their 'sum' is zero). Several methods exist for physicists to look at A, and the method determines whether they will see A spinning up or down. Regardless of which method they choose for observing electron A, in the same instant B will change so that sum of the pair always remains zero (a positive and a negative spin) regardless of how much distance is in between. Bell's theorem explains why the two electrons can be thousands of miles apart and still maintain an instant communicative connection. This obviously did not conform to the classic physics principle of local causality. Fritjof Capra expands on how global causality explains actions and occurrences at the sub-atomic level, where classic notions of local causality had lost their explanatory power:

*In quantum theory, individual events do not always have a well-defined cause. For example, the jump of an electron from one atomic orbit to another, or the disintegration of a subatomic particle, may occur spontaneously without any single event causing it. We can never predict when and how such a phenomenon is going to happen; we can only predict its probability. This does not mean that atomic events occur in completely arbitrary fashion; it means only that they are **not brought about by local causes**. The behaviour of any part is determined by its nonlocal connections to the whole, and since we do not know these connections precisely, we have to replace the narrow classical notion of cause and effect by the wider concept of statistical causality. The laws of atomic physics are statistical laws, according to which the probabilities for atomic events are determined by the **dynamics of the whole system**" (1982, p. 76).*

What Bell's theorem of non-separability and global causality imply, as noted above, is a compelling case for the interconnectedness of the whole universe. This insight, of the importance of the dynamics of the whole system, led to a radically different worldview (from the dominant-cultural-paradigm): that the world is in fact an intricate web or networked network of inseparable connections.

the others.¹⁷²

Much of Basarab Nicolescu's work around transdisciplinarity stems from the paradigmatic shifts that he experienced in quantum physics. In fact, he attributes his long practice in quantum physics as the source of both a) the general idea for transdisciplinary and b) *experimental data* for his transdisciplinarity axioms (Nicolescu, 2006).¹⁷³ Quantum levels of reality gave him an awareness of how "*disciplinary knowledge has reached its own limitations with far reaching consequences not only for science, but also for culture and social life*" (Nicolescu, 2010). But, both Basarab Nicolescu and I wonder if culture and society are engaging with these insights?

Basarab Nicolescu marvels at the potential of quantum physics to be, essentially, a threshold concept, meaning quantum physics could stretch the dominant-cultural-paradigm and prevent us from self-destruction spurred by the limiting worldviews inherited from Aristotle and René Descartes (Nicolescu, 2002). Specifically, Basarab Nicolescu believes that quantum physics offers a radical re-think of the black->white, true->false, subject->object dualism clouding our vision (Bernstein, 2015; Nicolescu, 2002); he believes quantum experiences could jolt us out of our blinkered utilitarian war and into the contemplative fields of common humanity and wonder again. However, while he argues quantum physics and the gems within are needed now more than ever, Basarab Nicolescu believes they are inaccessible to most. Thus, he attributes the failure of quantum

¹⁷² Within the readings I interpreted, Erich Jantsch does not appear to rely on quantum physics, rather only briefly and occasionally includes it within specific questions he wants to pose about alignment in broader scientific and artistic paradigm shifts (Jantsch, 1972a). From my bounded reading, neither John Dewey nor Paulo Freire engaged directly with the insights from quantum physics. However, John Dewey's modern philosophy was noted as being consistent with the insights coming out of quantum physics and posthumanism (Westling, 2006). While Edgar Morin was not a quantum physicist, he also credits both the sub-atomic world (microphysics) and its incompatibilities with classic physics, as well as Albert Einstein's theory of relativity (cosmophysics) as changing the mind of science to embrace more complex, nondualist ways of thinking (Morin, 2006). And other scholars whose work I refer to – Fritjof Capra, Niels Bohr, David Bohm – were all physicists deeply unsettled by their experiences with the quantum world.

¹⁷³ Quantum experiments justify Basarab Nicolescu's:

Ontological axiom: There are in nature and in our knowledge of nature different levels of reality and correspondingly, different levels of perception; quantum physics clearly shows how there are different levels of reality (or realities), with different levels of perception required for each.

Logical axiom: The passage from one level of reality to another is ensured by the logic of the middle; quantum physics shows how paradoxes in the visible world can be overcome by finding a perception and "term" at a different level of reality that can reconcile the paradox, e.g. light can appear as both a wave and a particle in the macro world because it is a wave-like distribution pattern in atomic reality. For Basarab Nicolescu, the logic of the included middle (or beyond-Boolean myth) is the very heart of quantum physics: "*it allows us to understand the basic principle of the superposition of "yes" and "no" states*" (2014).

Complexity axiom: The universal interdependence in which any level of reality can exist only because of the existence of and interaction with all other levels of reality; the notion of particles and energy as globally interconnected in a network is seen in this axiom.

physics in achieving a profound paradigm shift, in part to the impenetrable walls of communication. Communicating mathematical wonders to the world beyond is challenging, and outside of its own realm, he believes quantum physics loses its fire-power (2002).

Reflections on the transformative potential of experiencing other realities

Does quantum physics and other realms of reality hold transformative power?

Experiences of other realms of reality (beyond the macro physical) have been shown to have paradigmatic stretching capacity. For example, when astronauts experience the cosmological perception of an 'earth rise' from outer space, they are overwhelmed with a strong sense of the uniqueness and profound gift that is our Earth, and remark about indelible shifts in their concept of home. How could direct experiences of quantum reality, or the stories of those experiencing the shifts of paradigms through quantum sciences, maintain 'fire-power', as Basarab Nicolescu suggests it could, by igniting the wonder and curiosity of others?

Since the explosion of insights from quantum realities, many people have tried to extrapolate the insights of quantum physics to other domains, such as linking the principles of quantum physics with more relational conceptions of self, cosmology, and spiritual beliefs (Levy, 2018) Scholars have explored connections between quantum physics and Buddhism (Capra, 2000), Daoism (Jantsch, 1980c), Vedic thought (Goswami & Onisor, 2019), and Indigenous cosmologies (Aluli Meyer, 2013).

What are the implications of invoking quantum physics as a means of promoting beyond-dominant ways of perceiving and knowing? This type of extrapolation of quantum physics can be critiqued, as "imaginative appropriation", whereby "in the transit from mathematical formalism to ordinary language the [quantum oddities] tend to take on a surplus of meaning supplemental to their relevance within the prescribed context of the theory"(Miller, 2013).

While some explorations of quantum physics and spirituality and cosmo-ontology may be 'imaginative appropriation', I suggest within this inquiry that perceiving the paradigmatic stretching potential of quantum experiences could be beneficial for several reasons. I demonstrate, as Basarab Nicolescu, Albert Einstein and Niels Bohr believed, that a premise of transformative sustainability learning is that imagination and intuition are precisely what is needed in integrative partnership with our 'analytical left brains' to improve the questions we ask and the beliefs we explore (*Ch. 12, Premise: [meaning-systems](#)*). And for

those steeped in the dominant-cultural-paradigm, quantum physics as a 'core science' is a more 'trust-worthy source' of paradigmatic stretching.¹⁷⁴

Scholars have interpreted Niels Bohr's writing to suggest that Niels Bohr himself recommends that the ontic-stretching concept of *complementarity* could be applied to far more than just quantum physical systems (Blackburn, 1971). For example, the links between spirituality and quantum physics can be conceived of as demonstrating Niels Bohr's 'deeper truths' based in the logic of 'opposites as complementary'.

Complementarity, for example, provides a glimmer of hope that the 'sensuous' (arts and humanities) and 'intellectual' sciences could be brought back together again in a common frame of reference, that would not be a compromise or amalgamation, but a richer understanding in which each would each retain its own integrity (Blackburn, 1971). This is a common theme of the vignettes in the following *Process segment: a synergistic intermeshing of multiple ways of knowing*.

Generative questions

Some generative questions emerge in this discussion. I will attempt to weave these questions all together in the end of the document. Yet, as I mentioned, part of my intention in this inquiry is to raise and recognise more questions relevant to transformative sustainability learning than I am able to answer in this document, e.g. to be generative as well as conclusive.

If quantum physics can provide imaginative leaps and paradigmatic stretching to people beyond scientists working in the sub-atomic realm, in which instances would an exploration of the insights of quantum physics in transformative sustainability learning be helpful? What are the implications of drawing on the oddities of our quantum realities, taking place within us and around us, to spur imaginative and generative questions and explorations about our unquestioned assumptions, and the ultimate philosophical questions of 'how then shall we live'?¹⁷⁵

At the very least, if engaging with the philosophical questions raised by quantum physics provides the potential conditions and inspiration for learners to perceive single

¹⁷⁴ Whether it is ultimately helpful or not to draw on science to demonstrate the errors of science is another conversation.

¹⁷⁵ A question in agreement with Johann von Goethe, "When we venture into knowledge and science, we do so only to return better equipped for living" (Naydler, 2009, p. 7). A question also posed by anthropologist Tim Ingold as the most pressing environmental question of our time (Ingold, 2016).

viewpoints and realities (namely their own) as insufficient for the questions at hand and instead perceive different viewpoints (resulting in paradoxes) as necessary, this engagement would vastly stretch the separatist myth embedded in our epistemological meaning-systems and sense of self. As I'll demonstrate in the *Process segment*, one of the vignette-educator's course does engage with philosophies born from the insights of quantum physics, with students, in an embodied way.

Is engaging with quantum physics also a way of rhizomatically (through twists and turns not entirely map-able) connecting back into mystery, or the 'unknown' separated from empirical science hundreds of years ago (Radin, 2013), whether one names this unknown as intuition, creativity, spirituality, the Sacred?¹⁷⁶ How do these non-macro levels of reality influence how we relate to ourselves, our communities and our shared Home?

Are there quantum experiments for lay society, similar to Goethe's experiments for lay society, that provide onto-epi-axi-etc.-ology stretching? And, if so, how could the experiments be interwoven into the experience of a transformative sustainability learning course?

9.5 Other realities: Psychedelics

One of the outliers in this inquiry, in terms of activating-events or disorienting dilemmas, was the use of psychedelics.¹⁷⁷ There was only one footnoted instance mentioned in my reading, where Edgar Morin talked about the use of ayahuasca in relation to his spirituality and views of himself as a something of a mystic (Montuori, 2013a).

There was another tenuous connection. While Erich Jantsch did not write about his own personal use of psychedelics in the readings that I engaged with, he certainly explored cosmo-spiritual-self meaning-systems from a mystical, relational perception (Burneko, 2013), and he had interesting connections to those inquiring deeply into psychedelic experiences. Erich Jantsch was a valued colleague of Fritjof Capra and Stanislov Grof (Capra, 1981, 1988; Grof, 1985) who were all associated with the Esalen Institute – a location of psychedelic and similar (e.g. holotropic breathwork) experimentations (Capra,

¹⁷⁶ For some, intuition and creativity are also processes for accessing the spiritual and the Sacred, e.g. see Bemie Hunte's exploration of Creativity and Sacred in her 2016 doctoral thesis (Sydney University) .

¹⁷⁷ One of the qualities of postmodern research is to value the minority, the singular, the outlier.

1988; Rajagopalan, 2016, p. 204).¹⁷⁸ Is it beyond coincidence that one of Erich Jantsch's students at Berkeley (McKenna, 1999), Terrence McKenna, became a specialist in shamanic cultures and hallucinogenic plants (Pollan, 2018), was a scholar in residence at Esalen (McKenna, 1992), and gave his last public talk at Esalen (Martin, 2000)?¹⁷⁹ Erich Jantsch references both Terrence McKenna's work on hallucinogens and Stanislov Grof's LSD work (Carvallo, 1988; Jantsch, 1975a; 1980c, p. 246); but we may not know if Erich Jantsch himself ever engaged in these 'foods of the gods' (McKenna, 1992).

Psychedelics are marginal in academe, yet the descriptions of psychedelic experiences are resonant with the types of cosmic third-order learning described by Gregory Bateson (2000), transcendent states of consciousness described by David Kolb (2015), and underlying unity from which distinctions emerge, as described by Erich Jantsch (Jantsch, 1975b). Similar to quantum physics, or meditation, psychedelics present an avenue for exploring other realms of reality and consciousness (Pollan, 2018). Ayahuasca, LSD and other psychedelics can "awaken mystical experiences marked by feelings of unity with the universe, a sacred sense of reality, and an expanded sense of self" (Elgin, 2017, p. 9); in essence, a transformation in our cosmo-spiritual-self meanings systems. Perhaps needless to say, none of the vignette-educators in the *Process chapters* wrote or discussed an engagement with psychedelics in their university courses and programs.

9.6 Worldview-stretching of social networks

So far, I've demonstrated how engaging with Georg Hegel, observing the sub-atomic, and perceiving processes of evolution supported preceding-philosophers in absorbing and enacting relational logics-of-perception. An exploration of their social networks is also potentially enlightening in terms of understanding what supported them in stretching beyond the dominant-cultural-paradigm.

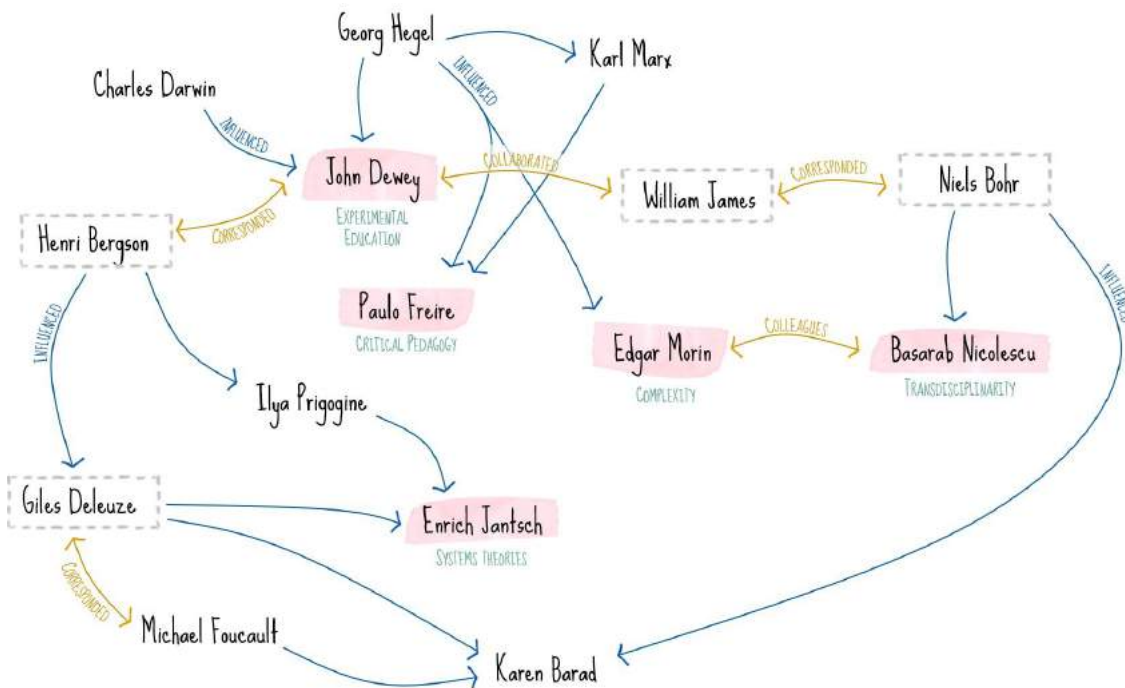
These social networks include personal discussions with contemporaries, as well as predecessors whose work was foundational and formational for them (e.g. reading their work was an 'activating event'). Below I provide a very simple visual illustration of the relationing betwixt the five philosophers. Even in this simple map,¹⁸⁰ we can see that Henri

¹⁷⁸ Both of which are considered experiences of consciousness beyond the dominant-cultural-paradigm towards much more relational, unitary experiences (Rajagopalan, 2016, p. 204-222)

¹⁷⁹ Erich Jantsch was one of Terrence McKenna's most influential mentors (McKenna, 1993).

¹⁸⁰ Which in future work, or in any scholarly field of study, should be explored more. This networked diagram

Bergson, William James, Niels Bohr, and Giles Deleuze would be relevant authors to engage with when exploring other sources of thought beyond reductive modernist tendencies.



Visual 41. Social diffusion and infusion of paradigmatic-stretching ideas

9.7 Discussion and reflections

This chapter compared and contrasted experiences of various ‘activating-events’. These included: philosophies of change and transformation (e.g. dialectics and evolution) and experiencing other realms of reality (e.g. quantum physics and psychedelics). These sources stimulated beyond-Boolean, relational, complex, process-aware logics-of-perception, which were then spread through social connections.

Primarily, I raise this discussion to illustrate ‘transformative sustainability learning’ germinated within and grew from philosophers who were attempting to both a) critique the dominant-cultural-paradigm and b) integrate *relational and processual logics-of-perception into their praxis* of experiential, critical, complex, systemic and transdisciplinary transformations. In their writings, these preceding-philosophers

could also be expanded to link in with the inspirations for the vignettes (see for example the links with Karen Barad, whose work has already been mentioned as influencing the vignette-educators).

reflected on how these ‘activating-events’ helped them to ‘see their worldview’ so that they could then begin and continue the journey of perceiving their own consciousness and reality-creation differently.

Yet, this deep philosophical impetus is still not often recognised in ‘sustainability learning experiences’ today. I questioned how the philosophers ‘activating-events’ offer insight into ‘transformative learning experiences’ that could be explored by transformative sustainability educators and then interwoven into university experiences, and highlighted where these questions will be further explored in the *Processes segment* of transformative sustainability learning, e.g. in terms of embodying philosophy to self-witness one’s own worldview and external paradigms, synergistically integrating multiple ways of knowing, being conscious of one’s own learning evolution, etc.

Beyond this primary point, the comparison of the multiple sources of worldview complexification across the philosophers demonstrates the need to continue to learn about the unconscious beliefs and myths at play within our perceiving. For example, Georg Hegel, Charles Darwin and Ilya Prigogine have made much progress in complexifying the dominant-cultural-paradigm (*Table 10*). However, all of them were critiqued as unconsciously maintaining unhelpful vestiges of the dominant-cultural-paradigm within their philosophies: Georg Hegel’s dialectics was still mechanistic and perceiving primarily separate entities; Charles Darwin’s evolution maintained a reductive focus on entities as well (*Table 10*). Even though critiques against Ilya Prigogine were not mentioned by the preceding-philosophers I engaged with, some scholars also perceive that unhelpful aspects of the materialist paradigm might still unconsciously influence Ilya’s perceptions (Kauffman, 2016, p. 49, 63).¹⁸¹

Comparing these differing critiques demonstrates the tendency for cultural awareness to expand and complexify over time. The expanded cultural view in subsequent generations enables a more critical response, for example, to the reading of Georg Hegel or of Charles Darwin. We are all products of our generation, and hindsight is likely to be more critical and nuanced. For example, while relational and processual logics-of-perception may infuse some of Georg Hegel’s and Charles Darwin’s meaning-systems, these logics did not infuse each of their meaning-systems. This is a point that I pick up on in *Premise chapters*

¹⁸¹ For example, Stuart Kauffman, who writes about the creative universe and the inability for science to predict even what can happen, let alone what will happen, dismisses Ilya Prigogine’s concept of dissipative structures as still existing within a reductive materialist paradigm.

11-13, where I also question the implications of a more fully infused relational logic-of-perception across many, or all meaning-systems.

| | | Georg Hegel's Dialectics | Charles Darwin's Evolution | Ilya Prigogine's Dissipative structures |
|------------------------|------------------------------------|--|---|---|
| | activated | Dewey (1), Freire (2), Morin (4) | Dewey (1) | Morin (4), Jantsch (5) |
| | critiqued by | Dewey (1), Nicolescu (3), Jantsch (5) | Jantsch (5) | |
| meaning-systems | dominant assumptions | | | |
| cosmos | cosmos separate from humans | | | Unified Whole (5) |
| self | separate | Selves as differentiated unity (2) | | Selves as differentiated unity (5) |
| ontology | static, material | Perception of synthesising (1, 2, 3) But still of separate notions in mechanical process (1, 5) | Perception of evolution (1) But still of separate entities (5) | Perception of coupling of processes of the living and the environment to co-evolve together (5) |
| time | linear | Synthesis is not immediate, but over time (3) | | |
| epistemology | reductive, objective | Synthesis always needed (4) | Reductive view of only single species (5) | |
| axiology | hierarchical | Engage the totality of humans, rather than assessing as good or bad (3) | Perception of competition (5) | Perception of altruism of distinctions (5) |
| anthropology | humans separate + superior | | humans at apex (5) | Humans as process within processes of evolution (5) |
| societal vision | hierarchical | Engage dialectics for social transformations through collective praxis (2) | | Does not know 'possessions' (5) |

Table 10. Comparing activations by and critiques of the philosophies of change

The above table demonstrates the increasing infusion of relational logics-of-perception, over time (transition from just red to blue). The point here is that the critiques arising from these comparisons remind us of how hard it is to see the very thing we are critiquing, e.g. the dominant-cultural-paradigm, within our own work. This, even more importantly, reminds us of our ability to be open for others to compassionately hold up mirrors for us to learn from together (via for example, discourses with our social networks), and keep

seeking more sources to complexify our understandings, rather than viewing people as right/wrong in their philosophies.

Correspondingly, another benefit of the critiques raised is the reminder of humility. That is, no matter what those raised within the dominant paradigm put forward, they and I remain ignorant of how other parts of our complex meaning-systems and their alchemic manifestations still might result in perhaps a 'zoomed in', more reductionist, separatist perception. And this is also my challenge to try to be mindful of throughout this inquiry.

Generative questions

One critique arising of this section generally, is that these preceding-philosophers are all male and squarely within the dominant-cultural-paradigm. There are many implications of this, but of particular relevance are the implications of their shared view of the reasons for the separatist myth. Perhaps these five philosophers view the separatist myth as arising within the dominant-cultural-paradigm because they are most familiar with the origins of Western philosophy in which they were trained? But what if this disjunctive perception is larger than, or more common than, just those infused with the dominant-cultural-paradigm?

Some argue, for example scholars in Hindu philosophies, separateness actually arises from our consciousness (Satprem, 2015). That is, all human consciousness is flawed in that it naturally perceives things in parts, and then puts the parts together to make meaning; the human ego creates a story from our ignorant consciousness that sees humans as separate from other people and nature. Hence, part of the premise of meditative and yogic practices is to re-orient our consciousness towards integration.

Other Buddhist scholars argue that this separateness arises from language, in that any time we use a word, or develop a concept, we necessarily exclude or create 'an opposite' (Laotse, 1948, pp. 48-50). Transcending the separatist tendencies of language is sought through practices of meditation (Buchanan, 2016), and observation without words, to move beyond pre-defined limiting conceptions (within which A and not A are already embedded).

Yet on the other hand, do Indigenous cultures tend to feel any form of separateness? Similar to Western, Vedic and Buddhist thought, do diverse Indigenous peoples experience the need to stretch beyond perception of separateness to tap into perceptions of relating to all? Or do relational verb-based languages make a separatist perception much harder?

Does knowing the origins of separatist perception influence the types of learning experiences that are relevant for experiences beyond-separation, whether separation arises in ancient philosophy, human consciousness, language? Would that change the types of 'disorienting dilemmas' or learning experiences that are sought?

I will attempt to interweave these questions of beyond-dual consciousness and perception into the synthesis, and yet deep explorations are beyond the scope of this inquiry.

—

My main thread through this inquiry is: *as these patterned, largely resonant, clarion calls for the necessity of worldview<->paradigmatic awareness is an integral part of the premises of 'transformative learning', in what ways does transformative learning happen in the lives of those who choose to engage as 'transformative sustainability educators'?*

Arguably, transformative sustainability learning seeks to create the condition for learners to live in more relational ways. Designing and facilitating these types of learning experiences *arguably requires, or at least is benefited by, having gone through your own transformative learning experience* (Sterling, 2010).

Similar to the stories of the preceding-philosophers, the following stories demonstrate how the vignette-educators became 'aware' or conscious of the dominant-cultural-paradigm. Their moments of transformative learning enabled the vignette-educators to: a) grasp the profound and far-reaching implications of the assumptions embedded in the dominant-cultural-paradigm; b) begin to envision and enact learning experiences from and within a more complex philosophical premise, and c) lead reflection and diffraction processes for their learners on the *significance of the experience of different paradigmatic assumptions*. In short, the four vignettes in this inquiry described their own third-order learning as essential to who they are and how they design learning experiences. The following section emphasises the importance of these types of deeper learning experiences.

Chapter 10:

Transformings of vignette-educators

10.1 Introduction

Transformative moments for the educators facilitated their desire to embed a more complex, relational logic-of-perception within the learning experiences they design and curate, similar to the activating or disorienting sources of the preceding-philosophers. This chapter illustrates the patterning of transformative experiences across educational practitioners, which lead to their more relational and complex perceptions.

During the interviews, one of my first questions to the educators was: how did you end up in transformative sustainability learning? Generally speaking, there were two types of responses: those that started with a professional perspective, and those that started with personal or childhood stories. What I later came to realise is that those who started with a personal story see their work as resulting from their own values or unique perspective (which sits outside the dominant-cultural-paradigm). In some ways, those who started with a personal story were demonstrating (or felt comfortable communicating about this in an interview with me), that they themselves have gone through transformative experiences. They recognised the importance of these transformative experiences in their awareness of, and valuing of, ways of perceiving and being that arise from relational and

processual philosophies.¹⁸²

In this section, I briefly illustrate the transformative learning experiences of the vignette-educators. Each educator had distinct experiences to tell in their own way (so the vignettes read and feel unique). In addition, the stories of transformative learning that I surface in this inquiry vary in length, based on the details discussed and the extent to which the educators communicated their own transformative learning beyond the interview (e.g. in journal articles). Thus, the final story - of Richard Bawden - is of greatest length, due to his prolific writing on his adventures in individual and collective third-order learning.

However, each educator shares stories in which their lived experience was discordant with what societal context told them was good, truthful and appropriate. For example, for some of the educators, their childhood was very relational, and yet it was their experience of school and work that ironed these complexities out of their perceptions. So, part of their own deep third-order learning is actually returning or *restoring* these earlier values (Lange, 2004).

I could have arranged the stories around these themes, but instead chose to keep their stories intact. My sense is that the best way to engage in this section is for the reader to feel (as a way of knowing) what each transformative learning journey might have been like.¹⁸³ I now present the four stories of transforming experiences, and in the discussion I cluster the similarities of these experiences.

10.2 Vignette: Leadership for Sustainability Education master's

Heather's in-forming and trans-forming experiences

Early in Heather's life, she had cause to question the tendencies of the dominant-cultural-paradigm. She spent many of her early childhood years living in Côte d'Ivoire, West Africa, observing the disparity between rich and poor and learning first-hand about the effects of

¹⁸² Again, this is not to say that the other educators not included in the thesis did not have quite profound learning experiences, but this was not an in depth part of our conversation or of their writing, for potentially many reasons.

¹⁸³ As RD Laing believed, a powerful way to fully know is to feel (Capra, 1988).

globalisation (2009, p. 113). Before she had a language for it, she began piecing together the interconnectedness between social inequity, environmental degradation, and economic policy.

Subsequently, during her undergraduate program, she experienced the “power of shifting perspectives”: Heather studied in Central America and learned a perspective on the US political involvement different to what is commonly taught, and was in a program that actively sought diversity of viewpoints. During her master’s program, she engaged with ecofeminism, deep ecology, and social justice, further shifting and enriching her perspective.

Since these experiences in her childhood, studies and now throughout her career, Heather continues to question and reflect deeply on the manifestations of the Newtonian, mechanistic paradigm within our learning systems and society. She strongly critiques the status quo, in which traditional teaching and learning programs help students become **successful in unsustainable cultural systems** (2011). These critical observations, reflections and questions influenced her doctoral inquiry into transformative sustainability learning (2009, 2011, 2013) and continue to influence her design of learning experiences within the Leadership for Sustainability Education program (Burns & Miller, 2012; Burns, 2015; Burns et al., 2015; Burns 2016a; Burns, 2016b; Burns et al., 2016).

In essence, Heather’s exposure to and experience of interconnected issues at a young age, recognition of political contradictions from lived experiences in different parts of the world, as well as engagement with philosophy in her master’s degree contributed to her doctoral exploration of transformative sustainability learning. In some ways, there are hints of similarity between her story and Paulo Freire’s story of growing up exposed to the contradictions of social classes and international politics (1974).

In her doctorate, Heather blended *philosophical explorations* of transformative learning theory, worldviews, paradigms and pedagogies, with *active teaching and experimentation* with these philosophies. Joy’s experience (below) is similar in that her doctoral inquiry was an intermeshing of deep philosophical exploration and teaching in light of these philosophical questions, in which new pedagogical processes emerged.

10.3 Vignette: Agential realist (food) pedagogy

Joy's in-forming and trans-forming experiences

Joy had been an environmental scientist and higher education teacher for around ten years, facilitating environmental education employing the same pedagogy in which she was taught, e.g. she taught river health, ecology and food systems, from a dominant, modernist perspective (O'Neil, 2018). As the concept of sustainability began to enter the academic and public dialogue more broadly, Joy began her own doctoral inquiry and critical engagement with the questions of 'what is learning?', 'what is sustainability?', and 'how does learning influence sustainability?' (O'Neil, 2015).

While rare in academic literature, Joy writes openly about her realisation that the content and process of her earlier teaching perpetuated the unconscious dominant-cultural-paradigm. Through her deep exploration of philosophy, Joy reflected, "it never occurred to me that **this pedagogy was part of the same paradigm of thinking that created environmental issues**"(O'Neil, 2017a) and "I began to feel that I was perpetuating the crises we are facing in the world"(2018). In other words, Joy perceived the spirals of reductive, dualist teachers creating reductive, dualist students who in turn become reductive dualist teachers, and so on and so forth. Joy describes parts of her own transforming within her contribution to a 2018 special journal on transformative sustainability learning:

"I started my academic teaching career in an evening and weekend degree program serving working adult professionals interested in using the knowledge and skills they gain immediately into their work lives. As a faculty member outside of the disciplinary field of education, ... I fell back on mimicking some of my own instructors I had as a student. I stood up tall up in front of the classroom and with my authoritative voice, I lectured about the environment. [...]"

Knowing that these environmental science majors need skills to prepare them as environmental scientists, we follow the basic protocol of the scientific method, a systematic way of reasoning alongside the process of experimentation through observation, measurement, experiment, analysis, testing, and formulation of hypothesis...Students analyze and report their findings and depending on the parameters given for river health, for example, they would recommend a protocol. The entire time, they are separate from

the object to be measured and therefore gain no affection, care, or deeper connection with the Earth they are trying to preserve. I was the same kind of student. I was equipped with knowledge and skills, and yet, missed any interconnection with self, nature, culture, or society. I was a classic reductionist student and now a reductionist educator. [...]

My practice matured and began to include not only water systems but food systems within the environment and how it relates to sustainability and health. I presented food as a critical link across these challenges of fostering sustainable communities (Berry, 2009; Esteva & Prakash, 1998). I found myself viewing food as I did water—through the lens of reductionism. I knew this but was uncertain about what to do about it. Students were passing my tests and regurgitating the knowledge back to me in a same or similar form they received it. I knew this was industrialized education at its finest as described by O’Sullivan (1999). All the while, I was inspired by the proposition of a transformative learning framework for sustainability (Sterling, 2001) and some of my reading about food was profound. There seemed to be a deeper meaning offered by other disciplinary experts who view food more than an object to be studied. There was passion and connection that I had not seen before in science textbooks. I began to question whether food (and potentially other matter) could be used pedagogically not only as object but as the subject for transformative learning? In other words, as we transform food, can food transform us? If so, how and what are the implications?” (O’Neil, 2018).

Through her doctoral inquiry into transformative learning and sustainability, Joy read the work of philosophers seeking to move beyond dualist perceiving/conceiving/doing such as Karen Barad, Giles Deleuze, and Fritjof Capra. Joy also engaged transformative learning leaders such as Patricia Cranton, Elizabeth Yorks, and Elizabeth Lange in ongoing discussions to learn about and experiment with transformative learning principles in her own teaching. Her inquiry became a deep reflection on: the implications of the dominant paradigm, how this paradigm manifests and replicates within education systems, and her own role as an educator in designing and curating learning experiences that perturb the dominant way of perceiving/knowing/being towards more relational ways of perceiving/healing/being (2018). Joy underwent a large shift in her own conceptions of which paradigms we should breathe into life in order to regenerate as a species on this planet and with less exploitation, death and harm to other living and non-living entities.

For her, a profound insight has been to view the world also from within an agential-realist perspective. We'll explore her agential-realist perspective further in *Premise chapters 11 (relational perceptions), 12 (meaning-systems) and Process chapter 14 (models)*.

As an introduction to agential-realism, I present Joy's story again highlighting the agential realist critiques. As Joy mentioned, the content of her earlier courses included, for example, pH, turbidity, pollution testing as an indicator of river health, and straightforward actions on what humans can do about it. Students are taught to measure water pollution and monitor changes in quality but the "entire time, students as subjects, **are separated from** their object of study; the **subject matter is objectified** as something manipulatable by humans (2016, 2017a, 2017b, 2018). Thus, Joy reflects on how a reductionist view of nature, in which humans can know everything, and control nature's health **as the superior, all-knowing beings**, was interwoven into her earlier learning experiences. In essence, Joy critiques how industrialisation has "**dismembered** us from our human and natural communities", and we can overcome this root of our problems – **the Cartesian divide of mind and matter** – by perceiving how life and matter are **inextricably connected** (O'Neil 2018).

While there is much diversity to their transformative experiences, several resonances appear between Heather, Joy and the preceding-philosophers. They were all influenced by their engagement with philosophies beyond the dominant-cultural-paradigm. For Heather and Joy these philosophies included eco-feminism, deep ecology, living systems (Fritjof Capra in particular), and postmodernism. Similarly, in Janet's story below, we see the influence of feminism on her own transformative experiences.

10.4 Vignette: Semester in Dialogue, Simon Fraser University

Janet's in-forming and trans-forming experiences

In the story of how Janet came to be involved in transformative learning and sustainability, she shared numerous formative and transformative experiences. These personal experiences, some positive and some more disorienting, guide her current learning practice and personal philosophy.

Throughout her life, Janet was influenced and inspired by those with a deep sense of curiosity about our interconnected reality. Growing up, Janet's mother was a "**lover of the world and nature and the birds, and everything** alive". Watching her mother with her

grandchildren, Janet has realised (or perhaps remembered) how her pre-conscious childhood must have been an intimate, curious and wonder-full exploration of nature.

Janet's time at university also provided her with several "beautiful" experiences that guide her epistemological orientations to learning. For example, in an offsite class on a Marine Station, a professor tasked the students with sitting on the foreshore and generating questions: "I want you to think up questions...That's all your job is, is to think up questions, like "why are the crows dropping the mussels", "are they dropping a certain height", "what's the crab doing". His goal was to generate critical, relational questioners. Another professor, Lee Gass¹⁸⁴, would get on the ground and enthusiastically remind and inspire his students to "be like kids with ants":

Lee told a story about getting down on his hands and knees to watch the ants on the sidewalk the way a kid would do it. He talked about being curious and asking questions as a big part of being a scientist - he would actually get on his hands and knees during this story and giggle - and we got the point - stop doing the things the way 'they are done' and try to remember how kids figured things out by doing, trying, experimenting.

Much of what Janet tries to create in the classroom seeks to curate these **relational, curious, enthusiastic attributes and freedom of thought**.

Janet also experienced several disorienting dilemmas at university that prompted her to question the epistemological purpose and design of a university. She discovered how science teaching at the university mirrors our arbitrary **segregation of knowledge** types and **won't easily let students break outside disciplinary walls**. Repeatedly she ran into the epistemological barriers:

Why doesn't the biology class talk about the environment?

*Why couldn't she take natural sciences, **and** philosophy **and** psychology?*

Why does her love of natural sciences mean she has to take every other science course - chemistry, bio-chemistry, physics?

How many people does she have to speak to and how many forms must she get signed to institutionally approve her decision to never be a bio-chemist, to get out of bio-chem lab?

¹⁸⁴ Lee Gass's philosophies to teaching can be explored here: <https://leegass.com/>

Janet began to perceive the negative impacts on the world from our disconnected knowledges and hyper-specialised organisation of universities. Not only does the university **not accommodate the complexity** necessary to engage wisely in the world, but it systematically extinguishes this ability for transdisciplinary thinking in students. Janet considered herself lucky to be a “disruptor”, who learned that if you ask enough people, eventually you will get your forms signed in order to exist outside the status quo.

In her experience as a biology lab tutor, she saw students being intentionally failed. The machinery of the department was actively creating a pass curve to get the appropriate number of students into each degree track. Grades were an important part of a perfectly calibrated system, which she was instructed to not disrupt. Ethically, she was appalled.

Through these experiences and more, Janet became increasingly driven to develop new forms and structures for the university that were **ethical, transdisciplinary and could actually create more resilient futures**. Her Doctorate “Recreating the University from Within: Sustainability and Transformation in Higher Education” explored how to move sustainability education forward within the university (Moore, 2004).

During this exploration, Janet realised she was undergoing her own transformational learning, which explained in part why she was drawn to this theory (Moore, 2005). She took feminist methodology classes and was shocked by these new perspectives. In the following interview excerpt, Janet shares her story in her own words, beginning with her master’s degree:

I just happened to fall into TA-ing.¹⁸⁵ I got partway through my master’s which was about hummingbird wings, and someone went on maternity leave and I started running the lab program for first year biology at UBC. When I was on ‘the back side’ finally, I realized that they were intentionally trying to get a curve. They didn’t want too many people to get A’s and as a result many people fail. And I thought “Oh my god, you don’t want everyone to pass, you actually want this curve” and ... “How do you...this is unethical. I could get everyone in my lab to pass if I could actually teach them what they need to know”. And they said “Don’t you rock the boat here, we’ve got a really good system”.

You think about how many thousands of students go through first year

¹⁸⁵ North American short-hand for being a teacher’s assistant.

biology at a big university, right? 1200 students a semester. So, we're just **cranking them through this machine**, and I thought "I could change this so that everybody understood biology, I could change it so we talked about the environment", and they said "**We don't talk about the environment here, we're in biology**". And I questioned "Well ... how come we don't talk about the environment?" "Well that's environmental studies", right?

So [in this experience], I was collecting information about the organization of the university and organization of knowledge and the complexity that's happening in the world, and I wanted to save the planet, and I was studying hummingbird wings in a lab. I thought, "Okay this is not going to help". So, they told me I had to get a PhD, if I wanted to change curriculum.

So, I walked across the campus and met someone named Bill Rees who studied the ecological footprint. Or, he created it with a grad student, and he was in community and regional planning. That school took a bent to sustainability before anybody did. And if you read his writing, it's kind of the darkest of what's happening on the planet. He's a very strong thinker, thinking about the carrying capacity of the earth and where we're at. So, he was speaking about this quite a while ago now, because it's 2017, and this was about 2000. He was running a school on community regional planning based on sustainability, and nobody else was. And so, I went and talked to him, and he actually is an ecologist from the same school that I was coming from.

So, he was someone who had left science as he said, "**There's not an environmental problem, there's a human problem**". And so, I really heard this, and went across to that world, which was unbelievable for me - I have a master's degree and I've been teaching in science - to kind of wander over to social science. They said, "The only research methods class we have is feminist methodology", do you mind taking that?"

And I was It was ... **That was transformative...."Oh I have been.... I cannot believe what they've done to my brain, what science has done to my brain, and what they have done to me, and what they've done to me as a woman."** It was so shocking to see who I had become as a result of my science education. And so, that's when I started reading and writing about transformative learning. I thought, "Oh, it's actually happening to me, no

wonder I'm reading it", right?

And I remember Bill crying as he read my comps, the serious academic guy was like, "I get it because that happened to me, and I didn't... We never talk about it.

And so, to me, this reflection that is part of good education, was emerging, right? **The transformation of, "Oh my god what, look at what we're doing to people!"**

Now, instead of a learning experience imbued in the cold, reductionist machinery of the dominant disciplinary paradigm, Janet's seeks to create a hot bed for activated, switched on creative students, unleashing and channelling their own energy for change towards resilient futures.

Heather and Janet both discussed early childhood experiences. Heather described at early age how she developed a sense of interconnectivity within the world. In Janet's vignette, she also explains the diverse in-forming childhood experiences that created her more relational worldview. And then Janet discussed the disorienting experiences as an adult when this relational view was challenged by the dominant-paradigm.

Even though some meaning-systems of our worldviews might be relational, other meaning-systems of our worldview might be more infused with the unconscious beliefs of the dominant-cultural-paradigm (as discussed in *Ch. 9, Premise: philosophers' activating-events*). Both Janet and Joy discuss their profound and emotional realisations, through their deep inquiries into learning, about what the dominant learning system was actually doing to them and to others, because of the unconscious infiltration of the dominant-cultural-paradigm into their ways of knowing and being, and the implications of this.

Similar to the three preceding stories, Richard's story below also demonstrates the power of using the situation at hand to engage deeply with philosophy to provide other perceptions through which to design and experiment with the situation at hand. This experiential transformative learning, was undertaken as a collective of some staff at Hawkesbury Agricultural College. However, even before engaging with this collective transformative experience, Richard identifies many formative and transformative experiences influencing his worldviews and pedagogy.

10.5 Vignette: Hawkesbury Bachelor of Systems Agriculture

Richard's in-forming and trans-forming experiences

Richard has oft reflected on the significant events that have shaped his worldview and his orientation to being, and particularly, his critique of the modernist, scientific-techno paradigm. The greater volume of his written material allowed me to interpret his transformative learning experiences through the lens of *separatism* (as a logic-of-perception). Richard's worldview complexification was enabled through his critically questioning and transcending of the separatist myth, particularly as it manifested in: a) agriculture, b) ways of knowing, c) institutional (dis)engagement with ethics, d) and separation from the context of Others.

A. Experiencing the change of logic in agriculture from *relationality* towards *separatism*

Richard started his life on a small, family farm in England. The 100-hectare farm was a mixed enterprise with 24 different economic activities; they were living by *diversification* rather than *specialisation*. The family had been farming that way for '600 - 700 years and nothing had changed much'. He and his family lived their lives *by the rhythms of nature*, and without electricity (Bawden, 2010b). Richard considered his earliest years as steeped in relational values of respect for other and environment: do no harm, do good, be inclusive, be fair (Bawden, 2010b). These *direct experiences and relational values* extended to the family, farm workers, customers, dozens of livestock, and nature.

In contrast, leaving the family farm was an experience of entering a world steeped in a different set of values, not based on relationality. It was the 1950's: the pesticide and fertiliser revolution. Richard learned an entirely different agricultural model of *predict and control* at university, in which humans are implicitly conceived of *separate and superior to nature*. He recognised this new paradigmatic approach was going to: 'change our farm; there is nothing our farm could do in that light, because we couldn't specialise', e.g. couldn't compete economically with mass specialised production farms. He was witnessing a changing of the paradigmatic guards, and foreseeing the death knell for his family farm.

B. Separation in ways of knowing

In these university years, Richard was exposed to additional ways of knowing and was frustrated by their **lack of intersectionality or integration**. Not only was science in the academe **completely ignorant of the lived**, practical experience of farmers, but his family's practical way of knowing was **not informed** by the advances of science: "My family didn't even know what science was, let alone, the elements of science". In addition, the Christian Brothers school, and family's religious ways of knowing seemed to be at odds with this scientific way of knowing, and nobody could explain the relation between the two: "I learned to reject religion, as I learned science and nobody could help me...the fact was nobody could explain [their relationship] to me, and that was annoying".

C. Separation of ethics from our institutions, and particularly the separation of means and ends from ethical consideration

Another disruptive moment for Richard was participating in and experiencing the **separation of ethics from our societal institutions**, specifically the military, agriculture, and pharmacy. For example, through working part-time in the army, there were potential situations under triage, when 'individuals who were deemed to be beyond help', meaning their lives could not be saved medically, would 'reject that analysis, and respond with violence'. Richard and colleague were instructed that 'should the circumstances degenerate to such a state that the whole triage process - to identify those who might survive if treated - was threatened, the ultimate resort was to have the recalcitrants silenced, as they were described as a nuisance'. These instructions deeply disturbed Richard.

The significant moral questions raised during Richard's experiences in the army were not dissimilar to the moral questions about the cruelty embedded within his work with intensively housed animals. Richard recognised that his experiments on animals led to pain and death of countless animals, but he was following the subconscious, utilitarian paradigmatic mantra that that **the ends justify the means** (2011a). His experience on his own farm, with a strong integration of ethics to his work, did not prepare him for this separatist paradigm:

Nothing on our farm was intensive, it was all extensive and gentle, and we knew the names of all the animals. We milked 9 cows, 10 cows, whatever it was, so you knew them all, well. [We had] 50 sheep, and even there you knew who in that 50 sheep, those who would lead, those who would follow and so on.

A third trigger for recognising the separation of ethics from societal ways of doing, was experienced in his work in the pharmaceutical industry. Here he was exposed to and deeply questioned the ethics of chemical companies' testing of drugs. This is an example of a theme he picks up on later in his work: why is only the desirability and ethical implications of the ends considered (consequential ethics)? Why are means and ends **considered separate**, and what about the ethical (deontological) implications of the means?

D. Separation from Others

Perhaps one of the more indelible moments in Richard's life in terms of a moment that creates an awareness of his own worldview, and the need to enrich his worldview, took place while he was working overseas. He was invited to be part of a three year United Nations Food and Agriculture project in Uruguay as a parasitologist in a national veterinary lab working on livestock security. During the first year, he became friends with his three Uruguayan veterinarian colleagues, progressed the project collaboratively, and yet lived a 'weird, ambivalent' life of a diplomat in relative wealth, while the economy of Uruguay 'was shot'. He was aware that he had arrived in Uruguay during a post-insurrection police state under the presidency of a civilian 'puppet' (installed with the reported assistance of the United States government). Initially, he (subconsciously) perceived his work in the veterinary lab as **separate from** these broader political-economic-social-historical contexts. His Uruguayan colleagues begged to differ.

About a year into the project, Richard's Uruguayan colleagues took him to secret location where the revolutionaries used to meet. There they changed personas and laid out in front of him the un-ignorable, **unneglectable interconnections between their work and the broader context**. Needless to say, Richard was caught off-guard. He was under the impression that all was going well: he was learning Spanish, they were friends, he invited them to Saturday BBQs, they had new lab equipment, they were developing insights into the situation of livestock security, his boss was telling him that he was doing a good job. While his Uruguayan colleagues did not disagree that they were friends, in this secret location, they shared their broader, contextualised, 'conscientised' (conscientização) view

of their UN project, and critiqued Richard's role in it. They intentionally and critically 'wrung the shit out of me', essentially saying:

'You're a terrible person...You're not doing the job...Every day you drive through the slums, and you never ask us questions about that. And you're not doing anything to help them. All we are doing [in this project] is helping the rich farmers get richer, and they send their money off to Europe and they have the freedom to move, and we don't. And so, what on Earth are we doing?... The reason why we can't come to your BBQs is because this is the only time we have to visit our relatives in prison.'

In this moment, Richard saw the edge of his worldview. He began to realise it was his indoctrination in the dominant-cultural-paradigm that "disabused" him **from perceiving deep relationality**. As mentioned above, his initial, subconscious stances were: 'that's poverty, that's not me' (**separation**); 'politics here is a Uruguay problem, that's not me, I am here looking after parasites and enjoying the support and sponsorship of the wealthy landowners' (**separation**).

The basic options laid out by his colleagues were 'choose not to change the strategic direction, and we'll keep ignoring "the real issue" here; or take up the cause and rethink our approach'. Deciding to move into the space afforded by a stretched, more complex worldview, Richard asked his colleagues what he could do to help himself and their project expand to critically engage with these broader contexts (**relationality**). He agreed to talk to his project manager the very next day about an expanded scope. The manager gave the small parasitology group his blessing, but cautioned Richard to proceed subtly and quietly, as 'there are spies everywhere'. (To which Richard responded: "*Now you tell me! What the hell's all this stuff going on?*")

Richard and his colleagues started to develop a systems model of the complex situation, mapped out on the wall. The systems map covered all the 'various aspects' that their group had to look at if they were 'going to do this job properly'. One of these sub-systems posted on the wall was politics, until the Minister of Agriculture - a General - visited. Upon walking in and reviewing their work, he demanded: '*Rip that off the wall. This is a veterinary laboratory, it's nothing to do with politics*'.¹⁸⁶

¹⁸⁶ Which raises another interesting point about relational perspectives helping to overcome power. In essence, The Agricultural Minister was maintaining power by **maintaining separation**. This approach of *divide et impera* (divide and conquer) is one of the hallmarks of the dominant paradigm, from ancient Greeks, to

While Richard returned home before this Uruguayan project was finished - recalled by his university in Australia - his experience left him 'beautifully challenged', in terms of shaking up and complexifying his own worldview. Ontologically, he was perceiving different relationships between people and their world; epistemologically he was wondering about the implications of languages in allowing you to perceive and say certain things; axiologically, he was (re)sensitised to the needs of poorer, marginalised farmers. His vision for society and his ideas on social change also solidified towards the needs for responsible and ethical development.

Crucial to Richard making meaning of this disorienting experience, to help him diffract into a transformed worldview, was reading a copy of Paulo Freire's "Pedagogy of the Oppressed", a gift from a colleague. Reading this book, in the context of the above Uruguayan experience proved powerful. Freire's pedagogy provided the theory to explain Richard's experience, and Freire's philosophy continued to inform his vision in his subsequent appointment as Head of Hawkesbury's School of Agriculture. This Freire-informed philosophy included a focus on development beyond just wealth accumulation, e.g. equitable, improvement/betterment of rural Australia inclusive of people and 'nature' alike.

What is learning and knowing?

Interwoven through Richard's 'transforming' stories is a deep questioning of what is learning and knowing, and how do we learn and know: 'Well what the hell does faith mean, where does that come from? Why are his students unable to synthesise? Why are students protesting the Vietnam War not able to explain what they are protesting about? What would it be like to run a university residential hall as an alternative learning environment, for four years, in with a motto of "learning to live"? How did his children learn to speak Spanish within a week of arriving in Uruguay, and know how to use all of the "something like 18 tenses in Spanish", without knowing it conceptually?

Richard's questions about learning and knowing can all be interpreted as arising from the lens of separatism as it manifests from the dominant-cultural-paradigm. Arguably, his questions relate back to overcoming perceptions of separateness:

faith *as separate from* science;

the *separation of* emotion from rational thought;

analysis *taught as separate from* and prioritised over synthesis¹⁸⁷,

the *separation of* rational university learning from personal and social ways of being.

Richard continued to explore these deep questions of 'what is learning' through his journey to and within Hawkesbury Agricultural College.

Collective transformative learning at Hawkesbury

The preceding stories highlight a few threads of Richard's worldview and epistemic transformings (or developing an awareness of his own worldview, as a means to changing it). Another important part to his vignette is the collective transformative learning of Richard and his colleagues at Hawkesbury Agricultural College. While this vignette is compiled primarily from his own writing and interviews, it must be reiterated, as he does often, that the story of Hawkesbury is an 'extraordinarily collective effort over 20 years', representing 'highly emergent development through continual sharing of new ideas, experiences, scholarship', in which *it is difficult to separate the 'I' from the 'we'* (2005b).

Their own story of transformative learning of 40 or so academics (to varying degrees) began in earnest when in 1978 they collectively decided to take a radical approach to curriculum reform (2000). To begin curriculum reform, they returned to basics and asked themselves, what do we mean by 'agriculture', 'learning' and 'development' (2002)? They committed to becoming a community of collaborators to collectively learn their way forward, with and from each other, through their investigation of these 'seminal questions' (2002).

This Hawkesbury collective began looking at all of the problems facing rural Australia and believed somewhat intuitively that systems theories and holistic philosophies would help explain how to deal with this complexity (2000). They decided, 'they really had to read'. And they read they did: sociology, ethics and communication philosophies, systems theories, animal sciences, etc. "We all did it." By engaging with these theories and philosophies, the Hawkesbury crew began perceiving the challenges facing rural Australia

¹⁸⁷ Moreover, John Dewey would note how both analysis and synthesis are not often contextualised within (e.g. are separated from) judgement as an emergent property from their interaction (1933).

as connected indicators of unhelpful, unethical drivers based on a desire namely for more **production, efficiency and wealth** (Bawden & Packham, 1998). They also began noticing that too few in science and education appreciated the complex inter-connectedness of problems, with most problems **being observed independently** (2004).

Their engagement with these philosophies was not 'self-gratifying mental gymnastics' (Dewey, 1938). In true Deweyian style, the faculty were grappling with significant issues, delving into philosophy and theory to build their own understanding, discussing these theories and their practical application within Hawkesbury, and trialling them to see what was of most use. Their wide-ranging discussions, held in the spirit of deliberative democracy, were significant (2004). These conversations were the sites of shared meaning-making, where the theories and practical applications were reflected on and discussed.

In addition to being avid readers and a collective of learners, two important procedural matters may have enriched the impact of these discussions. Firstly, for these conversations, whiskey was on offer.

"There are people who say to me often, "Where'd you get this stuff from?" It was because, and this is a key to Hawkesbury's success, we were avid readers. At least a number of us were. Out of the by now 40, I guess, maybe a dozen of us, and we met regularly. As I said, people would come, and I had a group of senior people, and we'd have whiskey every night. The whiskey would be there anyway. My wonderful secretary at the time called it "fuel". We had this big budget for "fuel"!"

And secondly, the development of their ideas was captured in the same space and visual format. The 'great ideas' or synthesis of meaning that arose during their discussions were captured on large pieces of butcher's paper that hung in the same anteroom over the many years. The insights and heuristics arising from these conversations visually documented their learning evolution, and were fundamental in changing and sharing their philosophically-informed-praxis (and action-informed-philosophical inquiries).

At its essence, the Hawkesbury staff, 'informed by personal experiences, scientific literature, and popular press', took a decision to what 'amounted to a commitment to a critical review of the entire **production paradigm** and all of the techno-scientific development process of rural Australia' (2004). They 'set out on a path which would in effect represent an attempt to address the **paradigmatic crises of modernisation**' (2016).

They sought, as educators and learners, to explore alternative foundations for development paradigms (2005b). Inspired by their critical reflections of the dominant-cultural-paradigm, and the manifestations of this paradigm in agricultural practices, they moved from disciplinary departments to multi-disciplinary teams, who researched, designed and ultimately conducted new learning programs (Bawden et al., 1984). It became clear that the dominant-cultural-paradigm also manifested in their teaching processes, so they reflected on the benefits of their own self-directed learning over the past three years, and began designing experiential, learner-led programs for real-world problem solving (Bawden et al., 1984).

However, even with all of this critical awareness, experimentation and radical change in the program towards an entirely experiential program, they found it very hard to break out of mechanistic models. They continued to structure learning in mechanistic ways (Bawden & Packham, 1998).

The Hawkesbury collective realised they themselves needed to be not only systemic agriculturalists (out with the community exploring messy issues), but also systemic educators (reflecting on their own learning and how to more effectively engage in messy issues, and what this meant for the worldviews they had). Thus, the educators experimented with transitioning from instrumental systemic problem-solving towards the development of *inter-personal relationships* (Bawden & Packham, 1998). This was a profound paradigmatic shift in realising systems are not an ontological mechanism to be optimised, but also an epistemological inquiry (Bawden & Packham, 1998). In other words, systems do not exist in an entirely knowable form in the world, but rather what is more knowable is our own unique understanding and perspectives of the 'systems' we construe.

In sum, within action learning groups, the staff systemically 'developed' curriculum, themselves, the organisation and the networks of collaborators (2002). This was based on both: a) the desire to actively and critically engage with the complexity of agricultural and rural affairs, in its entirety; and b) the recognition that they must be both facilitators and experiential learners/action researchers within the learning processes. In other words, they must learn as much about the process of learning and action research, as the issues and networks in which they were embedded (2000, 2002).

10.6 Discussion and reflections

The four stories of this chapter illustrate how each of the facilitators had their own transformings in which they became critical of the unconscious assumptions of separatism, mechanism, and other meaning-systems in the dominant-cultural-paradigm. Each one became aware of the relationships between dominant beliefs and socio-natural trajectories toward inequality, unsustainability and extinction.

While each story is unique, the conscientisation of the facilitators' own worldviews and broader paradigms were similar in some ways, which I bring together below. These contexts of transformation include: a) challenges to relational worldviews by experiences in the dominant-cultural-paradigm; b) sustained, intentionally deep, experiential learning within the 'holarchy' of this inquiry (*Ch. 2, Spheres of inquiry*); and c) engagement in places and with people of different worldviews.

a) Childhoods steeped in relationality, followed by contexts forged in the perception of separateness

One of the interesting shared qualities across several of the facilitators' transformative moments was a pattern of relational values experienced in their youth and subsequent experiences of their relational values being dismissed within experiences of broader society. Richard began his life on a farm in which he was intimately interconnected with nature, the seasons, the animals, the plants, the workers, the clients, his family. Absorbed deep into his being, this relational axiology was an appreciation and deep respect for others, one of do no harm. These relational values were subsequently challenged and forced from his way of being through experiences with the military, pharmacy and industrialised agriculture. Similarly, Janet spoke of an early passion for nature and driving curiosity spreading rhizomatically (e.g. not along societies neatly structured disciplines). Perhaps unsurprisingly then, both Janet and Richard mentioned their struggle in the arbitrary boundaries within a university system born of separatist, reductionist beliefs. Their frustration arose at the unbridgeable gaps within the university structure between the ways of knowing: Richard frustrated at the separation between religion and science; Janet frustrated at the separation between philosophy, science, and what was happening in the environment.

Upon entering the rigid, mechanistic establishments of society manifested from non-relational perceptions, be it university, military, pharmacy, agriculture, or the field of science, these educators' values were challenged or changed. Interestingly, three of them

were trained in reductionist, objective scientific ways of knowing. And it wasn't until their moments of third-order reflecting, that they realised the profound implications of this misalignment between earlier relational perception they had learned from earlier contexts and these separatist perceptions they had been indoctrinated in, and the broader negative implications across many societies for learning and sustainability, of teaching (and being) only in this techno-scientific way.¹⁸⁸ In their subsequent teaching, they emulate these earlier relational values (*Ch. 12, Premise: meaning-systems, Ch. 14, Process: models*).

This pattern is resonant with Elizabeth Lange's discussion on the importance of transformative *and restorative* learning. Often, transformative learning maintains an assumption that learners need to be 'transformed' to 'stretched paradigmatic' states. But this assumption does not take into account the vastly and unimaginably different circumstances embedded within every individual's life. She reminds us that conceptions of transformative learning should be interwoven with space for restorative learning. Restorative learning provides the opportunity for people to tap back into values that they may have once had, but that society has nullified or prevented them from expressing:

"Often, the inner intuitive ethical compass is submerged under cognitive, rationalist thinking and a deluge of cultural expectations and scripts for adult life. Restorative learning can help surface an individual's moral and ethical sensibility within a cosmic vision" (Lange, 2017).

Heather's story also suggests her own awareness of this type of inner intuitive compass, when in her early life experiences, she was challenged by the deleterious interconnections between social inequity, environmental degradation, and economic policy, even before she had the language for it.

Thus, the experiences of the facilitators in these vignettes offers a reminder of the need for humility when considering how to design and create the conditions for transformative leaning experiences. While we might be able to see paradigmatic patterns manifesting across society, *it is impossible for facilitators to be able to grasp or comprehend the complex worldview history and patterning of each student*. The complexity around this point will be picked up in *Process chapter 15*.

¹⁸⁸ In an interview with Fritjof Capra, Joy also touches upon her earlier relational perceptions born of her childhood experiences, but trained out of her in becoming a scientist (Capra & O'Neil, 2019).

b) Sustained, deep philosophical and experiential inquiry into learning

Each of educators mentioned their own periods of continued inquiry into learning as being transformative. For Heather, Joy, and Janet, part of this process occurred during their doctorates. For Richard, a significant part of this was with his colleagues, learning, experimenting and synthesising as a collective.

In these sustained moments of deep inquiry, each was compelled to answer the seminal questions of what is learning and how can we do it differently. As part of this process, they dove into worldview and paradigm-provoking philosophies: deep ecology, eco-feminism, postmodernism, systemic, sociology, ethics, critical, communication, learning and transformative learning theories. Importantly, each of them had the opportunity to apply these theories within the courses they were teaching at the time, thus learning experientially from deep abstraction, questioning, intuiting, experimenting and reflecting, as a means towards improving the societal systems and complexifying their own perceptions. For each of them, their own internal change in perceptions and perspectives became just as important as the externally driven questions of what is learning. The internal and external inquiries merged.

Importantly, Richard's vignette demonstrates how facilitators' transformative, third-order learning experiences can be intentionally and proactively designed as a *collective* of curious educators. Over four years, the Hawkesbury faculty formed their own critical learning system, in which together they read, discussed, critiqued, experimented, and synthesised their collective, transformative learning, on butcher's papers along their walls (as opposed to synthesis in a formal doctorate thesis). And this critical learning system of the faculty continued over the course of the 15 years together:

Key to our own collective 'conscious evolution' has been the willingness, of most concerned, to participate together; both in the evolution of the work that we have done together, in the name of what we would come to call systemic development, and in the evolution of our own collective consciousness" (Bawden, 2005a).

According to Richard, those that consciously participated in the learning collective all emerged with transformative experiences, but the same could not be said, for certain, for those educators who did not participate.

I presented the other educator's transformative learning more as individual journeys. And, this may have been because at the beginning of my research, I held an implicit assumption

that it would be important to interview the facilitator of each course to look at the individual's area of influence. Perhaps paradigmatically, I was influenced by a view that places more importance on the role of or belief in the individual, as opposed to a more collective view; or operating in the outdated perceptions of courses being taught by one person. Had I asked different questions about group transformative learning experiences, or co-interviewed several people from the team-taught courses and team-taught programs, other facilitators may have answered from a collective perspective as well, or recognised additional transformative experiences beyond the individual moments we discussed.

Regardless of whether it was as an individual or as a group, each of the facilitators exhibited characteristics of third-order reflexive and diffractive learners. They were all *critical of what they saw around them and refused to accept this dominant-cultural-paradigm as the only way*; undertook meaningful and applied philosophical explorations of *'what is learning'*; engaged in meaningful exploration of the paradigmatic and other influences on their *own worldview and consciousness*; and had a deeply ethical orientation, curiosity and bravery in *experimenting to do better things*. In essence, the facilitators' stories are deeply resonant with the holarchy of this inquiry (*Visual 10, p. 91*).

c) Experiences with people of very different worldviews

The final shared resonance was living in places and with people who have vastly different worldviews. These contexts create significant opportunities for complexifying one's own worldview. By living in Central and South America (in countries negatively influenced by the global neoliberal regime), Heather and Richard were shown the limits of their own perspectives, when one is exposed to the contradictions of one's own government, and sees the limited perspective on the context and implications of one's project in a messy, political, economic, social, historical context. Richard's colleagues were brave, strategic and challenging in helping him to see his blinders.¹⁸⁹

Clearly traveling to other countries heightens this opportunity – to see and discuss different worldviews - but diffusion of worldview awareness and beliefs can also happen through social networks, seen among the philosophers preceding transformative

¹⁸⁹ Characteristics espoused by Paulo Freire in processes of collective conscientisation.

sustainability learning (*Ch. 9, Premise: philosophers' activating-events*) and in the case of Hawkesbury Agricultural College staff's collective learning.

Transformings of one's self: why is it significant for each facilitator to have undergone their own transformative experiences?

We can conceive of our own individual worldviews crystallising from our perceptions of the world around us (or in other words, from experiences of contexts born from largely unconscious paradigmatic beliefs).¹⁹⁰ Similar to how the shape of a crystal mirrors the internal arrangement of its atoms¹⁹¹, our perceptions of and action in the world mirror our internal meaning-systems (and our meaning-systems are often in turn mirroring our contexts).

However, when our experiences differ significantly from the contexts of our past, like a crystal experiencing differences in temperatures or chemical compositions, our worldviews can branch and bristle in fascinating ways. These personal stories demonstrate how transformative learning educators have described their own experiences with a sort of transformative worldview re-crystallisation.

According to Richard, an individual experience of, awareness of and reflection upon one's own transformative learning is imperative for being able to facilitate transformative sustainability learning: "You've got yourself to go through the transformation" (personal communication, November 27, 2017). If you have experienced 'different sets of paradigmatic alternatives' (Sterling, 2010) or recognise the contexts of the context (Bateson, 2000), one is able to see when actions or decisions or ways of being are bounded by the rules and norms of a particular paradigm. This awareness helps one to: better design processes outside of the dominant-cultural-paradigm; create reflective moments when the unhelpful aspects of the dominant assumptions are manifesting in a learning experience; recognise the value of integrating all paradigms, depending on the context; and be respectful of all worldviews (while maintaining, as Paulo Freire suggests, the belief in learners expanding beyond their experience).

In other words, as Stephen Sterling suggests, transformative learning in a curated experience arises from the interaction between "the state of readiness of the learner and

¹⁹⁰ The "contexts of contexts" (Bateson, 2000 in *Scholarly Introduction 2*).

¹⁹¹ A cube of salt has a cubed patterning of atoms; a snow-flake has a six-sided atomic patterning (Smithsonian, 2013).

the quality of the learning environment to yield a particular learning experience as an emergent property of that interaction” (Sterling, 2010). Those facilitators who have undergone their own processes of transformative learning are arguably able to improve the ‘quality of the learning environment’, if ‘quality’ is defined as one which seeks to avoid replicating the harmful unconscious biases of the dominant-cultural-paradigm. Thus, when facilitators intentionally curate a learning system born of their own worldview enrichment and ability to diffract into alternative paradigmatic beliefs, there is a “two-level learning process involved”: the new ‘meaning making’ of the designers/teachers facilitates the new ‘meaning making’ of others (Sterling, 2010).

These stories of transformative experiences, of varying detail and depth, illustrate the types of experiences that facilitated awareness within the vignette-educators about their own worldview, its similarities and differences to the larger shared cultural ‘scripts’ and paradigms, and the relationships of both to regenerative and resilient societies. Based on these types of experiences, the educators’ philosophical premises have shifted, stretched, complexified.

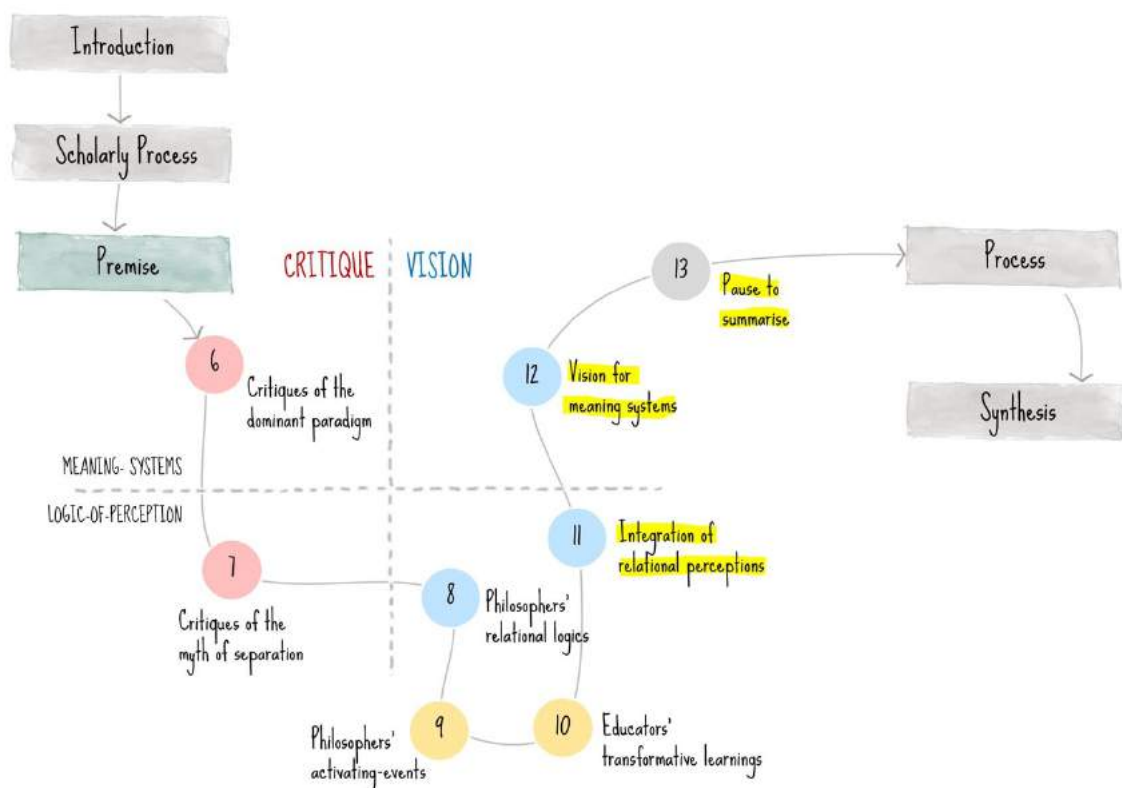
In sum, in the preceding chapters, I demonstrated several aspects of resonance between the preceding-philosophers and vignette-educators. They both engaged with a deep critique of the dominant paradigm’s beliefs and logic of perception (*Premise chapters 6 and 7*), and they describe those moments when they became aware of how the dominant paradigm was influencing their perceptions and actions (*Premise chapters 9 and 10*). These resonances illuminate what I am calling valuable and beneficial premises of transformative sustainability learning. That is, not just what one curates in a classroom, but one’s own individual work in preparation for the role as facilitator.

So, if preceding-philosophers and third-order aware educators are seeking to transcend, shift, stretch, nuance, complexify, and transform beyond the dominant-cultural-paradigm, what paradigmatic beliefs and perceptions are they trying to manifest? To illuminate insights for this question the following chapters sketch the philosophical *visions* for transformative sustainability learning (*Ch. 11, relational perceptions, Ch. 12, meaning-systems*). The subsequent *Process segment* will then explore how these critiques and visions manifest in educators’ learning designs.

Premise: Vision

The premises of philosophers preceding transformative sustainability learning included more relational way of perceiving and being (*Ch. 8, Premise: [philosophers' logic](#)*), as opposed to and in addition to worldviews rooted mainly in *separateness* and *dualism* (*Premise chapters 6 and 7*). But what are the various 'relational' logics-of-perception *within the vignettes*? And how are these relational logics imbued in all of our worldview and paradigmatic meaning-systems? The following three chapters provide insights to these questions (highlighted in yellow in *Visual 42*).

Chapter 11 unveils and conveys the specific beyond-separatist *concepts* invoked with three vignettes. I then integrate the logics-of-perception surfaced from philosophers (*Ch. 8*) and vignettes into a symbolic representation of complex, processual logics-of-perception. *Chapter 12* probes and interprets *envisioned* meaning-systems enabled by relational, processual logics-of-perception. *Chapter 13* pauses to reflect on the whole pilgrimage of premise.



Visual 42. Pilgrimage of premise: through relational philosophical [visions](#)

Chapter 11:

Integration of relational perceptions

If what we do in this world is a reflection of how we see it, then changing our way of seeing – our perspectives as well as our ways of coming to know – is a pre-requisite for changing what we do. (Sriskandarajah, et al., 2010).

11.1 Purpose of this chapter

I have two purposes for this chapter. Firstly, I demonstrate the resonance I found between preceding-philosophers and educators within the deepest dynamic of reality: our *logics-of-perception*. To demonstrate this resonance, I first share stories of the *vignette-educators'* logics, then I create a symbolic synthesis of the *philosophers'* and *vignette-educators'* logics, and then again, share personal experiences from *literature* of experiencing beyond-separatist perceptions. Not only do I interweave these three sets of perspectives to illustrate the resonance I found, but also to enrich my suggestion of the benefits for educators in bringing their consciousness to the deepest dynamics of their worldview and reality creation.

As a corollary to the first purpose, many suggest that accessing, reflecting on and complexifying this dynamic of reality requires more symbolic, experiential and emotional exploration beyond a rational discussion (*Ch. 4, Analytical framing*). Hence, I create a visual integration of all of these logics-of-perception (from philosophers and vignettes). In

my drawings and paintings, I illustrate each nuanced example, eventually creating a cumulative symbol of all of the identified complex, relational, processual logics-of-perception. Finally, I present experiences described in the literature, which illustrate the embodiment of these types of relational, processual perceptions within the fibres of our being.

Beginning with the vignettes, I now unveil and convey, from three of the courses, foundational beyond-separatist logics from three courses: *holism*, *intra-action*, and *interbeing*. I also briefly relate the vignette-educators' logics to those explored by the preceding-philosophers. After presenting three vignettes, I then discuss the meaning and implications of the collective vignette stories.

11.2 Beyond-separatist myths within the vignettes

Vignette: Hawkesbury Bachelor of Systems Agriculture

Holism as a deeply relational myth forming one's philosophical premise

The Hawkesbury group set out consciously and in the spirit of critical reflexivity, to challenge the crises of the dominant production-scientific-techno paradigm (2005a, 2016b). Richard argues that nothing short of a '*conscious recognition and subsequent transformation of both individual and socialised [paradigms]*' is necessary (Bawden, 2016b).¹⁹² The Hawkesbury staff set themselves no small challenge, and the vignettes of their experiences are brief insights into their experiential and systemic wisdom, collectively developed over a quarter of a century together.

In order to overcome the inadequacies of the dominant-cultural-paradigm, Richard's (and Hawkesbury's) philosophical premises for learning require an improvement of our perceptions. Richard argues that an improved perception can be achieved through developing a profound appreciation of *holism*, and its integration into our worldview meaning-systems. He has described the basic principles of holism for him as *wholeness*, *embeddedness*, and *transactional inter-activeness* (Bawden, 2005a). The perception of

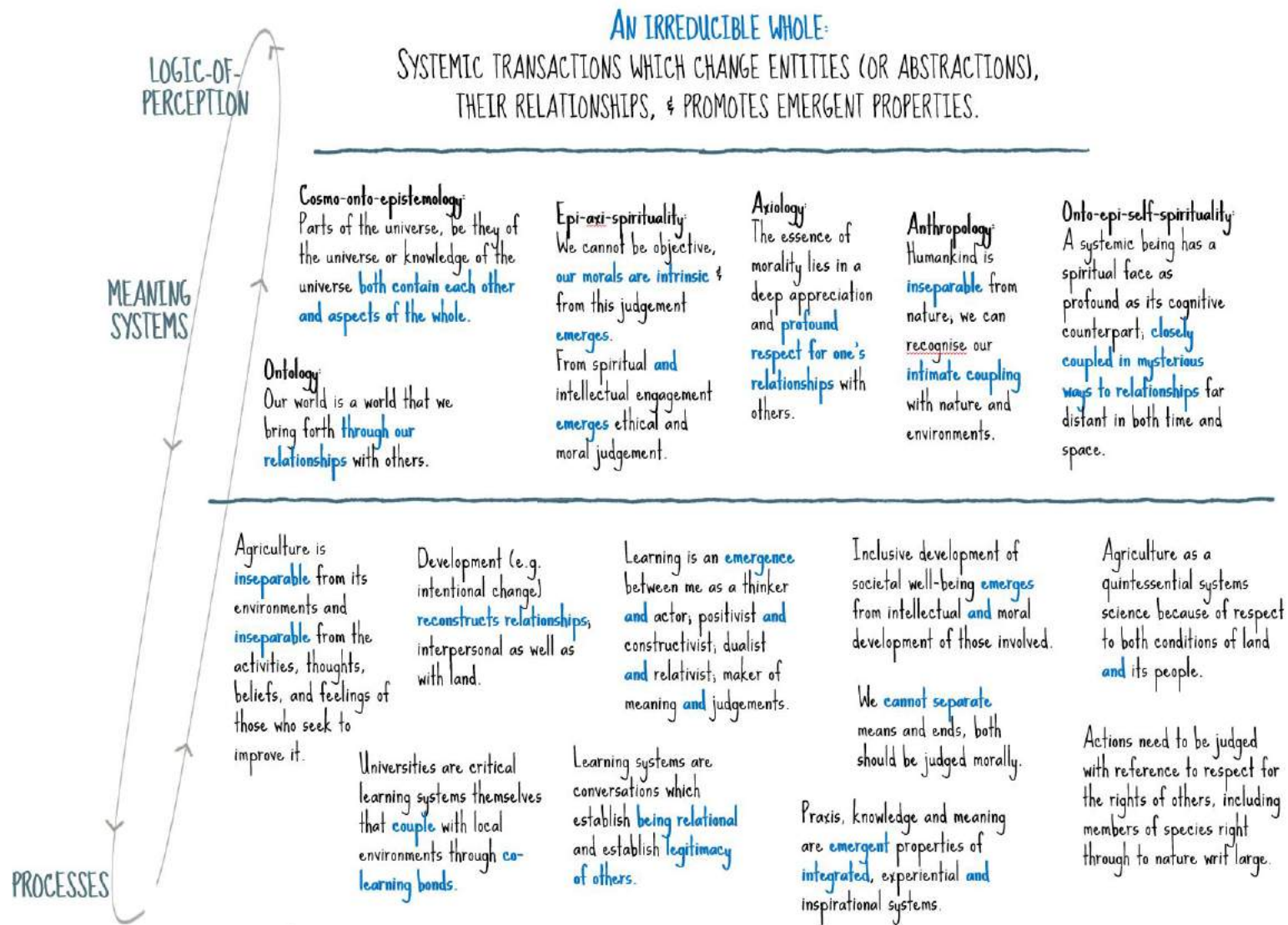
¹⁹² In this inquiry, I use a definition of worldviews and paradigms different to Richard Bawden. Richard defines worldviews as internal; and worldviews can be both individual and socially shared. In this inquiry, I refer to the latter as a paradigm. I explain my reasons for this definition in *Scholarly Introduction 2*, and within this section, I attempt to update Richard's terminology for consistency in this inquiry.

wholeness involves perceiving that any entities or abstractions that interact in a systemic way (a) will be **themselves changed**; (b) will have the nature of their **relationships changed**, and (c) will promote the **emergent properties** of the whole system in which they are (or assumed to be) embedded (Bawden, 2004b).

Importantly, 'emergence' cannot be perceived, found or determined in a reduced focus on any one attribute, event, phenomena, or thing. That is, no inquiry of singularities allows the complete understanding of emergence (Bawden, 2004b, 2016b, 2018b). As Richard asks, in looking separately at hydrogen or oxygen, it would be impossible to predict the experience of wetness, let alone swimming, as an emergent phenomenon of their transactions. He argues that it is important to not only strengthen our perception of emergence, but then to use our perception and appreciation of this phenomenon to specifically create the conditions for emergence to occur. We can do this for example, by respecting, valuing and bringing together differences or tensions, as it is through the **uniting of these tensions** that emergence becomes more possible (2004a).

The perception of holism can inter-steep within all of our worldview systems for meaning. Whereas *Visual 24* reflects the manifestation of the dominant separatist myth in our meaning-systems and thus into our visible 'world creation out there', we can also map how perceptions of holism (as an additional or alternative worldview logic), can influence our worldview systems for meaning, and thus dramatically change the way we act or create and regenerate relations in the tangible world. ¹⁹³

¹⁹³ (*Visual 24* compiled from Maturana & Varela in Bawden, 2003; Flood in Bawden, 2003; Bawden & Packham, 1998; Bawden, 1995, 2000, 2003, 2004, 2005, 2010)



Visual 43. Richard's relational logics-of-perception infusing through dynamics of reality

Interweaving Richard's conception to the other beyond-separatist-logics-of-perception

In terms of inspirations for this new logic-of-perception, Richard was profoundly influenced by Paulo Freire, and David Kolb (who drew heavily on John Dewey). Both John Dewey and Richard attempt to perceive the irreducible 'higher level' or *emergent* properties from systemic phenomena. Both Paulo Freire and Richard consider what tensions can be brought together for an *emergence* or a *transformation*.

Richard's holistic logic-of-perception also resonates with Erich Jantsch's holistic logic. Both of them draw deeply from systems philosophies, and in particular, they both were significantly influenced by Charles W. Churchman's writing. As such, they each seek to inter-steep a *holistic* perception throughout their beliefs of themselves and the world. However, whereas Richard describes himself more as a pragmatist (invoking *holism* into his onto-epi-axiological-self meaning-systems), the notions of mysticism tend to percolate more through Erich Jantsch's writing (e.g. exploring the perceptions of *holism* within the meaning-systems of self and cosmology, in addition to onto-epi-axiologies). The mystical and pragmatic could be perceived as separate, but how could they also intra-act and intra-relate in a learning experience? I'll raise this question again in the concluding chapter.

Next, I explain Joy's beyond-separatist perception: *intra-action*.

Vignette: Agential realist (food) pedagogy

Intra-action as a deeply relational myth (in)forming one's philosophical premise

Joy's pedagogical philosophy attempts to dissolve, or move beyond, an all-encompassing yet largely preconscious *disjunctive* and *separatist* logic-of-perception. She attempts to transcend this dominant perception both for her as an educator designing the experience, and for the students within the learning experience. Assisting with this transformation of the dominant-cultural-paradigm's primary myth is Joy's deep engagement with the postmodern philosophical work of Karen Barad, a feminist quantum physicist, who in turn is inspired by the profound work of Niels Bohr.

Karen Barad, a scholarly leader in posthumanist philosophy, advances a theory of *agential realism* (2007), where the Cartesian materialist view of reality is re-imagined. In the Cartesian split between subject and object, the *cognitive brain is the only source of agency*, and *matter is inert* and only responsive to forces. Karen Barad, however,

explores an ontological perception where *material has agency* (Barad, 2007, 2010).¹⁹⁴ No longer are humans the “Subjects” imposing order over the “Objects”; no longer is the dominant-cultural-paradigm logic based on separateness and hierarchy. According to agential realism, ‘meaning’ is made in the coming together of materials and consciousnesses, where they *intra-act* to form phenomena. Karen Barad pushes her readers to perceive how neither of these ‘things’, the traditional subject or object, actually exist before the meeting and intra-actioning of each other. The primary perception is of process, change, and ‘things’ coming together and apart at the same time in the perpetual *becoming* of phenomena (O’Neil, 2018). Joy attempts to embody Karen Barad’s work and logic of *intra-action*, in the design and facilitation of her learning experiences. Barad’s concept of *intra-action* offers a more complex worldview<>paradigmatic logic for re-perceiving and interpreting reality, and thus for creating meaning.

Visual interpretations of the ‘intra-action’ relating, using the familiar mathematical Cartesian coordinates, illustrates two insights. Firstly, it illustrates how intra-action as a worldview<>paradigmatic logic ‘dissolves’ the perception of separation (*Visual 44*). As such, it secondly illustrates the embedded separatist assumptions within the Cartesian coordinates meaning-making tool.

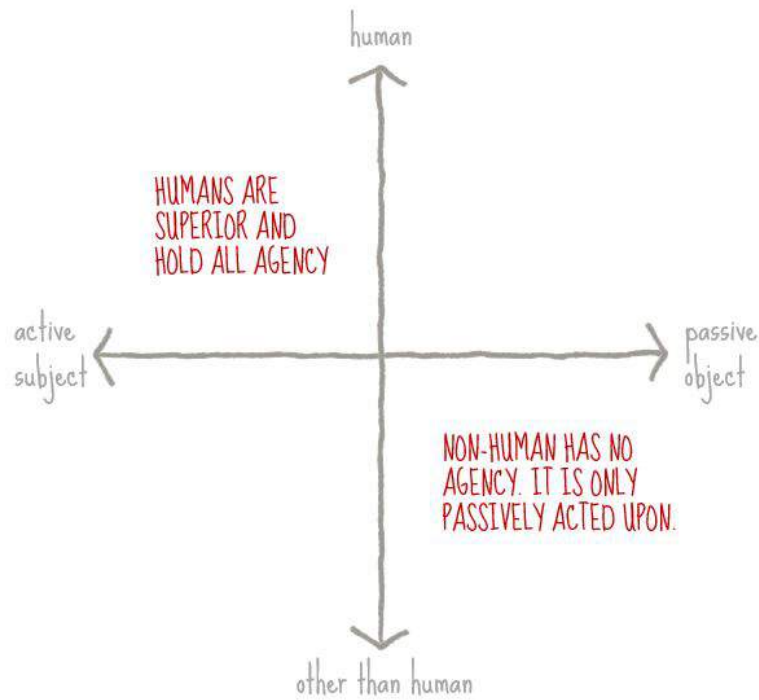
Cartesian coordinates are commonly invoked as a conceptual mean-making tool to show *separation* of entities (processes) along two dimensions, and the ordered lines of the Cartesian coordinates typically imply solid barriers and stagnant categorisation, beyond which questions are not asked of inter-relationships, resonance, movement, inter-steeping and cadence between the boundaries.¹⁹⁵ So typically, the dominant paradigmatic beliefs of separation between the agency of subject vs object (x axis) and human vs other-than-human (y axis) means that humans are believed to hold all of the agency, and material has none of the agency (*Visual 44*).

¹⁹⁴ A relevant question to explore in relation to the potential worldview stretching capacity of agential realism, which I did not have time to probe in this thesis, is whether material in Karen Barad’s ontology has a consciousness and intention, resonant with animist ontologies.

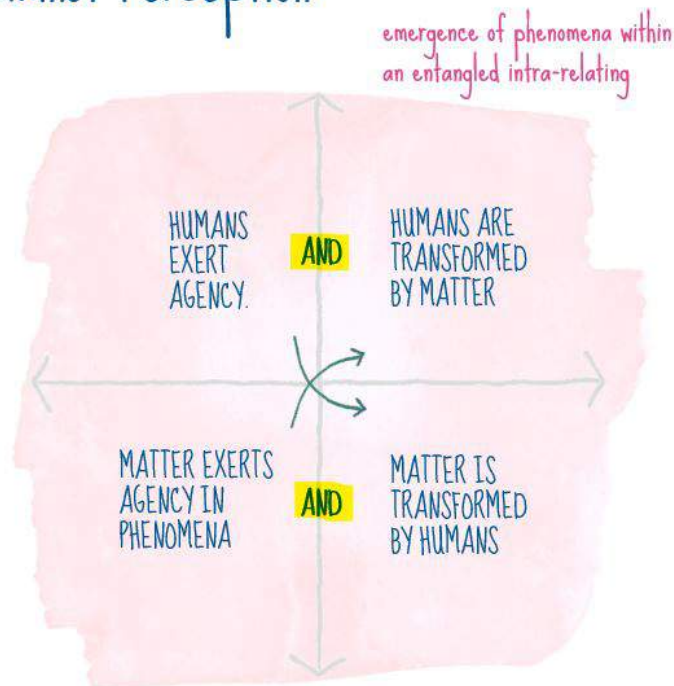
¹⁹⁵ There of course are exceptions. The Hawkesbury School communicates their windows on the world at times in Cartesian coordinates, but is very much aware of their relationality, in their spiralling representations and design of their Bachelors program (*Ch. 14.6*). Another interesting example is how David Snowden has begun talking about the importance of a collective dance or constant “cadence” between domains, and thus how “representation” of these distinctions is just as important. He has moved away from the Cartesian coordinates representation precisely for the embedded assumptions and perceptions within this image/symbol. See his aptly titled blog: <https://cognitive-edge.com/blog/separated-by-a-common-language/>.

The posthumanist philosophers often critique these separatist beliefs. Using ‘intra-action’ as a concept, these philosophers attempt to perceive and conceive in their inquiries the ways in which matter is also agential, acting upon humans within phenomena (*Visual 44*). Posthumanist philosophers argue that “as humans we need to see ourselves as material objects of the world, just as any other beings and matter” (Lenz-Taguchi, 2010 in O’Neil 2018), ‘matter’ in the sense that can be acted upon. Importantly, whereas the common dominant perceptions tend towards a belief in stasis, the posthumanist view shows how we (and phenomena of all kinds) are always in a process of *becoming*, paradoxically with and without agency (represented by arrows in *Visual 44*). The process of intra-action is constant (e.g. a process/dynamic ontology).

Perception of Dominant-cultural-paradigm



Posthumanist Perception



Visual 44. Differences of the dominant and posthumanist perception of the agency of materials.

In a paradigm infused with separatist logic, it is possible to perceive/conceive of ‘parts and wholes’ *inter*-acting (*Visual 44*). In comparison, *intra*-action as a worldview/paradigm-logic does not perceive or conceive of separateness (*Visual 44*). According to this logic-of-perception, no entity has an independent, self-contained existence. Entities do not pre-exist interactions but rather processes and phenomena are always emerging within their “*entangled intra-relating*” (Barad, 2007, p. ix in Lange & O’Neil, 2016). *Intra-action* is a way of perceiving/conceiving ‘inseparable phenomena’, in which intermeshing entities are always transforming together (cutting together and apart at the same time) (Barad, 2007).

In sum, in this relational logic-of-perception, *agency* is reinterpreted (within onto-self-anthropological beliefs). Instead of humans being separate from and superior to nature, and thus holding all of the agency to transform or exert change, agency is something that is mutually and simultaneously exerted. Joy often illustrates this notion of ‘simultaneously being Subject (exerting agency) and Object (being transformed)’ in simple and profound statements (these statements are perhaps better grasped through meditation¹⁹⁶, intuition, artwork, spiritually, or in slow contemplative reading):

while we transform rivers, rivers transform us,

as we transform food, food transforms us,

as we transform the world, the world transforms us,

*as nature materialises and shapes culture, culture shapes nature.*¹⁹⁷

Within this radically relational logic-of-perception, one can see, feel, think, ‘grok’¹⁹⁸ how we humans cannot stand apart from nature, and why minds are actually mind<>bodies. Dualities dissolve. Joy incorporates Karen Barad’s *agential realism theory* in her learning design so that learners intentionally perceive and conceive how the material world acts upon our thinking<>being and simultaneously how our thinking<>being acts upon the material world.

¹⁹⁶ The next time you walk to swim in an ocean, river, lake, stream, perhaps play with your perception: are you (active subject) walking into the river (passive object)? Or are you and the water meeting and intra-acting (both as active subjects/passive objects)? How does this change in perception change your beliefs about yourself and water?

¹⁹⁷ Presented separately within various papers (Lange & O’Neil, 2016; O’Neil, 2017a, 2017b, 2018).

¹⁹⁸ The science fiction term which means to not just understand something intellectually, but to grasp its meaning within every fibre of being.

More specifically, the premises of her food pedagogy could be articulated as: the concepts of ‘humans’ and ‘food’ do not actually exist. These concepts are only arbitrary boundaries forcing us to perceive objects, instead of dynamics, or processes of humans <> food mutual becoming. A premise to her food pedagogy is that humans<>food are inseparable phenomena in a state mutually transforming and emerging into new phenomena. The postmodernist theory of relational materiality is a “highly nondualist approach to teaching and learning”, thus Joy’s own “transformative learning was transforming a dualist approach of teaching food as Object – to be studied, managed, and eaten – into teaching in a nondualistic approach, where by food is the Subject” as well as the Object (2018).

Interweaving Joy’s conception to the other beyond-separatist-logics-of-perception

Resonances exist between Joy’s logic-of-perception, which she seeks to infuse in her learning design, and with the logic-of-perception of the preceding-philosophers contributing to transformative sustainability learning. As briefly mentioned above, Joy was significantly inspired by Karen Barad, who was also inspired by Niels Bohr’s paradigm-shattering insight into the “nonduality of objects and subjects” (O’Neil, 2018). As I demonstrated, Bohr’s more complex *onto-anthropological* beliefs inspired Nicolescu’s transdisciplinary approach to transcending the Subject and Object divide (*Ch. 9, Premise: philosophers’ activating-events*). That said, Nicolescu’s logic of the Including Middle still *preserves the distinction* of the events, phenomena, abstractions, or ‘parts’; whereas intra-action does not.

More subtle similarities emerge between Joy’s premises and John Dewey’s work. Joy’s agential realist premise includes the perception that “what we are and our very existence are in total mutuality and interdependence” (Lenz-Taguchi, 2010, p. 49 in O’Neil, 2018). This is resonant with Dewey’s assertion that there is no telling apart of nature and culture (Morris, 2015).¹⁹⁹

These comparisons again prompt me to ask, what are the implications of embedding relational logics-of-perception within some meaning-systems and not others? Each

¹⁹⁹ Another resonance with John Dewey’s work arises between John Dewey’s notion of the reflex circuit (see John Dewey’s process philosophy, p. 226) and Joy’s interpretation of diffraction. A key metaphor that Joy adopts from Karen Barad’s agential realism is the notion of ‘diffraction’. She interprets diffraction, as a nondual metaphor, as a means to help us to perceive “a wave like motion that takes into account” how thinking, seeing and knowing are “never done in isolation but are always affected by different material and human forces coming together” (Palmer, 2011 in O’Neil, 2018). In essence, this interpretation of diffraction and John Dewey’s reflex circuit offer two names for the same unity.

vignette-educator tends to explore the logic-of-perception through certain meaning-systems, and not others. For example, while most logics are explored *onto-epi-axiological* beliefs, Joy's work perturbs the dominant *anthropological* beliefs.²⁰⁰ Erich Jantsch's holism perturbs dominant beliefs of *self* and *cosmology*. I mention this to foreshadow *Premise chapter 12's* discussion of integrating beyond-separatist logic-of-perceptions within all of our meaning-systems.

Next, Heather's vignette offers a relational logic-of-perception as manifested in our beliefs about *self*.

Vignette: Leadership for Sustainability Education master's

Interbeing as a deeply relational myth in-forming one's philosophical premise

In Heather's premises and designs for learning, she attempts to stretch preconscious perceptions and conscious conceptions beyond the separatist logic-of-perception. Towards this goal, one of her guiding perceptions is the concept of '*interbeing*'.

Thich Naht Hahn - a Buddhist scholar, activist, and spiritual leader - coined the term of *interbeing*.²⁰¹ Over 30 years ago, he was seeking an English word to describe our deep interconnectedness. The verb 'be' is one of the few relating verbs in the English language. Even so, within the grammatical structure of the English and other noun-based languages, the verb 'be' encapsulates *subject and object separateness*. In seeking to transcend the implicit assumptions of the verb "to be", he created the verb and languaging of 'interbe', 'interare' and interbeing, as more accurate reflections of reality (Hahn, 2017). The naming of, and perceptions facilitated by, the notion of *interbeing* reveals the insight that everything relies on everything else in order to manifest. Our bodies and microorganisms, our planet and ecosystems, our societies and citizens, our families and heritage, our actions and beliefs are all interlinked in interdependent continuations of symbiosis with everything else:

²⁰⁰ Anthropologic beliefs as integrated with onto-epi-axiological beliefs.

²⁰¹ Thich Naht Hahn has dedicated his life to peace, after witnessing the destruction the Vietnam war (e.g. a phenomenon deeply rooted and premised within a separatist Us vs Them myth-logic), and was exiled for his heretical peace-building work.

*“Everything relies on everything else in the cosmos in order to manifest—
whether a star, a cloud, a flower, a tree, or you and me”* (Hahn, 2017).

Heather also draws upon Satish Kumar and Charles Eisenstein in developing her own perception, understanding and enactment of interbeing within her courses. Satish Kumar’s languaging of this notion is inspired by the Sanskrit dictum of *So Hum*, which he translates as ‘You are, therefore I am’. This mantra is often invoked in Satish’s teaching in Schumacher college,²⁰² a program with which Heather believes her Master’s program shares many similarities. Satish Kumar describes ‘*So Hum*’ as an entire worldview based on the webs of relationships: “We are living in the web of living relationships. And, the whole entire Earth is a web of life” (2008, p. 114).

Satish Kumar contrasts this dictum of *So Hum* with René Descartes’ *cogito ergo sum*. He interprets René Descartes’ dictum as a ‘separatist, dualistic worldview where we live isolated in our minds’, and describes this resulting paradigm as very **individualistic** and **ego-centered** (Kumar, 2008, p. 114).²⁰³ In comparison, the Hindu logic of relation perceives:

The Earth is therefore I am.

The water is therefore I am.

²⁰² The social media feed of Schumacher (Twitter, and Instagram), will often have references to ‘You are, therefore I am’ in the captions of their photos of Satish.

²⁰³ In other words, Satish Kumar compares *So Hum*’s notion of “the other is, therefore I am” or “you are, therefore I am” with René Descartes’ “I think therefore I am.”

Again, I haven’t gone back to read René Descartes, but on one level it seems that his notion of: ‘*I think (A) therefore I am (B)*’ can be interpreted as resonant with *So Hum*, meaning: ‘if our worldview **is** *So Hum* (A), we enact and **are** *So Hum* (B).’ Conversely, if our worldview **is** separation from nature (A), we enact and **are** separated from nature (B). If we think (*So Hum*), therefore we **are** (*So Hum*).

But René Descartes seems to be interpreted rather as: I think (using my superior, rational, brain), therefore I **am** (as opposed to the other non-thinking, material machines around me without consciousness that **are not**). Other interpretations could be that he was concerned with proving he existed, rather than proving nothing else has consciousness.

This whole discussion about interpreting what is meant by the verbs ‘**be, being, am, are**’ is a long-standing philosophical debate that has the potential to be disruptive and transformative, but I did not have time to go in depth and pulled out of the worm hole when I got to Charles Kahn’s “The Greek Verb “To Be” and The Concept of Being” (Kahn, 1965).

Suffice it to say, there might be much diffractive-power into beyond-dominant ways of ‘**being and becoming**’ through a deep dive into the history and philosophical complexities of this small but all-pervasive verb in the English language. Relational and verb-based languages would be a helpful entry point into recognising the broader noun/material/individual subject focused inadequacies of the English language.

The sunshine is therefore I am.

The trees and birds and bees and worms are butterflies are therefore I am.

My ancestors were, therefore I am. My teachers were, therefore I am

(Kumar, 2008, p. 114).

Similar to Thich Naht Hahn and Satish Kumar, Charles Eisenstein describes this notion of interbeing as a precept of the New Story for humanity, and of reality. He suggests 'interbeing' helps us to perceive how everyone and everything is 'inseparate from the universe', and how our being wholly partakes in the being of everyone and everything else (2013). He offers a simple experiment for why and how we might believe this as our fundamental logic-of-perception (2013):

*"Let's start with the obvious: This interbeing is something we can feel. Why does it hurt when we hear of another person coming to harm? Why, when we read of mass die-offs of the coral reefs and see their bleached skeletons, do we feel like we've sustained a blow? It is because it is literally happening to our selves, our extended selves. **The separate self wonders**, "How could this affect me?" The pain is irrational, to be explained away, perhaps, as the misfiring of some genetically coded empathy circuit meant to protect those who share our DNA. But why does it extend so easily to strangers, even to other species? Why do we desire so strongly to serve the good of all? Why, when we achieve a maximum of personal security and comfort, are we still dissatisfied? Certainly, as a little introspection will reveal, our desire to help is not coming from a rational calculation that this injustice or that ecological disaster will somehow, someday, threaten our personal well-being. The pain is more direct, more visceral than that. The reason it hurts is because it is **literally happening to ourselves.**"*

In Heather's premises for transformative sustainability learning, she infuses the relational-logic of interbeing, from Thich Naht Hahn, Satish Kumar and Charles Eisenstein into her learning design. Heather and her students experience interbeing is "an understanding of our deep relational interdependency on other beings" (Burns et al., 2016). This is more than just a cognitive recognition of connection, but is a more fundamental ontological/cosmological belief of self:

"I think sometimes with relationship, especially when we are thinking about classroom or learning experiences, we think about communication with each

other or how we socially construct knowledge or learning, or of how our consciousness meets each other, but interbeing is more fundamentally recognising that we always are connected to one another whether we're in the same room, or whether we are talking or communicating or not, it's a more fundamental understanding of how we are in the world".

This belief of 'interbeing' is significantly different from that of the **separate self**, or **Cartesian brain**, in which consciousness resides in our own individual heads. Instead of consciousness being separate from our brains, interbeing is a perception of consciousness in our bodies, our energy, around our body and in the energy field. Instead of health being an individual phenomenon and viewing humans as separate from nature, our health is also a sign of our interdependence. Our own health is part of the greater planetary well-being or distress (Burns, 2016b). Taking care of self is necessary to deal with planetary distress, and vice versa. Enactments of self-care and planetary-care can be perceived as one-in-the same; e.g. an inseparable anthro-axi-self-ontological belief infused with beyond-separatist logic.

With her classes, Heather and her students begin to practice an awareness of interbeing (Burns, 2016b). Learners develop an ethic and practice of care to help create a more resilient and flourishing world by beginning with care of the self in an understanding of interbeing (2016b). I present more of Heather's learning processes in *Ch. 14, Process*.

Interweaving Heather's perception to the other beyond-separatist-logics-of-perception

Heather's conception and enaction of interbeing (the belief that everything relies on and is connected to everything else in order to manifest) resonates with the other notions, e.g. Basarab Nicolescu's third axiom of universal interdependence, Paulo Freire's evolving fields, and Erich Jantsch's unified, creative universe.

Aspects of interbeing are resonant with Morin's hologrammic principle, but for Heather, this logic has more than just an *onto-epi-axiological* implication. Her *cosmo-anthro-self* interpretation harmonises with Jantsch's mystical description of the Law of Correspondence. As raised earlier, theses complementarities are important. The following *Ch. 12* discusses the potentially profound implications of manifesting relational, processual logics within only a few meaning-systems, as compared to a greater variety of meaning-systems (e.g. ontological, epistemological, cosmological, sense of self,

anthropological, etc.), enabled by the *groking* of a greater variety of relational-processual logics-of-perception.

Summary and next steps

Similar to the preceding-philosophers, these vignette-educators seek to overcome the ubiquitous perception and logic of separation. The concept of '*wholeness*' in systems theory invokes the perception of bounded inter-relating processes and unpredictable emergence, as opposed to disconnection and reductionism. *Intra-action* overcomes separation between subject and object, and human and more-than-human. Both material and living beings have agency over each other, resulting in processes of mutual-constitution. The notion of *interbeing* and *inter-are* imbue a deep recognition that nothing exists in isolation, and this radical relationality in essence means there is no such thing as an 'isolated self'. Significantly, these distinct concepts all relate to each other, *and* positively cohere with the diverse concepts I explored within the preceding-philosophers' more ethics-focused and complex logics-of-perception (*Ch. 8, Premise: philosophers' logic*).

This section raises generative questions such as:

- How do we transformative sustainability educators (and people steeped in the dominant-cultural paradigm) actually feel and express the complementary unity of these concepts for logics-of-perception: *wholeness, intra-action, interbeing* and the dynamics of change they offer for societies ways of becoming?
- If rationality is only one part of knowing, how do we invoke the diffractive, transformational-power of relational logics by going beyond a rational reflection?
- How do we more fully transition from a deeply unconscious, preconscious logic of separation, towards a complex, interdependent, holistic relational logic?

The following section begins to explore these questions in two ways: firstly, through a process of visual, symbolic integration, and a secondly as described through experiences of other educators within the transformative sustainability literature.

11.3 Co-creating a symbol of relational logics-of-perception

Introduction

A premise of transformative sustainability learning is to move beyond separatist logic, to develop more ethical perception<>enaction patterns. But how can we more fully and broadly move beyond separatist logic? If philosophers from diverse fields are shouting similar messages, how to we amplify their shared message?

Scholars who theorise about the deepest levels of reality suggest that this space, often furthest from our consciousness, is more accessible through imagery, stories, emotions, dreams, and symbolism (Selby 2002; Inayatullah, 2005). Images, at this level of reality, transcends left brain cognition (Inayatullah, 2005, p. 7). I recognise that images are only part of the beyond-rational approaches. Embodied, lived experiences are also powerful and necessary (Heron, 1992). Therefore, in this section I experiment with symbolic integration of these multiple conceptions of beyond-separatist logics.

The hope and intention of this created symbol is to provide a heuristic for enriching our logics-of-perception. The symbol visually integrates diverse perceptions that are aligned in their unity in stretching the dominant-cultural-paradigm beyond the separatist myth. The synthesis might amplify the philosophers' and educators' messages of overcoming separation. The symbol might offer a way of accessing more complex, life-giving logics-of-perception, capable of creating more sustainable, regenerative meanings, narratives, actions, and becomings, and ultimately contribute to context in transformative sustainability learning praxis and critical reflection.

Essentially within the spirit of postmodernism, I am asking – what does the symbolic integration of these various logics-of-perception enable us to do, or conceive or envision? Thus, in this section my intent is to support the development of one's own self-awareness (or self-witness) in observing where separation and fragmentation are the dominant perceptions, and where other, more complex and arguably more ethics-focused perceptions could manifest.

To begin this experimental and playful²⁰⁴ process, I re-interpret the dominant separatist

²⁰⁴ John Dewey reiterates how play is an essential and inseparable from learning and knowledge creation (1933). This process was playful for me, as it was a completely emergent method arising from the hermeneutical processes I was engaging in. These questions of the complementarity of these relational logics-of-perception kept triggering my curiosity and drawing me into this realm of experimentation with symbols. As described in *Ch. 3, Philosophical orientation*, this type of experimentation is encouraged in Post resonant

logic-of-perception. Next, I briefly summarise each of the shared and distinct ‘relationings’ as they become increasingly more complex e.g. Aristotelian logic followed by recursive, the including middle, hologrammic, intra-acting, emerging, transforming, and finally evolving logics. At the end, I present all of these relationings in an integrative symbol.

Aristotle’s logic-of-perception as *distinction*

Perceptions of *distinction* are the most dominant form of perception. Despite the grave concerns over its impacts, the preceding-philosophers argued not to dismiss it entirely. For example, Basarab Nicolescu believes that the ‘law of the included middle’ does not negate Aristotle’s ‘law of the excluded middle’. Rather we should put spheres of relevance and context around this perception (Nicolescu, 2005; Bernstein, 2015). Similarly, Erich Jantsch and Edgar Morin integrate the separatist logic with many other logics to enable a more complex perception.

In other words, perceptions of *distinction* have *very important* roles. In essence, a perception of distinction *is a way of valuing diversity*. One of the major insights of ecology is that diversity is a sign of health and robustness, and when we don’t value diversity, we literally kill it off.

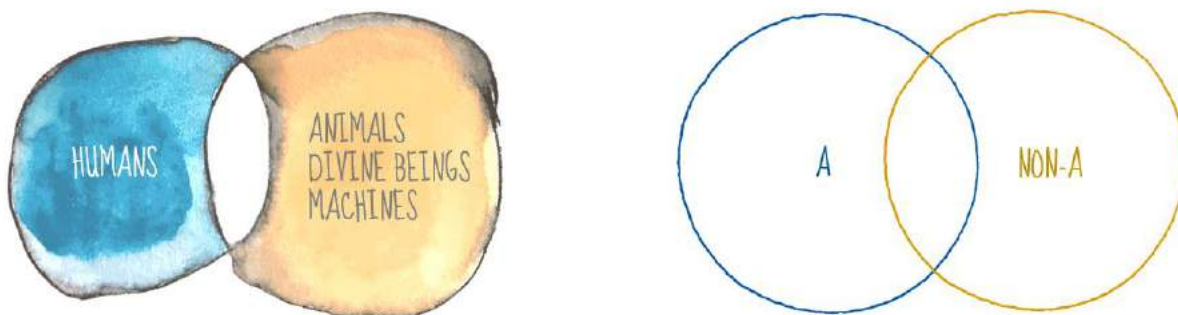
Hence problems arise when we mistake *distinction* for *separation*. All of the following relational logics-of-perception remind us that spheres upon spheres of relationality and unity exist around and within distinctions of diversity. Hence, *distinction is not permanent; distinction also allows for unity*. Distinction logic is only Aristotelian or Cartesian if it values only this act of separation, and stops here.

Unfortunately, as Gregory Bateson recognised, the dominant paradigm does stop way too short. The dominant tendency is to perceive *distinctions* as permanent, unchanging, reified. This tendency manifests and is recognised by many names: *separatist, binary, dualist, reductionist, nouns, static, exclusionary, competitive, antagonistic, disjunctive, anti-dialectic, fragmentary*, etc.

To give an example of distinctive perceptions, I draw on the definition of ‘human’ in the English language. Using Boolean symbology,

inquiries.

Visual 45 demonstrates the perception<>conception of humans based on distinctive logic in the Cambridge Dictionary; e.g. human is ‘being or having the qualities of people, **as opposed** to gods, animals, machines’. The painting on the left-hand side, presents distinctive logic more artistically (note the black boundaries, and no overlap in the middle). The visualisation on the right-hand side presents distinctive logic more abstractly.²⁰⁵



Visual 45. Painting of perception (and definition<>enaction) of humans as *separate*. On right, abstract drawing of distinctive logic.

The questions enabling a **distinctive** logic-of-perception includes: *how are these opposites mutually exclusive? How is knowing their distinctiveness insightful and relevant? What qualities of diversity is this perception honouring?*

Also perceiving recursive relationing²⁰⁶

Another step in strengthening perceptions beyond the separatist myth is in recognising concurrency of opposites through their **recursive** logic (i.e. mutual transactions, circular causality) (Bawden, 2011b; Dewey, 1933; Morin, 2006).

In recursive logic, the existence of each opposite (e.g. distinct entity/ process/ concept/ phenomenon) is continually influenced by the other. For example, humanity and nature can be perceived in a *recursive* relationing (Visual 46). In a balancing relationship, the actions of humanity are generative towards nature, and this allows nature to provide

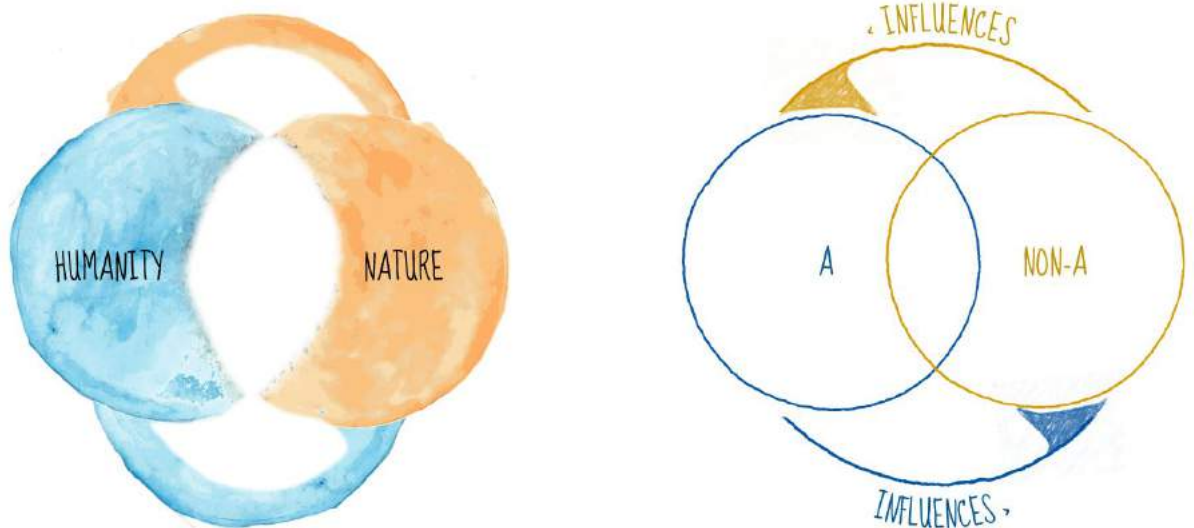
²⁰⁵ In future illustrations, it could be more ‘insightful’ to use photographs.

²⁰⁶ I present these logics as verbs; that is, instead of ‘recursive relationship’, I use ‘recursive relationing’. Similarly, in the next logic-of-perception, I use ‘including middle’ instead of ‘included middle’. I use present tensing to reiterate that these logics are moving beyond a static separatism, towards a dynamic process of relating. The verbs might sound awkward, but perhaps that is because we are not used to the presence of so much movement in the English language.

generative condition for humanity. In a *deviating* process, the change in perceived poleemics is amplified: if humanity destroys nature, nature will destroy humanity.

The painting on the left demonstrates how in a recursive logic, polarities or distinctions can still be still considered as separate, autonomous *entities*. Specifically, there is no overlapping included middle, where these perceptions<>abstractions meet. So, even though circular logic is a step beyond separatism, perceptions of circular logic, or complex interaction, can be described as 'weak' nonduality (Jantsch, 1975; Morin, 2006; Spretnak, 1996).

The visual on the right-hand side is cumulative; it integrates perceptions of both distinctive and recursive relating.



Visual 46. Painting of humans and nature perceived<>defined<>enacted as *recursively relating* On right, integrative symbol enfolding a perception of *distinctions* with *recursive relationing*

The questions enabled by *recursive*, or transactional perceptions include: What are the transactions between these distinctions? How are these entities changing or reacting to each other? How is each one both cause and effect?

Also perceiving the including middle

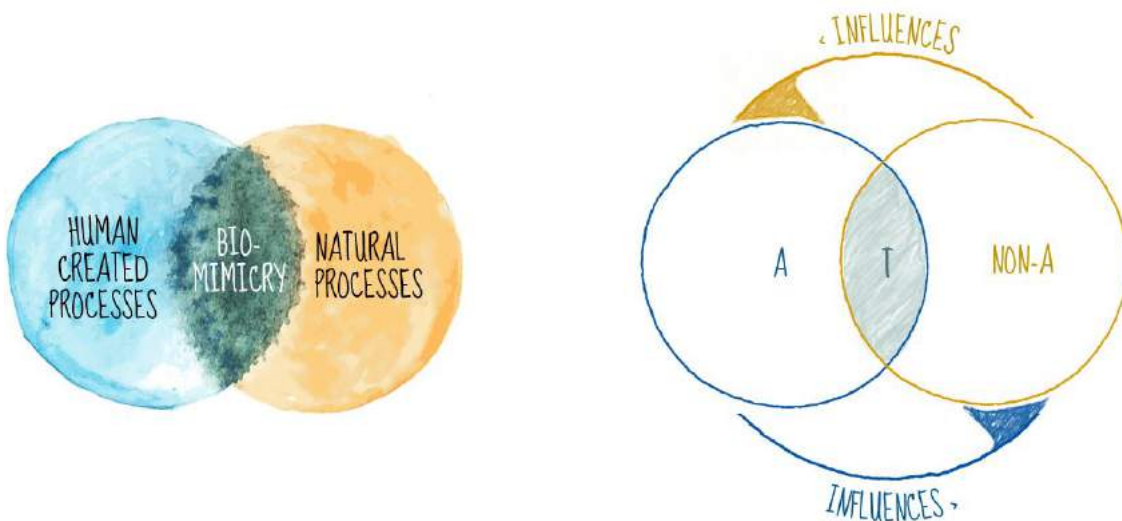
Another logic to of relationing is the logic of an including middle. Basarab Nicolescu's common example brings us back to quantum physics: at one level of reality, photons are perceived of as both a wave and as a particle. These polarities, while they don't make sense in the macro level of reality, are unified in the quantum level of reality. This

perception of the including middle perhaps is the start of discomfort in terms of embracing paradoxical and complementary truths.

This logic can also be applied pragmatically. For example, Javier Collado-Ruano (2015) explores the including middle of biomimicry as it relates to 'human' and 'natural' processes (Visual 47). He suggests human-created worlds and natural processes can and should be understood through a unifying logic (rather than seen as separate, or opposite).

The painting on the left-hand side attempts to illustrate how the logic of including middle, encourages two forms of perception. The entities/processes maintain their integrity as a **distinction**; **and** yet, a space exists where the 'opposites' are **unified**, and need each other to more fully explain the phenomena.

The right-hand drawing (Visual 47) integrates complementary perceptions of distinctive, recursive and including middle.



Visual 47. Painting of humans and nature as both distinct, and integrated in biomimicry. On right, integrative symbol enfolding distinctive ('non-a'), recursive ('influences'), and including middle (T) perceptions.

Questions enabled by perceptions of the **including middle** asks: *how can both polarities simultaneously be true and yet incomplete? How are A and non-A complementary? What allows their unification but preserves their distinctiveness?*

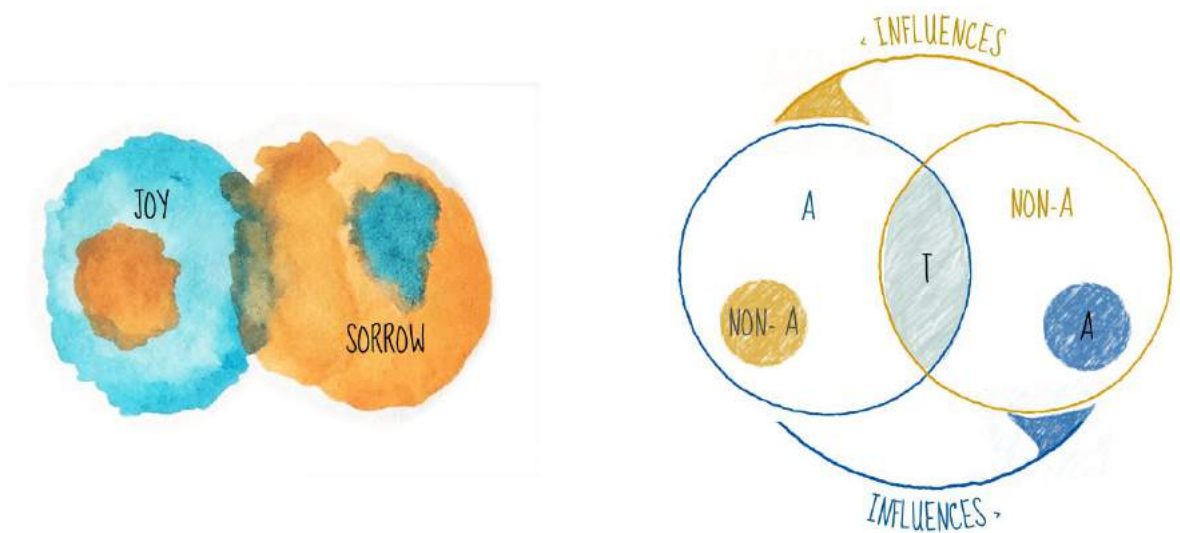
Also perceiving hologrammic relationing

Another relational perception is hologrammic logic. In creating a hologram, every part of the picture must contain a replica of the whole. By invoking this metaphor, 'hologrammic

relating', offers a logic for us to perceive and question how polarities can exist within their opposite (Morin, 2006). Erich Jantsch turns again to the arts to so beautifully illustrate his perception of hologrammic logic:

Friedrich Holderlin, in his Sophocles distich, has perhaps given this thought the most profound expression: 'Many seek to vainly, joyously to express joy. Finally, I apprehend it, here in my sorrow' (Jantsch, 1980c, p. 274).

The painting on the left-hand side (*Visual 48*) seeks to demonstrate how joy is comprised of sorrow, and sorrow is comprised of joy. The symbol on the right-hand side integrates distinctive, recursive, including middle, and hologrammic relationing.



Visual 48. Painting of *hologrammic relationing* of joy and sorrow.

On right, symbol enfolding distinctive (*A*, *non-A*), recursive (*influences*), including middle (*T*), and hologrammic (*small circles*) perceptions.

The question enabled by a hologrammic perception include: *how do these distinctions actually exist as embedded in each other? How does one require the other to exist?*

All of the questions articulated for these diverse relational logics-of-perception can be used to move beyond the dominant-separatist logic.

Also perceiving intra-active relationing

Intra-active perception is a profound enrichment beyond the perception of separation. This radical logic asks us to perceive how no entity, polemic or concept actually has a self-contained existence; rather it is created only in its simultaneous 'coming-together-apart' with other entities (O'Neil, 2018).

Like all of the preceding perception, an intra-active perception can be applied to abstract and lived examples.²⁰⁷ In terms of an abstract example, we can relate the perception of intra-action to our worldview meaning-systems. For example, if ontology is our beliefs about reality, and epistemology is our beliefs about knowledge and knowing, and axiology is about what we value, can we actually separate what we know, what is, and what ought to be? An intra-active approach is not able to conceive of the separate existence of ontology, epistemology, and axiology; but rather proposes a perception of an onto-epi-axiology, where in each moment, 'what is' transforms what we know, while 'what we know and value' transforms 'what is'. Our challenge is to develop the self-witness of this.

In terms of other lived experiences, Joy's vignettes provides many examples of how we can overcome separatist concepts of, for example, food, humans, rivers or nature, to instead perceive how it is in their meeting that either of these distinctions exist separately (*Visual 49*).

An intra-active perception might also be comparable to qualities of some Indigenous perceptions. For example, in English fox is defined as an "animal with four legs and orange fur" (Stuckey, 2010); in other words, fox is perceived using separatist logic, resulting in a disjointed definition of an entity removed from context. Comparatively, in the words of the Koyukon of Alaska, a fox is: 'Streaking like a flash of fire through the undergrowth' (Ingold 2006, pp. 13-14 in Stuckey, 2010). The intra-action of the movement, textures, colours, locations are perceived and thus create the definition.

Intra-active perceptions of the world are perceptions not of *entities*, but of *processes* inextricably bound in contextuality. For example, intra-active-esque perceptions prohibit animals in zoos from being conceived of as the Indigenous concept of animal, at-least as described by an Ojibwe Elder in conversation with Mary Hermes.²⁰⁸ In conversation with an Ojibwe elder, Mary Hermes asked, "Is a *ma'iingan* in a zoo a *ma'iingan*?" They said, "No, it is a 'wolf'. Because *ma'iingan* requires a context. I can't take it out of its context without changing the meaning. Everything in English is taken out of context" (Hermes, 2005).

The green centre in the painting below illustrates a unification of distinctions, and the dotted outline of circles illustrates how 'distinctions' actually don't exist outside of their

²⁰⁷ Are these even separate? A 'plane of immanence' perspective would say no.

²⁰⁸ Mary Hermes had been studying the power of native verb-based languages in schools as a means of learning about culture.

intra-acting. The symbol on the right side is thus also lightened, with a darkened middle to emphasise a perception of inseparability.



Visual 49. Painting of perceiving *intra-action* of food <> humans.

On right, integrative symbol enfolding distinguishing, recursive, including middle, hologrammic, and intra-active perceptions.

The additional question enabled by an intra-active perception is: *how do both A and Not-A not actually exist independently? How is their very existence in their total mutuality? What is the phenomena in which these distinctions only exist in their mutual transformation of each other?*

Also perceiving wholeness from emergent relationing

Perceptions of distinctions in a productive and vital play often opens awareness to qualities or phenomena greater than, and irreducible to, their 'separate existence' (Morin, 2006; Dewey, 1933; Jantsch, 1980; Bawden, 2004b, 2016, 2018). For example, by bringing together complex, biochemical process, who could predict that consciousness arises (Morin, 2006)?²⁰⁹ More pragmatically, emergence reminds us we cannot predict what will emerge from uniting various worldviews, processes, ideas, methodologies, people, flavours, energies, in a learning experience.

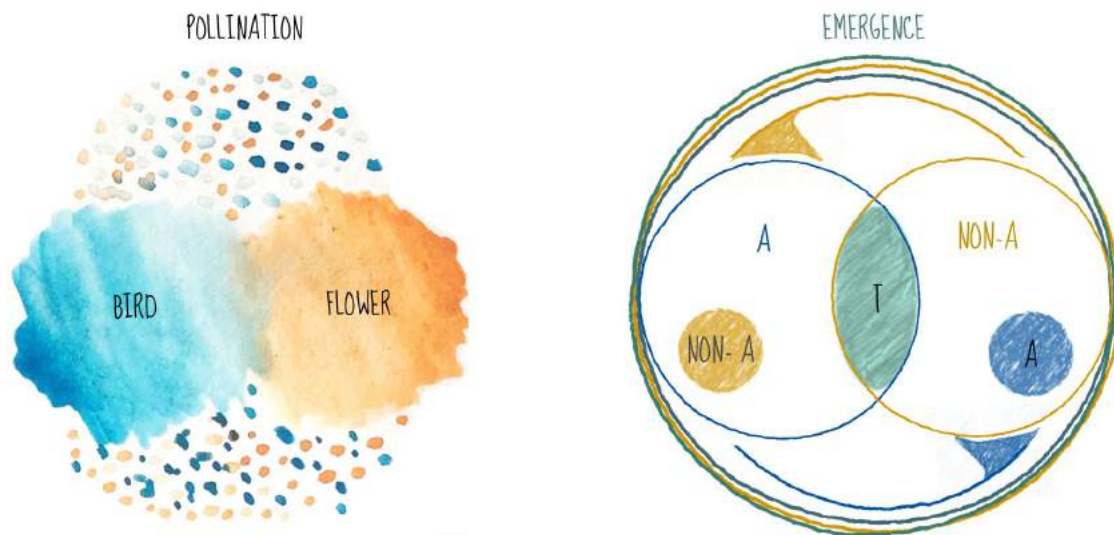
We can develop our perceptions of these emergent and irreducible "wholes" (Dewey, 1896), by exploring distinctions as if they were different faces of the same reality (Bawden, 1991). For example, love and anger look like opposites but both play an

²⁰⁹ Or the ability to tap into collective consciousness arises?

essential role in working towards liberation (Freire, 1974). Or an emergent perception can be used in defining humanity. In comparison to the previous separatist definition, some cultures define humanity as an emergent property from the interactions of 'consciousness' and 'earth'.

Our challenge in the dominant cultural paradigm is to loosen the boundaries of our perception. Take time to observe and see differently. All too often in the dominant-cultural-paradigm, we are taught to see bird and flower, yet we are not taught to perceive the emerging of pollination (*Visual 50*).

The dots in the painting on the left-hand side represent a new circle (pollination) that emerges from the inter-actions between the birds and flowers. In the cumulative drawing on the right-hand side, emergence is represented by the three circles (or an 'irreducible whole') around the relationings of distinctions.



Visual 50. Painting of irreducible emergence from the transactions of a bird and a flower. On right, symbol enfolding distinctive (*A, non-A*), recursive (*arrows*), including middle (*T*), hologrammic (*small circles*), intra-active (*dark green middle*), and emergent perceptions (*larger, outlining circles*).

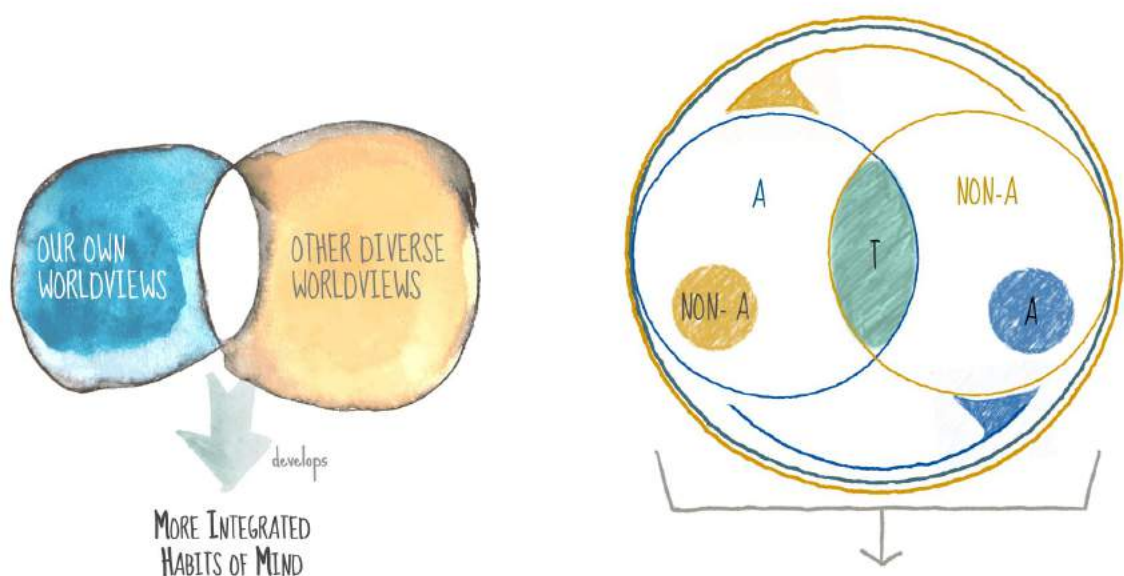
The question for inquirers and learners who are seeking to transcend the dominant separatist logic by strengthening their perceptions of emergence include: *what irreducibility emerges from this vital play of distinctions?*

Perceiving transformations

If we consider emergence to be perceptions of *dynamic permanence* or stability, as originally envisioned by Heraclitus, perceptions of transformation can be described as Heraclitus' *dynamic transitions* (Seibt, 2016).

A perception of transformation is the awareness of deviations over time. For example, Ilya Prigogine perceives the world through processes in transaction; and over time, how their complex relationings mean processes eventually deviate leading to new and more complex processes (Prigogine, 1970).

Transformations can also be intentionally created by bringing opposites together or leaning into the disequilibrium (Norton & Smith, 2010), which leads to their progressive synthesis (Freire, 1970), or Hegel's unity of opposites.



Visual 51. Painting of transformations enabled by bringing distinct worldviews together. On right, integrative symbol enfolding perceptions of diversity (*A*, *non-A*), recursive (*arrows*), including middle (*T*), hologrammic (*small circles*), intra-active (*dark green middle*), and emergent (*larger, outlining circles*) relationing; and processes of transformation (*grey arrow*).

Question enabled in this type of perception might include: *what are the deviation between these distinctions that we notice over time? What are the ideas/processes/entities we want to transform, and therefore what 'opposites' could we bring them into relation with?*

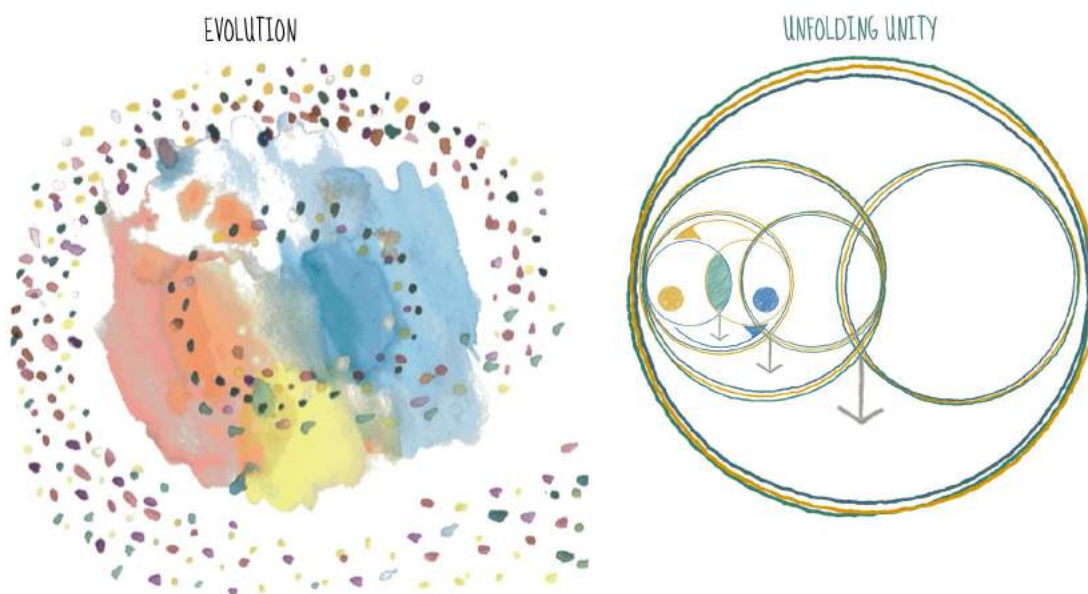
Also perceiving an evolving unity

An 'evolving unity' is the last type of perception that I present. This perception of evolving unity was described by Paulo Freire as field of never-ending tensions, by Basarab

Nicolescu as radical complexity, and by Erich Jantsch as the unity of self-organising, evolving processes (*Ch. 8, Premise: philosophers' logic*).

Perceiving evolution as a unity might be synonymous with perceiving a 'field of dynamic transitions', in an attempt at "grasping the total dynamics of reality as a whole" (Jantsch, 1980b). This perception is also resonant with the ideas of *So Hum*, and *inter-are* (11.1).

Within this perception, we might grasp how when we try to pick out anything by itself, we find it hitched in relation, in process, in transformation and in evolution to everything else in the Universe, to paraphrase John Muir (1911, p. 110).



Visual 52. Painting and symbol of perceptions of an evolving, unfolding unity.

Question enabled in this type of perception might include: *how are the nature of the many relationships changing? How are we, as humans, actually processes manifesting, existing and evolving because all else is existing and evolving? Towards what are the processes of processes tending?*

There are also ethical implications associated with a perception of an evolving unity. If we perceive a universal inter- and intra-dependence, then we must consider the 'ecology of actions' within which we exist (Morin, 2006). We become aware of 'ethics of entanglement' (Barad, 2007), and seek to operate with ethics in regard to the 'whole' (Churchman, 1971). We begin to recognise that our own actions will have impacts much greater than anything we can control or predict. Importantly, then, a perception of radical inter- and intra-relating implies a responsibility for creative participation in finding

ways to enhance the conditions within which we operate (Jantsch, 1980a,c), be it as humans living together on Earth, or educators in a classroom. Several of the courses detailed in *Ch. 14, Process: models* curate processes in which students are able to perceive how their created 'actions for sustainability' exist within this challenging contexts of 'ecologies of actions' and 'actions in relation to the whole'.

Reiterations of human construct

Edgar Morin reminds us that all of the preceding descriptions are just human constructs, which represent additional sense-making, order-creating, meaning-making logics for our perceptions. And Nora Bateson might remind us that there is more complexity in her right hand than any of the above discussion.

From these perspectives emerges a tension I navigate in this inquiry: I recognise these descriptions of logics-of-perception as human constructs, which in no way represent the complexify surrounding us; and yet, I personally find these articulated logics-of-perception helpful in determining more appropriate ways to learn about and live on this Earth, beyond the separatist perception of the dominant-cultural-paradigm, for reasons I discuss more below.

Discussion and reflections

The prevalent I-It relation is almost inevitably one of domination, based on a belief in separateness: I win because you lose, you lose because I win. The alternative...requires: "a shift of our ways of seeing that would affirm the complexities and mutual integration of both sides of any interface....What will it take to react to interfaces in more complex ways? At the very least, it requires ways of seeing that affirm our own complexity and the systemic complexity of the other and that propose the possibility that they might together constitute an inclusive system..." (Bateson and Bateson 1988, p. 176 in Sterling, 2003, p. 160).

Why did I demonstrate so much concern with transcending separatist logic? Separatism is a simple way of creating meaning, of coming to a solution, of coping with complexity, of developing certainty. 'Certainty' rules in this perception (Jantsch, 1975b). This logic is one of antagonism, of difference, and if it is the only logic applied, then relationships, process, movement are completely backgrounded, forgotten, and destroyed, as implied by Gregory and Mary Catherine Bateson above. The 'Myth' of Separation is in its singular application.

A deeply internalised (and thus externally created) logic of *only* difference and hierarchy mutually co-arises with a preference for only competition and individuality. Conversely, a

deeply internalised logic of radical connectedness and unpredictable dynamism is one where an axiological appreciation of cooperation and mutual benefit can be manifested. The more that we perceive the world in a place of only dichotomy, the more we create this reality through male/female, refugee/citizen, humanity/nature divides, and the more we literally create walls and cut out emergence, movement, life.²¹⁰

Striving beyond-separatism requires perceiving relationships, movement, process. The above progression of logics (from recursive to evolutionary) demonstrates how perceptions of separateness, are more ethical when conceived and celebrated as diverse *distinctions* that exist in broader fields of relations, processes and dynamic transformations. For the preceding-philosophers and vignette-educators, they believe inter- or intra-dependence and wholeness are useful perceptions in the pursuit of better relationships between human beings and the rest of nature. Their perceptions and questions are based on complementary, mutually constitutive, intra-active, emergent, and evolutionary orientations, rather than separation alone.

Perception of separation and disjunction alone immediately create inertia, stalemate, slam on the breaks, antagonise. The alternative dialogics and perceptions maintain movement, relationships, actions, transactions. Relational and processual perception is the place of emergence, of intra-action, the mutually constitutive-ness that is becoming. By bringing together cells, oxygen, food and water, life emerges. Life happens in the included middle. To cut out intra-action and the middle third, is literally to discredit and cut out life, like Descartes and his medical students, or disciplines hyper-specialising the world.

And in dealing with this space of emergence and mutual constitution, we remove hierarchy. If everything is interlinked, then: 'man is separate from and superior to nature', is replaced with perceptions of '*we live in tension, we influence each other, we could not exist without the other, we are each other*'.

These questions of relation and logic might almost feel too simple. These points above could be regarded as obvious, but arguably the dominant culture hasn't quite fully grasped how logics of relation can bring profound changes. These perceptions and questions help us to recognise and value the Other; the 'hard walls' and 'gaping divides' quickly disappear between I and the other, or us and the Earth, or between countries, families, species,

²¹⁰ 50% of transgender people attempt or commit suicide (ref)

thoughts, opinions, viewpoints, styles, disciplines, questions, starting points, practices, worldviews, paradigms, realities. We're all in this together.

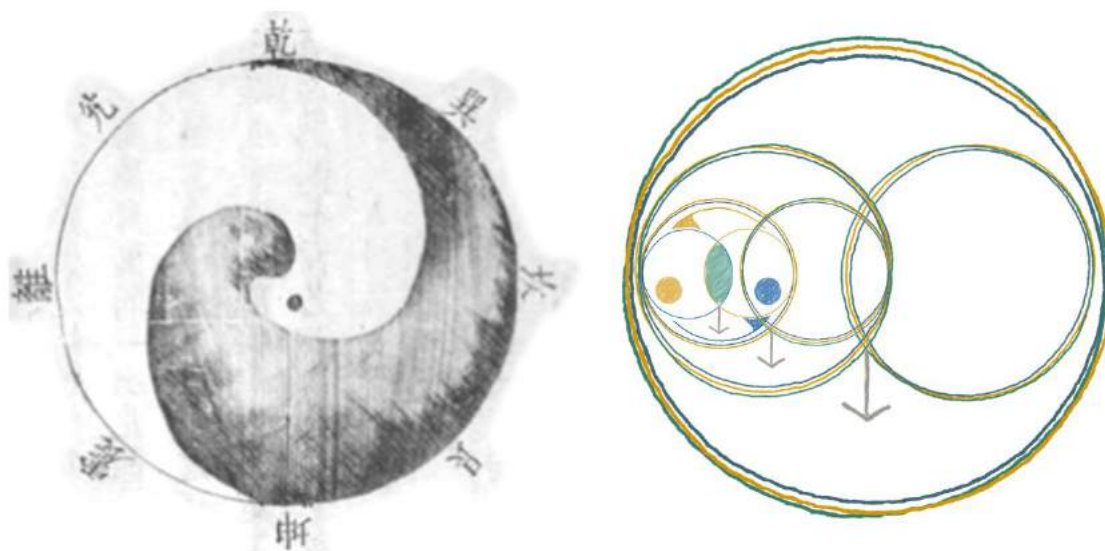
Simplicity exists on the other side of complexity.²¹¹ Like the circles drawn in the stone of our ancient ancestors, perhaps these circles present much greater wisdom than the dominant-cultural-paradigm recognises. And perhaps this simple, compelling central idea is resonant with the idea Niels Bohr borrowed in the design of his own coat of arms, the ancient *Taijitu* yinyang symbol (Wang, 2012; Max-Neef, 2005).

Throughout the exploration of philosophers' relational logics (*Ch. 8*), the reader may have noted comparisons to the ancient Chinese symbol of the yinyang (or *Taijitu*), within the descriptions. And the reader may have noticed similar visual cues between the above symbols and paintings and the yinyang. Arguably, they are both exploring and communicating resonant questions: what are they most helpful logics of relating, patterning across our existence within this vast universe, and how can we perceive these logics of relation?

The ancient Chinese and Daoist yinyang symbols, are based on the underlying cosmological principles of nondualism, interdependence, reciprocity, intertwining contradictory forces, with hologrammic properties (Wang, 2012, pp. 222-224). Each moment, or every phenomenon, is comprised of distinct yet mutually-constitutive processes, which emerge into unexpected properties (*Visual 53*).

The yinyang provides a 'knowing through visual presentation' (Wang, 2012, pp. 5-6; p. 201), of complex paradigmatic logics which can infuse our worldview meaning-systems and perceptions of reality. Similarly, the integrative symbol (created through a diffractive reading of relational and processual logics-of-perception of philosophers and vignette-educators) provides a similar prompt of perceptions to infuse dominant meaning-systems, and complexify dominant ways of thinking and being. The visual in this inquiry also looks a bit more complicated in its representations of transformation contributing to an ongoing evolution (*Visual 53*).

²¹¹ Like Oliver Wendell Holmes is often attributed as saying: "I would not give a fig for simplicity this side of complexity but would give my life for the simplicity on the other side of complexity." Meaning, we start a pilgrimage, or inquiry with simple questions, ideas and assumptions. As we progress, we encounter incredible complexity. But as we progress even further, if we are lucky, we are able to sieve out and synthesis the essential insights from all of the complexity.



Visual 53. Ancient Taijitu, Zhang Huang, 1527 - 1608 (Wang, 2012, p. 225) (*left*)

Integrative symbol of relating, transforming, evolving processes from this inquiry (*right*)

Ancient Chinese thought believed these symbols hold great power, and offer a tool for perceiving, thinking and reflecting on our interactions and with the world and each other (Wang, 2012, pp. 203-204). For example, symbols can support our communication and reflections, where language might not be able to. “Writing does not bring out exhaustively what is said, and what is said does not bring out exhaustively what is thought” (Wang, 2012, p. 203).²¹² In other words, these symbols can potentially provide a complementary and provocative form of communication to deepen what is conveyed to others (Wang, 2012, p. 203). Robin Wang notes the yinyang symbol is an “invitation for perceivers to think and meditate, to contemplate human beings and the world” (Wang, 2012, p. 225).

The application of these symbolic logics of relation is not without its own traps. On one hand, these preceding-philosophers, and this inquiry, argue that these principles are closer to the actual *cosmological and ontological* logics of our collective reality here on Earth. Yet the warnings of absolutism also apply to the application of these relational principles. These symbolic principles are not necessarily a fixed abstraction, rather how one interprets these symbols at any moment depends on the context in which one finds

²¹² According to Robin Wang, this comment was made by in the “Xici” commentary of The Book of Changes, which links images (*xiang*) explicitly to the limits of language.

oneself (Wang, 2012, p. 25). It is an error to think a 'method' (or series of logics-of-relation), can be applied "automatically to the world and anything" (Morin, 2006). So, contrary to what is suggested in the preceding synthesis of logics (written in a linear format), there is no easy 10 step epistemological process.

Yet again, we have to start somewhere. At a pragmatic level, these relational and processual perceptions encourage us to recognise there always more realities and more perspectives. They can inspire us to then act with curiosity, compassion and humility, and to inquire complexly, historically, contextually. At a deeper level, these relational logics offer the potential to open doors of perception beyond the typical realm of the dominant I-It or I-They consciousness. Instead of the separatist logic buried deep in the dominant unconscious, our challenge, perhaps, is to make more complex and relational dialogics a conscious point of awareness and experience, until they are infused in our being.

These symbols might help us review the historical arc of our disciplinary, personal and cultural development. For example, these logics of relation help explain the difference between shallow and deep sustainability (Williams, 2013); strong and weak transdisciplinarity (Max-Neef, 2005); weak and deep complexity (Morin, 2006) (*Ch 6.12, Premise: **meaning-systems***). What are their implicit logics of relation we've been exposed to and engage with, and thus what is included or excluded? Developing this awareness creates insurance against perpetuating the similar or new errors of the dominant-cultural-paradigm.

Generative questions

This exploratory section raises more questions that I want to raise briefly.

- What if a symbol such as that proposed here could underpin our approaches to transformative sustainability learning, and indeed educational efforts more broadly? What if it offers a collective symbol of unity based on a diversity of terms, perspectives and responses for how to both recognise and move far beyond the limits of separatist being?
- If the illustrative symbol is a beneficial synthesis, how could these types of symbols underpin or support moments of concentration, awareness, openness, or meditation, to help us beyond good/bad, right/wrong tendencies to explore more complexly?
- As opposed to a separating myth, how could a symbol of complex logic of relation

help those steeped within the dominant-cultural-paradigm meet the moments of each day differently?

- How can symbols like this help set the intention of how to perceive, inquire, be relationally in the world? How do these symbols offer a basis from which to notice what we are thinking and how we are reading-the-world? Perhaps in the room of researchers, for example, in addition to drawing a Cartesian framework, a relational symbol is also drawn and explored?
- What might or could these collective symbols offer learners when developing a self-witness to complexify one's worldview towards a more relational, interconnected, process, ethical perception?

A full exploration of these questions sits beyond the scope of this inquiry, but I will attempt to interweave them into the closing chapter.

11.4 Beyond-intellectual experiences of nonduality

In this inquiry, experiences of beyond-separateness refer to a conscious experience of transcending delineations or intersubjective consciousness (*Ch. 2.9, Spheres of inquiry*). To complement the abstract and symbolic discussion of relational logics-of-perception (*Visual 52*), we can also come to know beyond-separatism in the sharing of personal stories. Indeed, the abstract and the visceral co-evolve, and thus knowing requires both. To honour the personal nature of these stories, I provide each educator's unique narrative in their words.

The dance of the fens and I as one

David Selby long time environmental and sustainability educator, suggests a unifying **wholeness** as the ultimate 'logic of relation' for reality. He expresses this logic-of-perception as a 'dance' in which we can consider "things as expressions of the dynamic unfolding, **the being and becoming, of the whole**". This '**dance of the whole**' maintains that every 'object' in the world is also of everything else. In this level of perception, presence or consciousness, we can embrace that we are acting on behalf of the earth, because we are the earth. David illustrates his perceptions of nondualism contrasted with the manifestations of separation in a visceral story spanning from childhood to adulthood, about his youth just on the edge of the Lincolnshire fenlands, England:

To reach the fens we had to walk from the village down a bridle track called Green Lane. To go down Green Lane for any child interested in nature was to enter a world of wonder. In wintertime, the fens would freeze over and it was possible to walk for miles over ice, slipping and sliding, looking for animal tracks, with one ear cocked for the sound of creaks and groans indicating that you were literally approaching thin ice and that it was time to retreat. Not that ice walking was life-endangering – except for the drains and river ways, the water stood only about two-feet deep for mile after mile. To fall through the ice was cold and unpleasant, but also quite a thrill. In spring and summer the fens transformed into a vast wild garden of flowers with evocative names such as Marsh Marigold, Lady's Smock, and Ragged Robin, Red Campion, Monkey Flower. I spent day after happy day searching for flowers and keeping an annual scrapbook of pressed flowers, noting the date of first seeing the flower in bloom each year. Each year we watched the coming of birds in the spring, their going in the fall. We knew badger holes, the fox coverts, the broken-down willows where the shrews nested.

In the early 1980s I took my children to see this place of wonder, the place where I had lived out some of the happiest times of my boyhood. Green Lane had become the principal road through a suburban housing estate. The fens had been drained in the name of agricultural development and efficiency (as understood by Strasbourg bureaucrats). The place where I once lost my Wellington boots in a mire of mud one spring-time – to be chided heavily by my mother in those impecunious times on returning home bootless – had been concreted over. The sense of loss was palpable. Somehow, part of me, a source of my identity, of my sense of self, had been taken away...The tarmacking of Green Lane was both a process and symbol of disconnectedness from the Earth and the erosion of identity (Selby, 2002).

The dance of the waters and pebbles as one

For Elizabeth Lange, leader in transformative sustainability learning, part of her journey of transcending separatism is contemplation of the basic **unity underlying the universe**. In this unity, the “spiritual and material are alive and part of an inseparable reality; and the observer is part of the world being observed” (2018). She explains her own personal journey in coming to understand flowing unity as the core of reality, by drawing upon experiences and views that deeply influenced her, such as quantum physics, living systems

theory, Indigenous philosophies and Eastern spirituality. In regards to Indigenous philosophies, Elizabeth invokes Paula Allen Gunn's description of the medicine wheel and sacred hoop which conveys reality as a dynamic, encompassing, singular unity as opposed to separateness that characterise non-Indigenous thought. Eastern mystical traditions that she enfold, are also based on accepting the "unity of opposites", which are two sides of the same reality: "these opposites are not to be resolved" hierarchically, but relationally in dynamic balance. Elizabeth also shares a personal story to demonstrate this nonduality:

*Relaxed, I sit in my old faded chair nestled in the tree line at the pebbled shore, watching the harbour waters lap and the birds whirl. As I gaze at the water's edge, suddenly the rocks and waters begin to move in layered waves. It's as if the pebbles are moving to some unseen music creating a symphony of colour and shape. I shift my head, sure I am momentarily delusional, but it continues, mesmerizing in its beauty. As they dance together, I feel as if I am in the still point of time, seeing through the veil of another reality. I would later come to understand that the **flowing unity** at the core of reality and the fluidity of matter momentarily had revealed itself (Lange, 2018b).*

Immersion in natural surroundings, like Elizabeth Lange and David Selby's stories, can be sources of this perceptions of dynamic, unity (Spretnak,1997). More frequent immersion in nature has been linked to greater perceptions of radical interdependence (Spretnak, 2011). For example, vignette-educator Richard Bawden, has also thought that farmers, with their closer connection nature, often have a much more deeply embodied sense of systemic relationing than, say urban dwellers (Bawden, 2005c).

Experiences of the unitive consciousness in the literature

Blurred and softened perceptions of more unifying consciousness are also described in the literature of transformative sustainability learning. Within the Special Issue of Transformative Sustainability Learning, Lewis Williams shares her Indigenous practice of "becoming of place", in which through everyday practices of respecting the reciprocity and fundamentally interdependent world, Indigenous foster a sense of nonduality (2018). Importantly, Lewis Williams reiterates that to take note of Indigenous paradigms for Sustainability Education *must be led by Indigenous peoples, and must take up the work of self-determination and Indigenous resurgence* (2018).²¹³

²¹³ Many authors in this space of transformative sustainability learning espouse the need to include

Other experiential sources of nondualism were mentioned in the transformative sustainability learning literature. These practices included meditative, yogic, and contemplative practices (Blake, Sterling, & Goodson, 2013; Hathaway, 2017; Selby, 2002) which remove the sense of “separation between the perceiver and the perceived, unveiling the unity between their and reality’s existence” (Chanda, 2015 in de Angelis, 2018). Other related practices included: rhythms and repeating phrases (Lange, 2018; Selby, 2002); ‘power plants’ (Chaves, et al., 2017); holotropic breathwork (Rajagopalan, 2016); empathetic, embodied, spiritual, slow, therapeutic art, artful self-enquiry, peer reflexology learning (Selby, 2002); and sitting and contemplating with more-than-humans in order to connect, communicate and learn from them (Barrett, et al., 2016; Hathaway, 2018).

These practices in general are often described as ways to access beyond-separatist consciousness. For example, practices in many traditions offer experiences of nonduality: Buddhist meditation, chanting, ecstatic dancing, contemplative exercises, and shamanic processes (Abram, 1996; Harner, 1990; Jantsch, 1976a; Spretnak, 1997). Descriptions by individuals reflecting on and integrating their psychedelic journeys can be radically nondual, overcoming the boundaries between self and the universe (Pollan, 2018).

While not explicitly mentioned in the transformative sustainability learning literature, children’s modes of perception have permeable boundaries, and are often described in nondual ways (Spretnak, 1997; Pollan, 2018). This reminds me of the mentor important in Janet’s story of coming to other ways of knowing, Lee Gass, who encouraged his undergraduate students to get on the ground and ‘be like kids with ants’ (*Ch. 10, Premise: educators’ transformative learning*).

Charlene Spretnak also summaries other examples of radically nondual experiences that aren’t ‘curatable’ for transformative sustainability learning, but could be a source of story-telling in transformative learning. For example, she describes moments of “sudden, unexpected apprehensions of nonduality” as “a journey into the cosmological nature that

Indigenous and other traditional ontologies. The similarities between Indigenous worldviews and New Science (systems, complexity, quantum physics, noetic sciences, collective consciousness) are explored, however Indigenous worldviews are inseparable from the lived experiences of structural oppression (Grande, 2013). In other words, life imperatives are not separable from ontological and epistemological dimensions. Imperative in drawing the connections between Indigenous cosmologies and the intensions of any relational paradigm is to avoid extractive and colonising patterns (Tuhiwai-Smith, 1999). I am aware that even with my best of intentions, my discussion of Indigenous cosmologies within this inquiry may still contribute to colonizing “misrepresentation or recontextualisation” (De Santolo, 2018). It begs the question of whether non-Indigenous ‘academics’ have any ethical agency to write about these comparisons, unless given permission.

lies within the world” (1997).²¹⁴

I raise this discussion of experiences of unifying, radically nondual, wholistic consciousness in relation to transformative sustainability learning, as these experiences are argued as offering significant shifts for transforming the ways we create change in the world. Indeed, Richard Bawden, who curated transformative sustainability learning at Hawkesbury for nearly 20 years has reflected that if he were to start the odyssey all over again, he would begin in this realm of “innate sense of systemicity” or a conscious experiences of an implicit wholeness or unity (Bawden, 2005c). Within *Ch. 14, Process: models*, I discuss some of the vignette pedagogies that could enable and foster experiences of an intersubjective, wholistic consciousness. By designing learning experiences inspired by these nondual worldview visions, learners can experience a different worldview (and contemplate these experiences) in order to develop the ability to maintain a consciousness of a dynamic, relentlessly relational, processual, wholistic unity.

11.5 Summary and segue

In sum, the deepest dynamic of reality is conceived of as our logic-of perception. This dynamic is both ever-present and informing all other dynamics (layers) of reality (*Table 3 in Spheres of Inquiry chapter 2*); yet this process of perception is also the furthest from our conscious awareness (de la Sienna, 2018). Societies steeped within the dominant-cultural-paradigm, are under a limited perception of reality through a separatist logic (Sterling, 2019), the *myth of separation*. This myth threatens our survival, and those steeped within it are in need of stretching and integration with additional logics of perception. Stephen Sterling calls for this “*positive dis-illusion*,”²¹⁵ by all means possible: education (formal and nonformal), mainstream and social media, community activism, political debate, national

²¹⁴ This may be similar to a personal experience of mine. When meditating, and listening to the birds outside my window a few years ago, I had a sudden thought pop up into my awareness: ‘Do birds sing every morning to energetically cleanse the world?’ The moment this thought crossed my mind, I was jetting through stars, at a speed beyond human possibility. It lasted only a few seconds, but I had tears on my cheeks, akin to when flying down a mountain on skis in a breath-takingly cold day. And in an experience of synchronicity, not a half an hour after deciding to contribute my own personal experience, I came across a discussion of string theories, that offers, in a ‘Western’ way, validity to this experience: “*In this regard, the universe can be viewed as a rich sea of consciousness...String theorist Michio Kaku proclaims that the mind of God is ‘music resonating through cyberspace’.* This begs the question posed by scientist Manjir Samata-Laughton: “*is every note of that music imbued with an inherent sentience? Imagine for one moment, each wave/particle of vibration within every aspect of reality is sentient*” (Hutchins, 2014, p. 90).

²¹⁵ By “positive” dis-illusion, I interpret Stephen Sterling as referring to complexifying the dominant societies’ limited perception of reality in ways that combine “humility, courage, and determination to achieve global One Planet Living”.

and international agencies, etc.” (Sterling, 2019). This chapter has attempted to demonstrate other contributions to this stretching, nuancing and complexifying of a separatist logic-of-perception, in philosophy, vignettes, symbolically and in felt story.

This chapter illustrated and integrated relational and processual perceptions. This ‘intention for beyond-separatist perceptions’ has patterned across the three perspectives of this inquiry. The *vignette-educators* offered their languaging and intentions through ‘*wholeness*’, *intra-action*, and *interbeing*. The vignette-educators’ logics-of-perception were resonant with those of the *preceding-philosophers*, yet the logics were also distinct. Therefore, I then integrated all of the distinct logics into a symbol, and asked what this non-lingual visualisation may offer. I then demonstrated the resonance of this symbol with another cultural symbol of meditation and meaning-making. Finally, to complement this visual and abstract discussion, I provided felt experiences described in personal stories of educators within *literature* relevant to transformative sustainability learning. Central to each of these four sets of perspectives for transcending separatism through a conscious experience of nonduality, is “the recognition of a continuous dimension of being uniting seemingly separate, discrete entities” (Spretnak, 1997). I suggest the patterning across these perspectives (of needing to unite seeming discrete entities) is a premise of transformative sustainability learning.

So, if philosophers and educators embrace relational, processual, and unifying logics-of-perception, what would that mean for their worldview meaning-systems? How would we re-perceive knowing (epistemology), society, the idea of self, our relationship to nature (anthropology), etc.? The following section probes and reveals how relational and processual logics-of-perception could be embedded and infused within the meaning-systems of our worldviews and paradigms.

Chapter 12:

Relational meaning-making

We create the world that we perceive, not because there is no reality outside our heads..., but because we select and edit the reality we see to conform to our beliefs about what sort of world we live in. The human who believes that the resources of the world are infinite, for example, or that if something is good for you then the more of it the better, will not be able to see their errors, because s/he will not look for evidence of them. For a human to change the basic beliefs that determine their perception – what Bateson calls his epistemological premises –s/he must first become aware that reality is not necessarily as s/he believes it to be. This is not an easy or comfortable thing to learn, and most humans in history have probably been able to avoid thinking about it. [But sometimes the dissonance between one perception of reality and another reaches a point when it becomes impossible to avoid the awareness that differences in perception of the world, matter]. Specifically, it is clear that our cultural mind has come to such a point. But there is danger as well as possibility in our situation. There is no guarantee that the new ideas will be an improvement over the old. Nor can we hope the change will be smooth. ²¹⁶

(Mark Engel in the preface to Bateson, 1972, p. vi)

²¹⁶ I've updated for inclusive pronouns, and in brackets, to move the language beyond either/or and right/wrong rhetoric, towards a contextual relativist interpretation.

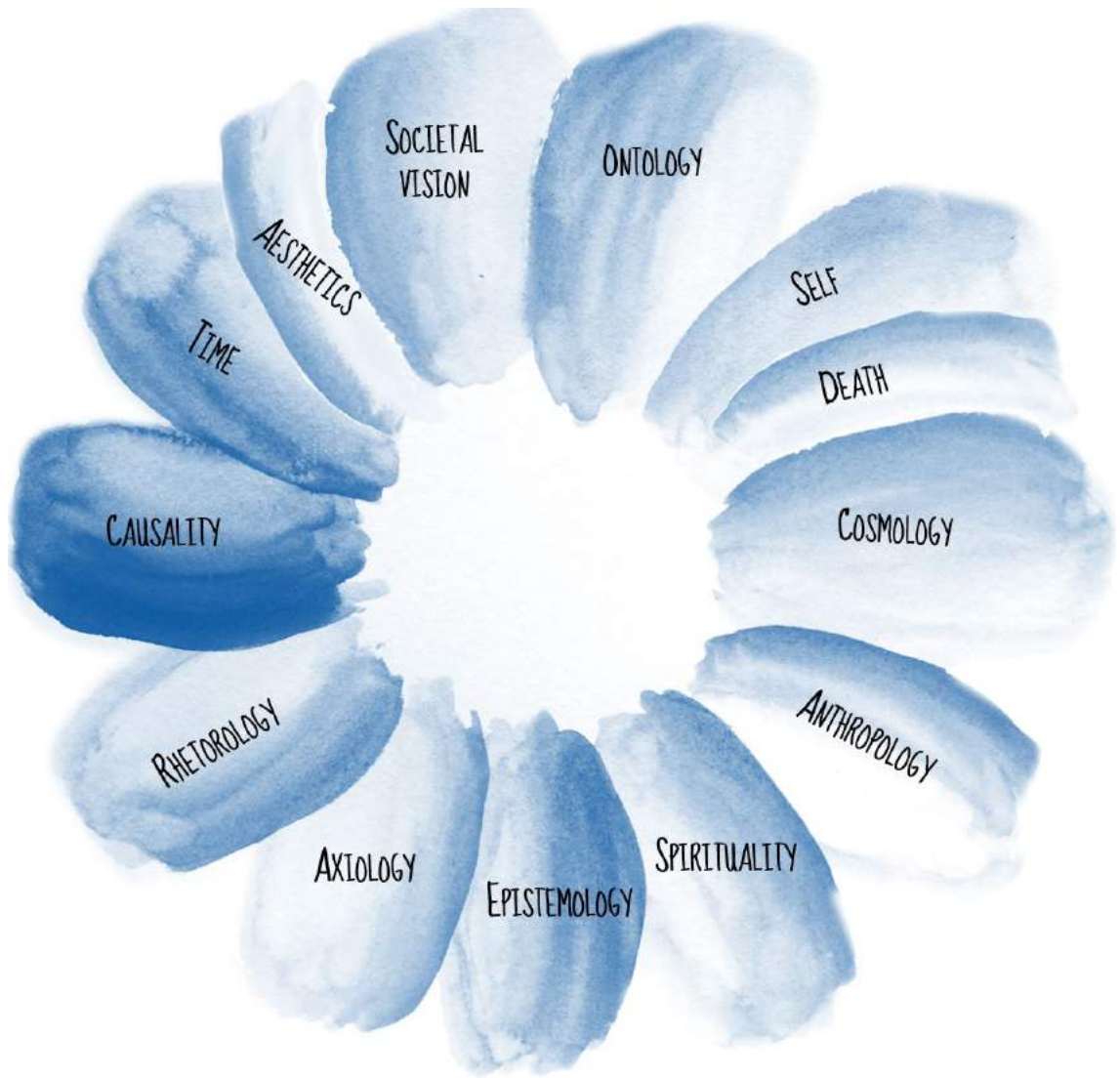
12.1 Orienting this chapter in relation to the other chapters

The preceding chapters explored why and how the perception of, and belief in, *separateness* can be considered the underlying myth of the dominant-cultural-paradigm (Ch. 7, *myth of separation*). I then demonstrated how preceding-philosophers and transformative sustainability educators experienced their own transformative moments (Ch. 9, *philosophers' activating-events*; Ch. 10, *educators' transformative learning*). These transformative moments enabled each person to explore additional and alternative, non-separatist perceptions (Ch. 8, *philosophers' logic*; Ch. 11, *relational perceptions*). This chapter moves up from the 'deepest' level of reality to reveal how relational logics-of-perception profoundly changes worldview<>paradigmatic meaning-systems (Ch. 12, *meaning-systems*).

12.2 Introduction to this chapter

In this chapter, *Premise 12*, I weave together insights from current literature and vignettes to build a rich tapestry of the envisioned paradigms and espoused worldviews. In other words, I collect insights from educators who used the terms 'transformative sustainability learning' and who included their third-order reflexivity and diffraction in their writing.²¹⁷ I frame this dialogue using the meaning-systems in *Visual 54*. This wide-ranging synthesis allows the identification of a new set of threshold concepts that together offer guidance on how others might expand, stretch, nuance perceptions towards relational, regenerative, nondual ways of being, knowing, doing.

²¹⁷ It should be noted, other educators use different terms to describe their pedagogy, who could also contribute to this exploration of premise. They do not use the terms 'transformative sustainability learning' and thus sat outside the imposed boundaries of this inquiry. Even though this inquiry is framed as transformative sustainability learning, for me the more interesting question is who are all of the other educators who have had a deep reflection on the dominant-cultural-paradigm, and how do they try to cultivate learning experiences informed of different premises. This is an integrative step for future research.



Visual 54. Meaning-systems in a more relational conceptioning

For each of the meaning-systems illustrated above, I first present questions for reflection I have written to indicate the types of third-order reflections that could be enacted for exploring each meaning system. Then, I examine orientations for expansion of each meaning-system contributed by multiple scholars and vignette-educators. I then distil the integrated contributions into potential threshold concepts for transformative sustainability learning, or into questions we as educators might consider.

I present this interpretive analysis to “*provoke thought*” and offer “*a proposal that requires no other verification than the way in which it is able to ‘slow down’ reasoning and create an opportunity to arouse a slightly different awareness of the problems and situations mobilizing us*” (Stengers, 2005, p. 994). In other words, the intention for this section is to prompt a slightly different awareness of our deep beliefs: does it help us pay attention to

what matters, how to learn, how to perceive and acquire new perspectives? I do not present this analysis and synthesis to provide a comprehensive summary of what is, or what ought to be.

12.3 Ontology: evolving, interdependent processes

*In the dominant Western consciousness, "Nature is epitomized by **living objects** rather than **complex flow patterns** of which objects are temporary formations. The landscape is **a room-like collection of animated furniture** [...] but it should be noted that it is best described in terms of **events which constitute a field pattern**" (Shepard 1959, p. 505 - 506 in Selby, 2002).*

Expanding our ontological perceptions and beliefs

When I look out the window, what do I 'see'? Birds and flowers? And/or processes of, say, pollination, mutual nourishing, symbiosis? And/or inseparable mists of spirituality, culture, life?

What do I believe is real or can be said to 'exist'? That which I and we can reason and confirm through five senses? And/or that which I and we can intuit as existing beyond our powers of measurable observation? And/or what I can perceive in spaces of non-usual consciousness?

What is the nature of existence? Can meditation change material reality? Is non-local intuition and pre-cognition possible?

.....

Transformative sustainability learning creates the conditions for experiencing and considering ontological questions and beliefs beyond **materialist only** views towards **relational** ontologies. Similar to 'post' philosophies, several transformative sustainability educators argue that it is this **ontological** stretching, shifting, nuancing that offers greatest possibilities for enacting more regenerative ways of being (Barrett et al., 2016; Lange, 2018b; O'Neil, 2018). Educators in the transformative sustainability learning literature who are diffracting into more complex worldviews explored several veins of relational ontologies.

'Pluriverse' as a relational ontology

Martha Chaves and her colleagues put forward a view about the *pluriverse*, or multiple ontological realities (Chaves et al., 2017). They offer this view of a pluriverse to counteract the notion of a *dominant one-world*, or singular global universe. In this perspective of "ontological politics", drawn from William James and Bruno Latour, Martha Chaves et al. agree with feminist and postmodern views that reality does not precede everyday events but rather is shaped within the radically unique interactions of diverse people with diverse materials.

And they make a valid point, in common with feminist relational theories (Spretnak, 1997). Radical plurality points out how it potentially inflicts harm to characterise and essentialise shared experiences, into such qualities as male and female. These stereotyping processes can wipe out significant diverse experiences (Spretnak, 1997). In addition, there are estimated 7,117 language groups (Eberhard, Simons, & Fennig, 2020) and innumerable histories around the globe. This diversity sits in stark contrast to the singular dominant globalist, paternalistic neo-capital paradigm. We are in dire need of the ability to perceive the pluriverse.

Chaves et al. demonstrate how recognition of the existence of the radical diversity of realities can help understand why tensions arise in settings of transformative learning (for example the intercultural gatherings they support in Colombia). The authors also suggests that this notion of a 'pluriverse' is an example of a relational ontology, because one is able to practice what Isabel Sebastian refers to as "ontological humility and epistemological agility" (personal communication, May 12, 2018).²¹⁸ In other words, if one believes in and can perceive the 'pluriverse', then other forms of knowledge and ontologies are accepted as acting in relation to others and one's own. This ontological notion of pluriverse entwines with epistemological views of multiplicity, constructionism, or deconstructionism, depending on one's theoretical framing (for example see Spretnak, 1997; West, 2004).

The 'web of relationality' as a relational ontology

Another relational ontology perceives each living and non-living thing as in radical

²¹⁸ Senior Research Consultant at ISF, and whose thesis was on relational ontologies (Sebastian, 2018). See also (Haider et al., 2017) for a discussion on epistemological agility and (Holland, 2013) for a discussion on ontological humility.

relation (Sterling et al., 2018). David Selby invokes the metaphor of the *web* to describe this perception of a dynamic, interconnected and emergent nature of our world (2002). While a valuable perception, David Selby also argues that this still depicts ‘entities as primary, solid and separate (even through interconnected)’. He argues this ‘web-like’ interpretation still has limitations for “evoking transformative earth consciousness and behaviours”(Selby, 2002). This critique resonates with what Charlene Spretnak, respected ecofeminist philosopher, refers to as a “*minimalist sense of nonduality*” (1997). This ontological belief of a web is enabled by a recursive relationing (*Ch. 11, Premise: relational perceptions*). In other words, entities still maintain their distinct boundaries, but influence each other.

The dance of relationality and entanglement

Expanding our perception further, we can perceive a relational ontological vision described as a *free-form dance* (Selby, 2002). This ontological standpoint perceives inextricable *entanglement* (O’Neil, 2018) in which both living (human and more-than-human) and non-living (matter) have “performative” agency within their intra-actions (coming together to form anew) (Barrett et al., 2016; Lange, 2018b; O’Neil, 2018). *Entanglement* is the ongoing, continual process of becoming and evolving, when materials, humans, and more-than-humans intra-act (Barad, 2010). In this ontological perception, dynamic change is a constant (Lange, 2018b).

For me, the metaphor of a dance does not quite work to evoke this type of perception, as in my mind, a ‘dance’ still conjures images of separate entities moving in relation. Instead, I have begun to associate this level of perception as an ‘estuary’, where it is impossible to perceive a fine line clearly dividing where the river ends and the ocean begins, and in fact it is not even about the nouns or states of the ocean or the river, but the continual movement and process embodied in these inseparable phenomena, which many other phenomena influence (lunar gravitational forces) and from which many phenomena emerge (nourishment). The ‘dance’ (or the estuary) signifies:

an unbroken wholeness and unity, in which ‘things’ are actually ‘phenomena and processes’, ever-enfolding and evolving in a multi-levelled and multi-dimensional dance of internal and external relations (Lange, 2018b; Selby, 2002).

As opposed to a *minimalist nonduality* invoked by the web metaphor, the estuary (or dance) metaphor evokes a *radical nonduality*, which is capable of perceiving and believing in the ‘existence of *unitive dimensions of being*, a gestalt of a subtle unitary field of form,

motion, space and time' (Spretnak, 1997). In other words, this ontological belief is enabled by perceptions of *intra-active relationing* and an *evolving unity* (Ch. 11, Premise: [relational perceptions](#)) and these ideas and terms will be explored below.

Radically relational ontological views have implications for other meaning-systems. For example, this ontological perception necessarily implies that *the self* also has no boundaries (Selby, 2002).²¹⁹ In other words, an estuary (or dance) of a radically relational reality more explicitly disintegrates or complexifies the relationship between self and others (*beliefs of self*) and humanity and nature (*anthropological beliefs*). *This point feels crucial, and is explored in the discussion at the end of this chapter.*

Discussion: Strength in embracing multiple relational ontologies

These ontological perspectives can be perceived as mutually exclusive. However, this section demonstrates that the 'radical diversity of the pluriverse' and the 'estuary' (*or radical sense of nonduality*) can be complementary, and provoke change in their integration.

Martha Chaves and colleagues' critique is enabled by (inextricably linked to) her specific worldview beliefs of *sense of self*. Specifically, their plurality is perceivable/conceivable from the perspective of 'humans as individuals' and each unique 'person' has their own experience. In essence, each 'human worldview' and individual's worldview-enacting²²⁰ is a unique reality, and there are 7.594+ billion worldview/realities on Planet Earth.²²¹ *Their notion of ontological politics importantly helps us to remember this diversity of human worldviews/realities as well as honour and explore their difference when we engage with one another.* And yet, the suggestion of ontological plurality is what Charlene Spretnak conceives of as minimalist nonduality. In a minimalist duality, 'all that exists is each person's human construction of their experience' *without recognising any unitive dynamics of being* (Spretnak, 1997).

Charlene Spretnak's description of an ontology as an evolving unity *further dissolves notions of separatism within other meaning-systems*. In other words, a radical nonduality

²¹⁹ This view of an unbounded self can be contrasted with views where individual coherence is retained, but constructed in relation to others, which explored more in the section on *Self* below.

²²⁰ E.g. the ongoing processes of inter-and-intra-becoming of world and self, based on the interpretation of reality through one's worldview and the enacting and creating of reality based on interpretations.

²²¹ And growing by the thousands during your reading of this thesis.

transcends separatist tendencies across the *sense of self* and the *sense of human/nature relations*. Instead of humans being separate individuals and humans as separate from nature, the radical nonduality fully recognises, or groks, the concepts of interbeing and intra-action (*Ch. 11*).

Importantly, Martha Chaves et al. and Charlene Spretnak's positions are not mutually exclusive, but rather exist in paradox. In this dynamic system of relations, any particular manifestation is simultaneously a distinct part and the unbroken whole; the *unity exists along with particularity and subjectivity* (Spretnak, 1997). In other words, ***the simultaneous existence of the 'pluriverse of ontologies' and the notion of 'radical nonduality'*** is an example of Bohr's great truths (i.e. paradoxical truths). We simultaneously have both our own unique reality enacted based on a complex broth of our past experiences, genetics, moods, worldviews, physical perspectives, etc. and yet, we also have our shared radical nonduality of Interbeing with each other and the planet, in our mutual cosmological, ecological brew. The estuary (dance, brew) thus represents a deeper level of presence, or of 'being present,' that we can strive to strengthen our abilities to perceive and experience (Selby, 2002).

Nuances exist in explaining the primary reasons for this 'oneness'. David Selby and Elizabeth Lange suggests quantum physics, ecology and the new sciences ground the validity of this perception and belief in a unitary dynamic:

In the framework of the new sciences—quantum physics above all—began to indicate that the “oneness” people sometimes experience is not delusory and that the explanation of it is not beyond the ken of the sciences. As quanta, and entire atoms and molecules, can be instantly connected across space and time, so living organisms especially the complex and supersensitive brain and nervous system of evolved organisms, can be instantly connected with other organisms, with nature, and with the cosmos as a whole” (Laszlo, 2008, p.3 in Lange, 2018b).

In comparison, Charlene Spretnak contextualises contemporary sciences within many different dynamics, that explain or contribute to unitary dimensions of being:

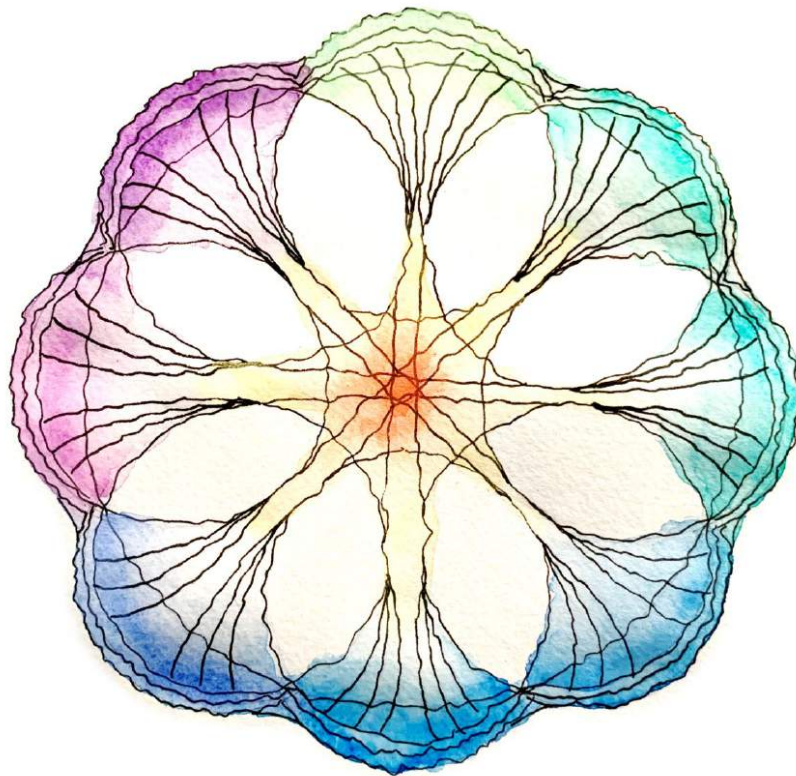
“The “quantum soup” is not a base, or a source [of the unitary dimension of being], but part of the play of matter/energy. The grounding of human agency and subjectivity lies in a multiplicity of processes, such as one's genetic inheritance of behaviour predispositions; one's cognitive functions,

which include the continuous resculpting of neuronal groups and pathways near synaptic interactions; the influence of bodily experience on metaphor, by which most conceptual thought is organised; the influences of landscape, weather, and other dynamics of one's bioregion on imagination and mood; the self-regulating dynamics of the body-mind; the effect of daily exposure to strong and weak electromagnetic fields; and the subtle manifestation of nonlocal causality and other relational dynamics that lace the universe.

If these aspects of human experience are acknowledged, one can accurately speak of the "autonomy" of an individual only by incorporating a sense of the dynamic web of relations that are constitutive for that being at a given moment. We need new words – or, at the very least, some means of distinguishing between the old "lone Cowboy" sense of autonomy and the ecological/cosmological sense of uniqueness coupled with intersubjectivity and interbeing. The objectivist, mechanistic, and arrogant framing of a number of core concepts in the Western philosophical tradition inhibits the development of a deeply relational sensibility that is attentive to contextual dynamics of a great subtlety" (Spretnak, 1997, p. 433-434).

However, these views on radical nonduality are not incompatible, just as the views on 'web' and 'dance' ontologies are not incompatible. In fact, we must learn to develop and access perceptions of all – distinction, web, unity - if we are to create more ethical, regenerative futures (Spretnak, 1997; Morin, 2001).

The painting below is inspired by the idea of integrating these various ontological perceptions. For example, the dominant separatist perception might focus on the separate tree trunks. The relational perception might focus on the intermingling of the tree canopy. And the unifying perception might focus on the unifying processes at the centre from which everything emerges or is whole. As David Selby suggests (2002), we need to encourage perception of the dance (estuary), while continuing to work with the web and distinct logics-of-perception.



Artwork 9. Integrating perceptions of distinctiveness, relationality and unity (Seth P. Morrison)

In sum: Embracing complementarity of these ontological views means stretching the dominant paradigm

If the patterning of the Carl Jung's 'niggardly either/or logic' (Freke, 2018) still hides in meaning-systems beyond our epistemologies, we perhaps are still acting within the realm of a minimalist nonduality, for example, where we have relational onto-epistemological meaning-systems and yet the logic of separatism lies dormant in our sense of self and sense of human/nature relationships more broadly. The differences between 'minimalist nonduality' and 'radical nonduality' highlight the benefits of relational myths influencing and pervading more of our meaning-systems (as opposed to a few), and hence the value in a more explicit discussion of various meaning-systems in this inquiry.

Summary of *ontological* premises in the form of potential threshold concepts

Transformative sustainability learning literature calls for 'signposting' and articulating a systemic, holistic, and integrative worldview (Barrett et al., 2016; Hathaway, 2017; Sterling et al., 2018). In response to these calls, I discuss many meaning-system beliefs in this *Premise chapter 12*. To further 'signpost', I also present illustrations of threshold concepts that have emerged from the vignettes and as a summary to the discussion above.

These threshold concepts represent what can emerge when the contexts of contexts, or deep beliefs, have been ‘thrown open to question’ (Bateson, 2000).

Previous articulations of transformative sustainability learning threshold concepts have involved a discussion and refinement with the participants in the learning (see Barrett et al 2016). The threshold concepts presented below are my interpretation of the kinds of beliefs explored (consciously and subconsciously) within the transformative sustainability learning literature and vignettes (that draw on interviews and published works) (Table 11). These threshold concepts should definitely be experimented with, critiqued, adapted, contextualised, continually refined, nuanced and complexified.

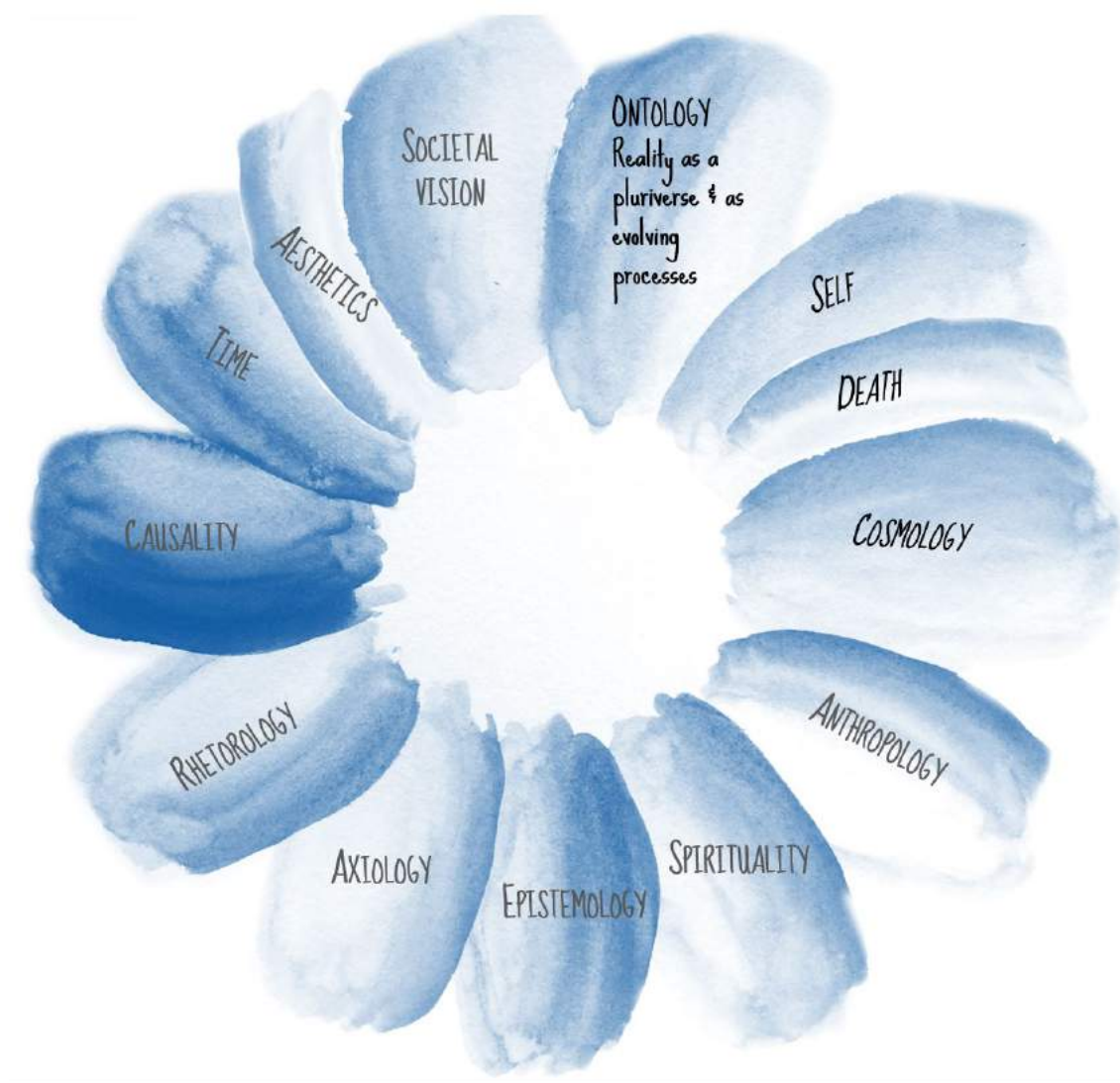
In the table below, I also draw attention to how relational logics-of-perception infuse into these ontological threshold concepts. Previous chapters proffered that the deepest dynamic of reality influencing transformative sustainability learning is more complex logics-of-relation. Thus, this table illustrates how beyond-separatist logics-of-perception allows these ontological threshold concepts to exist. I demonstrate this through colour and by articulating how the relational belief has moved beyond a separatist perception.

| Illustrative ontological threshold concepts | Beyond-separatist perceptions |
|--|--|
| Our world and universe is comprised of radical interdependencies and inter-relationships , in which emergent and unpredictable properties / processes / qualities / phenomena arise. | Reality as <i>more than separate</i> , inert materials |
| We can perceive the interconnectedness of all life, human-made systems, including one’s self as part of a living, emergent system. | Reality as <i>more than humans as separate and superior operators on a machine of separate parts</i> |
| Reality has a participative and contextual nature. | <i>Overcoming ‘black or white’ views of reality</i> |
| Humans and the world interact to influence each other . Both are agential subjects who have no a priori meaning before coming together. | Dissolving the <i>object / subject divides</i> |

Table 11. Illustrative, potentially transformative ontological threshold concepts.

In the following chapter (Ch. 14, Process), I discuss how four vignettes create the conditions for learners to embody these ontological concepts. Rather than a common transmissive approach to learning (e.g. presenting these threshold concepts as bullet points on a slide for discussion; Ch. 2, Spheres of inquiry), I present these threshold concepts to be considered as indications of the types of transformations in perceptions and conceptions that learners could conceivably experience in transformative sustainability learning.

The above discussion highlighted the inter-actions (or intra-actions) between our ontological beliefs, sense of self, connectedness of the universe, and our beliefs about our relationship with nature. It is with this relationality in mind, that I follow this section of ontology with an exploration of the meaning-systems of *self* and *death*, *cosmology*, *anthropology*, and *spirituality* before moving to epistemology.



Visual 55. Summary of a relational ontology (and the next three meaning-systems in *italics*).

12.4 Self: in-relations

Enriching our perceptions of self

What do I, as an 'individual', have control of in my life? Where does the boundary of 'me' stop and 'something else' begin? How have, and do, my relations and context influence me? How are these relationships a mutual inter- and/or intra-action? If I were to perceive 'no-self' in the Buddhist sense, or 'all-self' as in a unitive dimension of being, how would I respond to various decisions in daily life?



In addition to a perception of oneself as a **separate individual**, transformative sustainability learning suggests several additional perceptions: **the relational self** (e.g. individuals-in-relation); **the dancing self** as subject and object always in a state of becoming with other subject /objects; **the unitary self** as a dissipative structure embedded in a universal whole.

The relational self

We can think of our own 'self' as individuals-in-relation (Lange, 2018b). This notion of self is often included explicitly within the definitions of transformative learning. For example, transformative learning as defined by Stephen Sterling and colleagues at Schumacher College, is an "experience of self that is much more fully in transaction with others and with the environment, a participatory self or participatory mind" (Reason, 1995, p. 3 in Sterling et al., 2018). Barrett and colleagues (2016) also include this expanded notion of self within the definition of transformative learning. They suggest transformative learning "involves a 'deep structural shift' that changes understandings of the self in relation 'with other humans and with the natural world'" (Morrell and Connor 2002, p. xvii in Barrett et al., 2016).

Self as subject and object in a perpetual state of becoming

In addition to relational interpretations of self, the agential realist ontology (*Premise chapters 6, 10 and 11*) prompts us to rethink the notion of individual determinism. Rather than human individuals being the dominant acting Subject, we are also acted upon by material. As subject/objects, we are continually-becoming-selves depending on how the material exerts influence on us in that moment (O'Neil, 2018). In a performative ontology,

the self is not entirely separate from the other, because of the “lively relationalities of becoming” (Barad, 2009, p. 69 in Lange, 2018b). In these lively relationalities, the notion of self is not static, and there are diffuse boundaries between “self and others, self and the other-than-human world” (Sterling et al., 2018).

Selves as dissipative structures comprised of universal energy flow

With a more radical embrace of nonduality, which is sometimes alternatively referred to as the ‘mystical,’ cosmological, and quantum perspectives, we are prompted to see how the human mind, matter, body, and spirit are an interpenetrating whole or a moving event within a moving universe (Allen 1992 in Lange 2018b; Swimme, 1996). Individuals do not “exist per se but only as local perturbations in (the) universal energy flow”:

Consider a vortex in a stream of flowing water. The vortex is a structure made of an ever-changing group of water molecules. It does not exist as an entity in the classical Western sense; it exists only because of the flow of water through the stream. If the flow ceases the vortex disappears. In the same sense, structures out of which biological entities are made are transient, unstable entities with constantly changing molecules dependent on a constant flow of energy to maintain form and structure (Morowitz, 1972, p. 156 in Selby, 2002).

The perception of self as a perturbation in energy flow is in part the notion of self as a dissipative structure, or a self-organising structure demonstrating a paradoxical entanglement of ‘dynamism’ and ‘structure’. Dissipative structures require a constant *flow* of energy and exchange to maintain their *structure*.²²²

The vignettes below further illustrate these various premises of ‘self’ informing transformative sustainability learning.

²²² I wonder (but cannot explore within the confines of this thesis), whether these notions of no-self would resonate with the Buddhist concept of “no separate self” (i.e. “fully conscious”), a concept of self offers paradigmatic stretching potential (Sebastian, 2018). My experiences with Zen Buddhism provided me with conditions and stimulus for personally engaging with ‘perceiving/being’ beyond a separate self, bounded by skin, and it slowly began to dawn on me how deeply unconscious and ‘anti-dialectical’ this belief of ‘individual self in a biological form’ was.

Vignette: Hawkesbury Bachelor of Systems Agriculture

Sense of self as a systemic being

Richard argues that essential to inclusive well-being is process of becoming systemic. If we want to bring systems science to fruition or use any other means to enact more ethically defensible and relationally healing actions, we need to include (or start with) ourselves. Rather than 'becoming system thinkers' or 'mastering systems practices or theories', we need to contemplate what being systemic means for us as individual beings (Bawden, 1995; Bawden, 2003). Richard describes being systemic as an 'inherent and profound sense of interconnectedness with others and the world at large'. We can develop an appreciation of this wholeness by consciously observing our participation in it through intuitive and spiritual means (2005). Richard's systemic being or self refers to one where the 'spiritual face is as profound as its cognitive counterpart' (1995).

This personal interpretation of a systemic being or self for him extended towards the braiding of many opposites. *Richard conceived of how his systemic being emerged from engaging with tensions.* His systemic being emerged from the dance of: I the thinker and I the doer (1995); me the positivist and me the constructivist, me the dualist and me the relativist, me the maker of meaning and me the maker of judgements (1995), all the while balancing a pragmatic quest for learning how to learn how to create less destructive forms of agriculture and food production.

Vignette: Leadership for Sustainability Education master's

Sense of self as radically interconnected, internally and externally

Self can be radically interconnected to the 'external'. Heather believes an *ontological* shift towards relationality (e.g. understanding the interconnected and interdependent nature of our world) is inextricably linked with a change towards intermeshing learners' *sense of self*, the *spiritual* and the *cosmos* (Burns et al., 2015). She invokes Fritjof Capra to explain this intra-action: "*When the concept of the human spirit is understood as the mode of consciousness in which the individual feels a sense of belonging, of connectedness, to the cosmos as a whole, it becomes clear that ecological awareness is spiritual in its deepest essence*" (Capra, 2009, p. 27 in Burns et al., 2015). Thus, perception of a relational reality, or cosmological, ecological, and spiritual connectedness is imperative for students to strengthen their understanding of self, and is necessary for leadership development (Burns et al., 2015).

The 'internal self' can also be perceived as (needing to be) radically interconnected. In the beginning of Heather's course, she invites learners to create a self-care plan. These plans are for each learner to draw upon as they come into being as sustainability leaders. The self-care plans themselves demonstrate how students make their own meaning of learning as overcoming separation. The learners reflect in their own words on what this type of holistic, nonseparatist perception might mean for them as 'individuals'. One of the students Jane wrote about becoming whole, saying "*In order to be an effective sustainability leader, I must first work to become whole. Through mindfulness and reflection, I am working to ensure that each aspect of my life contributes to all aspects of my life and practice*" (Burns, 2016a). Another student also wrote about wholeness and the importance of not separating areas of her life, being intentional to "*let all areas of my life fuse together to be flexible and adaptable while allowing various systems of my life to overlap*" (Burns, 2016a).

I summarise these notions of self-as-whole, in the potential threshold concepts below.

Summary of philosophical beliefs of 'self' in the form of potential threshold concepts

The beliefs of *relational*, *intra-active*, and *unitary* selves can be considered as complementary and encourage a change in perception in their integration (similar to integrating the ontological beliefs of 'web' and 'dance', *Artwork 9*). All of these perceptions of 'self' offer unique experiences and interpretations of experiences. The opportunity for educators is to explore learning situations designed for perceiving and valuing all of these views of self simultaneously and integratively in order to more ethically determine how to be and act: "*Through appropriate topics and methodologies, we need to help those in our learning communities know and experience at one and the same time the discrete self, the relational self, and the dancing self*" (Selby, 2002). This aim side steps the reductive question of 'which sense of self is a superior perspective?' I wonder how these senses of self can be integrated, in order that more ethical ways of being emerge?

To summarise these concepts of self, and continue to signpost and articulate more systemic, holistic, and integrative worldviews, *Table 12* presents potential threshold concepts illuminated in the vignettes and literature in which beliefs of self are expanded beyond the dominant perspective of a separate self. These beliefs of self are enabled by relational logics-of-perception. As mentioned above, these threshold concepts also offer

points of reflection for facilitators to consider how their learning experiences may create the conditions for these insights or questions to emerge.

| Illustrative threshold concepts of self | Beyond-separatist perceptions |
|---|--|
| Wholeness and relationality is not 'objectively observed out there', but is in the very essence of being. The self is integrated in the whole of nature and the cosmos beyond. | Dissolving <i>perceived divide</i> of Self from Others and Nature. |
| Self-care as a process of healing the separation in our own lives, e.g. (re)integrating our multiple identifies and goals. | <i>Dissolving boundaries</i> created by different roles we play. |

Table 12. Illustrative threshold concepts for potentially expanding sense of self

Recap and next steps

The beliefs of self that infuse transformative sustainability learning are much more complex than the dominant sense of 'singular-self' implicit in the dominant-cultural-paradigm. The perception of a singular-distinct-self compared to a self-in-relation or dancing-self has implications for another deeply held, often unconscious meaning-system: that of our beliefs about death, which I briefly explore next.

12.5 Death: necessary for life

Re-engaging with our perceptions of death

What happens to 'us' when we die? Is this something to be feared or not? Why? What is the role of death in our individual and collective existence?



Perceptions and beliefs surrounding death are a powerful meaning-system. Generally, Western culture has lost the “knowing of death as the teacher that returns us to life, and has made death the enemy that we try hubristically to hide from by making its presences taboo” (Hawkins, 1991). We avoid facing, talking about and learning from our own mortality. Our perceptions of death are inextricably linked to our perceptions of self, humanity, spirituality, the cosmos, yet this ‘meaning-system’ of death was mentioned only by David Selby in the transformative sustainability learning literature, and he considers it important.

David Selby critiqued the dominant **death denial** across Western societies as a “central aspect of our planetary crisis” (2002). He interprets our frenzy with consumption as a rush for immortality; and he argues our need for immortality stems from our simultaneous **avoidance of the fear of death** and loss, and a **fragmented view of ourselves from the cycles of birth and death throughout nature**. Yet, ironically, by separating ourselves from death and focusing on immortality of the ‘discrete self’, we still experience a “grievous sense” of loss: the “psyche is dulled from its own experience of the world” (Griffin, 1995, p. 51-52 in Selby, 2002). David Selby suggests that in response we should **bring death into the curriculum**, in appropriate and complex ways (considering socio-economic and cultural diversity), for example through contemplation and reflection on cycles of birth and death, and on our presence (in a highly nondual perception) as “processes or perturbances in the energy field” (Selby, 2002). If brought into the learning, we could explore how perceptions of death have changed and why that might matter.

This nondual perception of self resonates with the perception of self-as-dissipative structure discussed above, and with expanded, unifying cosmological views discussed next.

12.6 Cosmology: a unitive field

Metamorphosing our *cosmological* perception and beliefs

What do I believe about the origin and existence of the universe? What is its purpose? What is it made of? How do these beliefs influence me? How do my cosmological beliefs influence my sense of self?



As mentioned in the critique (*Premise ch. 6 and 7*), few educators in my bounded literature review engaged with a paradigmatic reflection on the dominant-cultural-paradigm's cosmological beliefs. It is perhaps unsurprising that cosmological meaning-systems were not explored in greater detail, given the West's reduced view of cosmology as merely a physical dimension (O'Sullivan, 1999, p. 231), and it's nearly non-existent status in our educational discourse (O'Sullivan, 1999, p. 92). In the university setting, in the dominant-cultural-paradigm, it is hard to perceive any discussion of the cosmos as relevant to the design and enactment of general learning experiences.

However, for at least two of the preceding-philosophers - Barasrab Nicolescu and Erich Jantsch - the engagement with cosmological meaning-systems was crucial for thinning the cloak of the dominant paradigm. In fact, Jantsch framed the exposition of his life's work within the premise of the universe as self-organising, creative and co-creating (1980).²²³

In terms of suggestions for complexifying our cosmological meaning-systems in the selected transformative sustainability learning literature, Elizabeth Lange offers the idea (for our perception) of a *unifying cosmic plenum*, rather than an assumption of the universe as *dead, lifeless matter in lifeless passive space*. The 'cosmic plenum' articulates the idea of the fullness of the universe with a continuous energetic and information foam, e.g. a medium smaller than quanta, and non-locally communicating beyond marco space/time conceptions (Swimme, 1996). This cosmic plenum (described more below) connects billions of universes and everything within (Laszlo, 2008 in Lange, 2018; Laszlo 2018).

Elizabeth Lange suggests we can perceive and develop our awareness of this cosmic

²²³ According to Edmund O'Sullivan, a leader in transformative learning, Erich Jantsch is one of the few philosophers enabling a desperately needed cosmological identification of self, in addition to Teilhard de Chardin, Ilya Prigogine, Isabelle Stengers, Taoism, and Indigenous worldviews (1999, p. 230).

whole, as inseparable parts, including our 'selves' (Capra, 1975 in Lange, 2018). Inspired by David Bohm's investigations into quantum physics, we can contemplate our physical reality (what we can empirically observe) as built out of quanta (discrete groupings of energy; *Premise ch. 9.4*). These quanta "emerge out of this plenum, vibrate at different frequencies in the manifest world, and dissolve back into it" (Lange, 2018b). In this expanded perception, cosmological matter, including ourselves, is a structured form of energy that can be transformed into other forms of energy, not just an entity (Lange, 2018b). This perception of a unified cosmos is shared amongst quantum physicists and Eastern mystics (Lange, 2018b). As Albert Einstein suggests, in actuality, "a human being is part of the whole, called by us the universe" (Einstein in Suzuki, 1997, p.26 in Lange, 2018b).

Cosmological theories of this type invoked by Elizabeth Lange can be referred to as field theories. Field theories tend to connect Albert Einstein's physics (the very big) and quantum physics (the very small), and are generally holistic, nondual ontological perspectives. Field theories suggest that the becoming and behaviour of materials, living structures, and social structures cannot be described alone by chemistry, genetics or sociology, i.e. the natural laws (Sheldrake, 2007). Instead, to explain the re-occurring patterning and becoming of these systems, field theorists suggest that there is an invisible field of information, that flows within and around these systems. This field provides information on 'how to become' and 'how to pattern' (Joye, 2016). The information within these fields is created based on past patterns, suggesting that natural laws are more like learned behaviours and that the past is always present (Lazlo 2008, p. 118 in Lange, 2018b; Sheldrake, 2007). This notion of an underlying information field/reality, arises in:

- Psychology: Carl Jung's collective unconsciousness (Jung, 1971, pp. 59-69; Sheldrake, 2007),
- Noetic sciences: Chris Bache's mind-field (Bache, 2001),
- Quantum physics: Ervin Laszlo's Akashic²²⁴ Field theory, or cosmic memory (Laszlo, 2018); David Bohm's implicate order (Bohm et al., 1996; Buchanan, 2016),
- Neurophysiology: Karl Pribram's underlying coherence or holonomic brain theory

²²⁴ Borrowing from Sanskrit and Hindu philosophies of the ether - akasha, the element that connects all things.

(Joye, 2017; Pribram, 2007),

- Theosophy: Rudolph Steiner's Akashic record, or the living spiritual history (Buchanan, 2016; Steiner, 1909),
- Biology: Rupert Sheldrake's morphic field theory (2007),
- Transpersonal psychology: Stanislov Grof's holotropic breath-work (for experiencing cosmic consciousness) (Grof, 2009),²²⁵
- • Cosmology: Brian Swimme's all-nourishing abyss (1996, p. 97).

In this space of field theory, we can see how the notions of self, consciousness and cosmology can be perceived of as an intra-active whole. Field theory raises interesting questions about where our consciousness arises from and what this means in terms of oneness with other people and nature (Laszlo, 2018). While briefly mentioned by Elizabeth Lange, field theories and their worldview-stretching potential have not yet been more-broadly discussed in terms of fostering transformative sustainability learning. Expanding the transformative sustainability learning literature to include and contemplate the ideas of Jean Gebser, Henri Bergson, Teilhard de Chardin, Sri Aurobindo, Chris Bache could be fruitful in expanding our conceptualisation of what cosmic consciousness is and how can it be stretched (Laszlo, 2018; Gidley 2016).

If developing a cosmic identification for one's self is an essential part of meaningful transformative learning (Bach, 2001; O'Sullivan, 1999; Swimme, 1996), how can educators, particularly in university settings (e.g. the location of the vignettes in this study) meaningfully and experientially engage in perceptions and discussions of cosmologies through pragmatic experiences with learners? What kinds of situations and contexts are appropriate?²²⁶ How can we learn from humanities courses, e.g. anthropology and cultural studies, that have already been engaging with these ideas?

Several educators mentioned the role of cosmology in creating transformative learning experiences – e.g. developing awareness of what we implicitly perceive our cosmology to

²²⁵ Stan Grof's life-long interest in holotropic states were born from his own experience with LSD and cosmic consciousness.

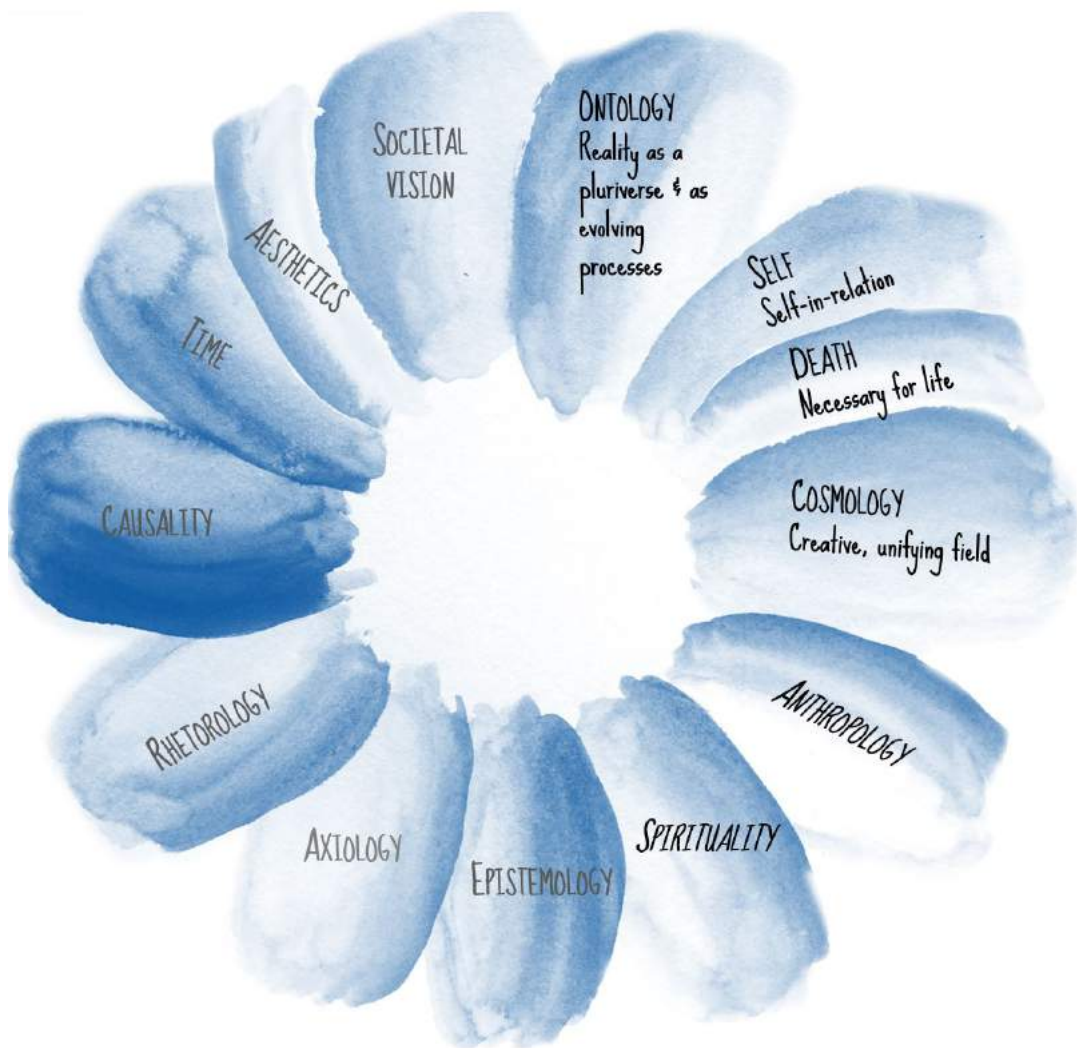
²²⁶ I think part of the reason why cosmologies are so easily dismissed from learning experiences associated with universities in the dominant culture is because their relationship to the 'practical and pragmatic' cannot be seen, and thus this would be the challenge. 'Beliefs' of the cosmos as empty bits of space are deeply and unconsciously embedded in the practical lessons at university, so what would be mean to resurface alternative cosmologies through pragmatic experiences with learners?

be, or being exposed to other diverse cosmologies (Chaves et al., 2017, Barrett et al., 2016, Lange, 2018b). Two of these examples are based in intercultural learning, where groups of people with vastly different cosmologies come together in meaningful ways. Through discussions, the implications of different cosmological perceptions can't help but become apparent. How else could cosmological perceptions be explored, and which spectrum of cosmological premises could inform these program designs? What might be potential 'threshold concepts' to explore in this meaning-system?

Recap and next steps

Common approaches to education perceive the cosmos as mechanist, largely comprised as space. Conceived of largely as an astronomy discipline, cosmological meaning-systems are not included broadly in education. Transformative sustainability learning seeks to expand our conceptions of cosmology and its integration into learning settings.

To summarise more broadly, the above discussion demonstrates how within transformative sustainability learning, the meaning-systems of ontology, self, and cosmology are born from more relational logics-of-perception. As implied within the discussions, relational logics-of-perception enable more strongly inter-steep beliefs of ontology, sense of self, cosmology, anthropology and spirituality. Hence, the following sections explore anthropology and spirituality.



Visual 56. Summary of relational onto-to-cosmo meaning-systems (and the next two in *italics*)

12.7 Anthropology: nature and humanity in reciprocal relation

Healing our anthropological perceptions

What is humanity's relationship with nature? How are (or could) humans be protectors, masters, apprentices, siblings to nature? Does humanity exist outside of nature; part of nature; both outside and part of nature? How helpful is 'humans' as a concept as a reference point for making meaning?

In what ways and circumstances is it okay for 'humans' to 'manipulate' nature: Kill that persistent mosquito? Avoid silk dental floss if the silk worms are treated unethically? Eat meat, but only in certain contexts? Reroute entire water catchments? Seed clouds with chemicals to induce rain?

When I engage with animals and other more-than-humans throughout our day, when do I perceive an interconnectedness? What does that feel like? How does that change me?



The dominant paradigmatic beliefs of **humans as separate and superior to nature** can manifest in all areas of societies: how we prepare food, how we live, how we entertain ourselves, how we design our cities, etc. (*Ch. 1.4, Premise: meaning-systems*). For some educators, disrupting this anthropological perception is a key focus of transformative sustainability learning. They design their learning experience to enable perceptions (for subsequent dialogue and reflection) that humans are not separate from nor superior to nature (O'Neil, 2018; Barrett et al., 2016).

Complementary conceptualisations of humans and nature perceptions were mentioned (mirroring the ontological beliefs discussed in 12.1). These beliefs ranged from 'recognising our multiple interconnections between the human and the more-than-human world' (Sterling et al., 2018) to the belief 'we are an indivisible whole' (Lange 2018b, Selby, 2002). These beliefs echo those in the philosophical literature, namely that humans should move towards beyond-anthropocentric relationships with Nature, in which Nature, with equal rights and consciousness, is valued, and the deep interconnectedness is recognised (Morin, 2001; Sunde, 2008).²²⁷

²²⁷ These distinct anthropological beliefs also resonate with the other ontological and 'self' beliefs. The first
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Both Elizabeth Lange and David Selby, who perceive humans also as part of the Whole, invoke quantum physicists for their expanded perceptions. Elizabeth Lange quotes Albert Einstein to remind us that it is our limited consciousness that binds us to the delusion of separateness, rather than allowing us to recognise and consciously experience our part in the Whole (2018). David Selby quotes quantum physicist David Bohm (1983, 1990) to clarify this invisible Whole, perceiving that things and objects (both humans and nature) are “ontologically subordinate to flows and patterns”, and thus everything is a signature of the uninterrupted flow of the Whole. Selby also uses environmental philosopher Holmes Rolston III to illustrate the perception of an indivisible Whole. Standing at the shoreline of a Rocky Mountain wilderness lake, Holmes perceived how the waters of “North Inlet are part of my circulatory system; and the more literally we take this truth the more nearly we understand it” (1975, p. 222 in Selby 2002).

These human-nature beliefs transcend the notion of protecting nature for utilitarian reasons or even for intrinsically valuable reasons. Rather, this view recognises that intelligence exists throughout the universe, and is not a defining or unique characteristic of humans (Lange, 2018b). The more-than-human can literally speak to us (Barrett et al., 2016), intra-act with and change us (O’Neil, 2018), and teach us (Lange, 2018b). Ultimately, for M.J. Barrett and Stephen Sterling, this expansion in our human-nature perspective is a significant point for transformative sustainability learning. M.J. Barrett and her colleagues assert (2016):

*"For us, transformative sustainability learning involves moving beyond epistemic and ontological assumptions embedded in modern Western culture, particularly with respect to human relations to the more-than-human, or nature. We use the phrase more-than-human, non-human and nature interchangeably to designate the non-human entities with whom we, as humans, are always in relation. Such an approach includes a pedagogical move to **recognize nature as co-instructor** (Russell 2005), and supports a teaching orientation that takes as its starting point the ‘assumption that the natural world is literally able to speak’ (Blenkinsop and Piersol 2013).....There is a need to move beyond the psychic numbing that has deafened human perception to the more-than-human (Bai 2009) and support*

group is still arguably infused with a *separatist logic-of-perception*: reality as a web, sense of ‘self-in-relation’, and humans as interconnected with nature. The second group is born *from a holistic, unifying logic-of-perception*: Reality as a dance/estuary, ‘self-as-evolving-unity’, and humans/nature as in indivisible whole.

students to become more 'alive to the world' in all its sentience (Abram and Jardine 2000; Ingold 2013).....***we suggest that recognition of and engagement with the more-than-human as agential and communicative beings is at the core of a transformative sustainability learning.***"

The following vignettes further demonstrate how these expanded anthropological beliefs formed part of the premises of transformative sustainability learning.

Anthropological vision in the vignettes

In the Leadership for Sustainability Education master's, and in the Hawkesbury Bachelor program, Heather and Richard respectively explore anthropological meaning-systems. In terms of our anthropological perceptions of humanity and nature, integrating principles of interdependence would mean perceiving that humankind is ***inseparable from*** the nature that we currently 'seek to manipulate to our own ends' (2003). According to Richard, this may be the 'most poignant need' for awareness of inseparability (2003). In Heather's Leadership for Sustainability Education program, one student illustrates his wonderings about his perspective of nature and its relationship to humanity, and new perceptions/actions that emerged from the stretched worldview:

*"When we perceive the environment as something **separate** from the self and humanity, we view the Earth as victim needing to be saved. But what if the Earth is resilient, self-sustaining, nonjudgmental, and nourishing? What if it isn't just about the Earth and others, but about helping myself too? Looking at these questions through an ecological perspective helped me realize I've always been part of the environment; I am not isolated but **rather part of the whole system**. Earth doesn't need a saviour; Earth needs us to realize we are part of the web of life and that our interactions, actions, and thoughts ripple through her and us" (Burns et al., 2016).*

Summary of anthropological premises in the form of potential threshold concepts

The dominant-cultural paradigm believes humans are separate to nature (*Ch 6.4*). Transformative sustainability learning begins with more complex, relational and reciprocal premises (*Table 13*).

| Illustrative anthropological threshold concepts | Beyond-separatist perceptions |
|--|---|
| Humans are intrinsically embedded in nature. We have an ecological identity, we are interconnected with and part of the natural world. | Overcoming perception of human patterning as separate from nature's patterning. |
| The relationship between humanity and nature is reciprocal. Rather than 'conserving nature', human activity must support nature, so nature can support us. | |
| Nature is agential and can be humanity's teacher. | Overcoming notion of human separation and superiority. |
| Nature has a consciousness, and should be afforded rights. | |

Table 13. Illustrative threshold concepts for potentially expanding anthropological meaning-systems

These perceptions of deep relationality and unity amongst cosmology, self, nature and we humans can at times feel spiritual. Hence, the following section explores this premise as articulated within transformative sustainability learning.

12.8 Spirituality: a vital perspective

Reintegrating with *spiritual* perceptions

When and why is it important for me to connect with the spiritual? How and when do I experience the spiritual? What is sacred? What are the great, transcendent mysteries and what do they mean to me?

.....

Whereas academic norms and thus undergraduate learning experiences tend to see spirituality as **separate from** most scholarly inquiries and disciplinary modes of teaching, some initiatives of transformative sustainability learning **reintegrate spirituality**, particularly those influenced by ecofeminist spirituality, Eastern spirituality, and deep ecology. For example, Elizabeth Lange spoke of the importance of ecofeminist spirituality and Eastern spirituality in developing her theory of transformative sustainability learning, and suggests that transformative learning should attend to spiritual relations as part of moving beyond just the individual to engage with the “whole” (2018b).

David Selby agrees that spirituality should be included within the curriculum. His notion of spirituality is not so different from the previously described relational onto-cosmo-self-anthropological perceptions. Inspired by deep ecology, he loosely conceptualises spirituality as a recognition of the “*deeper levels of connection within ourselves and between*

ourselves and the world" (2002). He quotes the Bhagavad Gita to illustrate this point: *it is possible to see oneself in the heart of all beings, and to see all beings in one's heart*. After which he remarks, "If this sounds like spirituality in the curriculum, that would be an appropriate conclusion" (2002). He argues it is unlikely that educators will impact our culture unless we embrace a radical interconnectedness through a revived engagement in spiritual mystery and "a sense of the ineffable, the unknowable" (2002).²²⁸

Selby also notes the role of peak experiences (Maslow, 1985 in Selby, 2002), in tapping into the spiritual, e.g. those occasional senses of "self as oceanic" from the "thrill of climbing a mountain", of "weaving the waters of a difficult river in a canoe", or moments in a rose garden (T.S. Elliot in Selby, 2002). His suggestion is that we (educators, facilitators, mentors, members of a learning society): "cultivate contexts and opportunities for such experiences within our formal learning programs" (2002), by slowing down (e.g. through contemplative and therapeutic art, dance, breathing, yoga, meditation). Selby (2002) reassures us that developing this type of learning through appropriate topics and methodologies will be difficult, but not to be hard on ourselves, because "*this is a kind, not all or nothing, philosophy...we can feel good about small beginnings - for what we are doing is difficult and countercultural - knowing that the ripples will go where they will and remembering that what happens somewhere is in a strange way, happening everywhere;*" a claim resonant with field theories touched on above.

Spirituality as discussed in Martha Chaves et al.'s paper on transformative and transgressive intercultural learning in Colombia provided a good example of the sensitivities that arise when engaging in the space of the spiritual (Chaves et al., 2017). This gathering involved the enactment of spiritual practices by Indigenous Misak and Hare Krishna participants. The enactment of these diverse spiritual practices, and thus differing beliefs of the sacred, created tension and discomfort.²²⁹ Bringing together various enactments of sacredness and spirituality can be tense, but with a foundation of love, compassion, respect, openness and willingness to learn from each other, these experiences

²²⁸ Gregory Bateson agrees: In his book, the question of the sacred (in addition to questions of the aesthetic and of consciousness) need to be addressed in order to arrive at a theory of action in the living world (Bateson & Bateson, 1987).

²²⁹ For example, tensions arose between perceptions of being vegetarian for reasons of the Divine, verses sacredness as respectfully honouring the life of an animal in preparation for consumption; fires on sacred grounds as disrespectful to the Divine, verses sacred fires as living entities to be guarded; women "on their moon" in separate communal gatherings during this time of sacred energy, verses perspectives of segregation and inequity of women.

can create the conditions for spiritual reflection and enrichment.

But how appropriate is it to raise questions of spirituality within a learning experience? Arguably, a stance on spirituality (and cosmology) is always present based on the design and paradigmatic assumptions of the course, whether explicit or not. Often this stance is that spirituality is 'not relevant'.

But is it the role of higher learning institutions to create the conditions for 'spirituality' and to become a more conscious source of discussion and contemplation? Elaine Riley-Taylor (2002) and M.J. Barrett and her colleagues suggest so; they view spirituality as a means of trans-rational knowing which can transcend and complement rational knowing. Where trouble arises, according to M.J. Barrett, is conflating spirituality (as source of powerful knowing) and religion (the social structures put in place to support spiritual practice). This conflation is why "public education systems have been hesitant to provide opportunities for students to learn skills in receiving, interpreting, and applying transrational knowing" (Barrett, 2013).

This question of spirituality and university learning experience is much more complex than I'll be able to cover in this inquiry. The main point is that feelings of oneness with self, nature, others and cosmos (covered in 12.1-12.4) are inseparable with from notions of the sacred and the spiritual. If expanding to relational logics-of-perception is enabled by spiritual experiences of intra-connection with multiple selves, others, nature, and the cosmos, there are implications for how educators curate these experiences, and how they talk about these moments with learners. The vignette below describes how one vignette-educator engaged with spirituality.

Vignette: Leadership for Sustainability Education master's

Including the idea of *spiritual* perceiving

The Leadership for Sustainability Education master's created the conditions for learners to reflect on the relationship between spirituality and the ways they perceive and act within the world. The learning experiences Heather curates create the conditions for self-care and leadership to be perceived and practiced as ways of being that "are at their core spiritual" (2016b). The learning experiences demonstrate how cultivating spirituality can contribute to personal growth and wisdom required to be a sustainability leader. This insight was echoed by one of Heather's students: "I learned that exploring spirituality and self-healing are vital components toward developing my philosophies of healing" (Burns

et al., 2016a), as in healing the wounds inflicted by the myth of separation. Towards this, self-care and inner work are important for sustainability, requiring a deliberate slowing down of our lives and the learning process, to cultivate individual and collaborative mindfulness and reflective practice, as a means of contemplating and cultivating these spiritual perceptions and relational values.

Summary of *spiritual* premises in the form of potential threshold concepts

To summarise these beliefs about spirituality in transformative sustainability learning, and continue to signpost and articulate more systemic, holistic, and integrative worldviews, *Table 14* presents potential threshold concepts illuminated in the vignettes and literature in which beliefs of self are expanded beyond the dominant perspective of a separate self.²³⁰ These beliefs of self are enabled from relational logics-of-perception. As mentioned above, these threshold concepts are not for indoctrination but offer points of reflection and dialogue for educators in considering or reflecting on any experiences of the ineffable.

| Illustrative spiritual threshold concepts | Beyond-separatist perceptions |
|---|--|
| Engagement in spiritual mystery and “a sense of the ineffable, the unknowable” can foster perceptions of radical interconnectedness | Heals the divide between rational and spiritual ways of thinking/being, or the perceived and thus enacted separation between our minds and hearts. |
| Cultivating spirituality can contribute to personal growth and wisdom required to be a sustainability leader. | Heals the perceived separation between ‘academic learning’ and ‘spirituality’ |

Table 14. Illustrative threshold concepts for potentially expanding spiritual meaning-systems

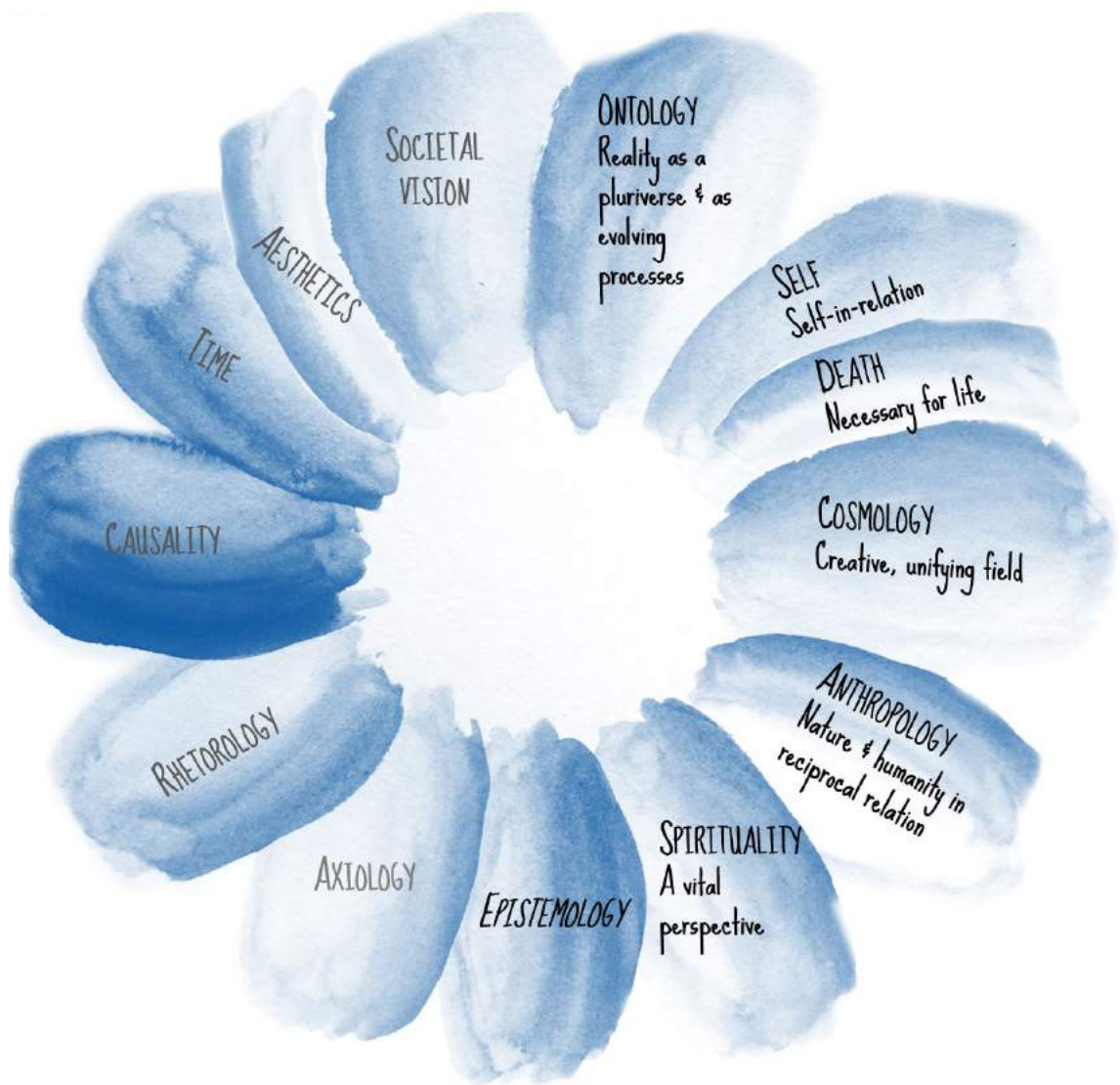
Recap and next steps

This section demonstrated how spiritual meaning-systems and experiences are relevant within transformative sustainability learning, as compared to its common dismissal in dominant ways of knowing (*Ch. 6.6*).

The expanded, more complex, more relational premises of transformative sustainability

²³⁰ Many aspects of this need for consistency in a scholarly work feel hypocritical: e.g. conceiving of spirituality in terms of ‘threshold concepts’, and communicating them in a matrix. What harm might be implicit in this, and how can it be overcome?

learning (in regards to potential onto-self-cosmo-anthro-spiritual meanings) have significant implications for commensurate stretches and complexifications in the ways we know. The following section explores these transformed epistemological premises of transformative sustainability learning. The discussion of these meaning-systems is longer than the others as the transformative sustainability learning articles I reviewed write and reflect more and on epistemological meaning-systems, more than any other meaning-systems.



Visual 57. Summary of relational onto-spiritual meaning-systems (and the next in *italics*)

12.9 Epistemology: holistic and integrated knowing

Expanding our epistemic perceptions and beliefs

What is knowledge, knowing, wisdom: Is it study at a university? Handed down from elders, spiritual leaders, or a Higher Consciousness? Rigorous scientific testing and objective fact? Gained through subjective life experience? An integration of all of the above and more?

Does 'truth' exist? If so, what are the sources I seek for truth and in which circumstances: My own intuition? Mentors? Spirituality? Academia and theories? Artists? Poets? The contexts?

What are qualities of desired knowledge and knowing: Must it verifiable and replicable? Must it be integrated with ethical considerations? Is there such a thing as right and wrong? It is even possible to 'draw boundaries' of a 'problem'?

What if I was 'knowing' using only a very tiny sliver of knowledge and truth? How much richer would my perceptions and meaning be if I was able to expand my epistemological beliefs?

If the dominant-cultural meaning-systems (of reality, sense of self and death, cosmology, humanity and nature, etc.) were born from a deeply nourishing feeling or intuition of radically interdependent or unitary processes, what kinds of knowledges and knowing would be possible and valued?

.....

This section illustrates the espoused epistemological stretches and complexifications within transformative sustainability learning. These beliefs relate to conceptions of truth, learning and knowing, and qualities of our knowing.

What is valuable truth?

Several paradigmatically-aware transformative sustainability learning educators suggest we should saturate the dominant monochromatic (black or white) **rational and absolutist** views of knowledge with blended **holistic, integrated** epistemologies. Their articulations echo the preceding-philosophers who all perceived knowledge as deeply embedded in context. In other words, the philosophers and educators see truth as influenced by the inter-steeping contexts of any situation: temporal, historical, relational, emotive, ethical, moral, subjective, more-than-human (trans-anthropocentric), etc.

However, moving beyond an absolutist epistemology can be confronting. This worldview stretch means leaving the safety and certainty of a single truth (Chaves et al., 2017). Learners may move towards an epistemological stance of multiplicity, in which everyone has their own subjectively constructed view (related to the notion of pluralist ontologies discussed in 12.1).

But beliefs espoused by the preceding-philosophers and other educators move beyond multiplicity, into the realm of *contextual relativism*, in which the complex and unique contexts of the questions and the questioners sketch and define truth and value (Perry, 1970; Salner, 1986; Bawden, 2016b). Truth is found in the experienced interaction between selves and world. To ground this in class, Schumacher educators in one course, for example, begin with the Zen-like invocation of “This is not the truth” on the board, which acts as an invitation for the “students to coproduce the meaning-making in the classroom, recognising that all theoretical models are, at best, usefully imperfect abstract representations of reality” (Sterling et al., 2018). This expanded perception of truth creates the space to appreciate that diverse ways of knowing are required to effectively engage in the process of sustainability knowledge creation (Barrett et al., 2016).

What is learning and knowing?

The third-order-reflexive transformative sustainability learning papers described an expansion of our epistemological beliefs about the process of knowing and learning. Richard’s vignette (see below), based on a holistic onto-epistemology, encourages a perspective of *collective learning as a process of healing our deep manifestations of separation*.

In an expanded epistemology, we can also conceive of learning as the process of life, as inspired by systemic philosophers and biologists Humberto Maturana and Francisco Varela (Capra, 1996 in Lange 2018b). In other words, the inner world of cognitive concepts can be seen as coming from a *co-emergent, intra-active responsive process* of entwining body, emotions, more-than-humans, other humans, and materials (Lange, 2018b; O’Neil, 2018).

What are ways of learning and knowing?

In addition to the common focus of rationality in learning, educators discuss how they attempt to integrate and validate additional human faculties for knowing, such as *intuitive, emotional, affective, spiritual and embodied knowing* in holistic learning

(Sterling et al., 2018). Overcoming one of the most common forms of separatism in learning, *emotions can be (re)perceived as inextricable from our developing rationality* (Damasio 2005; Damasio in Sterling, et al., 2018; Damasio in O’Neil, 2017a,b). Elizabeth Lange even creates the space for our perceptions to experience how these emotions (and other brain wave patterns) may come via the cosmic plenum to nonlocally transcend space and time, to connect individuals and groups (Lange, 2018b), if consciousness might also have the characteristic of antennas to connect us into a larger cosmic radio wave (e.g. the ideas of cosmic plenum discussed above).

Other authors remind us of the non-human faculties, or animist knowing, in which the *more-than-human can contribute knowledge* through their sentience, communication and volition, which might appear in the form of dreams, visions, and/or a felt sense (Barrett et al., 2016). M.J. Barrett suggests other trans-rational human faculties, such as *transpersonal, gut-feeling, dream-knowledge, remote-viewing, presentiment or pre-cognition*.²³¹ If our learning experiences create the conditions for experiencing and validating multiple ways of knowing, learners can stretch their epistemological beliefs towards a fuller range of both human and more-than-human knowledges available for making meaning.

What are the qualities of our knowing?

Based on these stretched onto-epistemological beliefs, the qualities of our knowing will also necessarily change. If relationality is recognised as ontologically primary, Elizabeth Lange suggests that this means we will begin to perceive and apprehend *knowing as tentative, limited, partial, approximate* (Lange, 2018b). David Selby agrees that we are thus re-oriented to consider our understanding of the macro world to concede that “nothing is fixed or fully measurable” because “our limited vision and inability to comprehend and entertain all the questions to ask, make for, at best, *provisional knowing*” (Selby, 2002). In other words, our knowing is elusive, because *what we observe is actually the limitations of our questioning* (Selby, 2002).²³²

²³¹ Perhaps similar to those recognised in ancient Vedic cosmologies (Radin, 2013).

²³² The worldview and paradigmatic shifts described in this inquiry are seeking to support just that: opening up the horizons of our questioning.

Exploration of epistemological beliefs within the vignettes

The preceding synthesis of epistemological beliefs of truth, learning, and knowing within transformative sustainability learning demonstrates a shared intent for learning to also be more holistic, contextual, collective, and provisional. Despite these shared qualities, many diverse discourses seek to achieve these similar aims. To demonstrate the diversity of discourses around these epistemological beliefs, the following sections proffer the unique perspectives of: the Leadership for Sustainability Education master's, a course running for almost 10 years; Hawkesbury Agricultural College, whose staff experimented with the onto-epistemological shifts within learning systems for over 25 years; and Kitchen-based learning, a more recent transformative sustainability learning pedagogy. Even though each vignette uses distinct theories and discourses, I demonstrate how each of them espouse onto-epistemologies enabled by a more relational and complex logic-of-perception.²³³ Thus each vignette heals separatist divides.

Vignette: Leadership for Sustainability Education master's

Living systems paradigm as a premise for ways of knowing

To stretch beyond the Newtonian separatist way of believing and knowing, Heather puts forward and articulates *a living systems paradigm*, inspired in part by a synthesis of the work of Fritjof Capra and Margaret Wheatley (Burns et al., 2015; Burns, 2015). A living systems paradigm views the primary nature of reality as interdependent relationships, with the ability to self-organise and to change creatively (Burns, 2016a, b). The metaphor and principles of living systems can guide our interpretations and actions.²³⁴ These principles often include the ideas of: nested systems, networks, dynamic balance, cycles, flows, development, as well as emergence, and co-creation (Burns, 2016a, b).

The living systems view of reality has significant implications for Heather's epistemological stance, in terms of what is (meaningful) knowledge. As opposed to universal, decontextualised knowledge, meaningful knowledge becomes the understanding of patterns and interconnectedness (Burns & Briley, 2005). Instead of "content as concepts", *content is a living, co-created process in which theory and*

²³³ At a meta-level, these sections of shared paradigmatic views interspersed with the vignettes are an exploration of unity in diversity.

²³⁴ For example, leadership or designing sustainability education etc. (Hutchins & Storm, 2019; Widhalm, 2011).

practice engenders and personalises new understanding (Burns, 2016a). Perceiving reality as a living web of dynamic interconnected relationships, the living systems paradigm explores how the world could usefully be perceived as constantly changing, uncertain, paradoxical, non-linear, emergent, self-organising, and adaptive (Burns et al., 2015; Burns, 2016b).

Heather's learning process seeks to implicitly overcome the separatist myth in several ways. Firstly, by *re-uniting the body and the brain*, so that knowledge and learning can come from sensing one's own body, or somatic learning. Secondly, to *reunite learning and meaning with context*, Heather engages ways of thinking and learning that are non-fragmented, holistic, systemic, connective and ecological (2013). Thirdly, to *reunite thinking and doing*, much of Heather's learning is active and experiential. Importantly, it seeks to *reconnect learners to the land*, whereas learners typically do not have a connection to the land or community where learning is taking place (Burns, 2015). And finally, to *reunite multiple ways of knowing*, Heather's learning draws on creativity, radical imagination, reflection, and collaboration, including seeking to re-connect learners to each other (Burns, 2016; Burns et al., 2016). Drawing on Indigenous ways of knowing and being, Heather seeks to *integrate our multiple selves* in learning: the intellectual, emotional, spiritual and physical (Burns, 2015). Engaging with the soul, and accessing and exploring the *connections between the inner and outer self* is important in her pedagogy.

Heather's vignette above sketched the epistemological intentions informing her courses. Similar to the following Hawkesbury vignette, Heather shares a belief in expanding our competencies to include contextual, relational knowing and learning. However, Hawkesbury did not draw on the work of Fritjof Capra, or others that they perceived as 'reifying' the word 'system'. Rather, the Hawkesbury approach to relational and contextual knowledge was through 'systemic development', which simply stated is their term for a particular perspective on ways of making sense of reality (or of 'a patterning of construing') which recognises that the observer and the observed naturally co-develop. The following vignette introduces the epistemological beliefs underpinning their learning experiences.

Vignette: Hawkesbury Bachelor of Systems Agriculture

Epistemological systemicity as a premise for transformative sustainability learning

One of the significant epistemological perspectives within the Hawkesbury school was the belief that ‘systems’ are not an ontological ‘thing’, but an epistemological phenomenon, or set of perspectives that everyone collectively brings to bear on a situation.²³⁵

A transformation in perspective is enabled by transcending separatist logics. In perceiving ‘systems’ as an epistemological phenomenon, a *perception of relationality* softens the subject/object separation. Instead of an objective reality out there, separate to us as knowing subjects, we recognise ‘objective realities’ as functions of, or inseparable from, our own subjective or contextual interpretations. In essence, *we recognise that we are within and part of any system we focus our attention on*. And, we recognise the ‘systems’ we observe in nature and society are but constructs, or conceptual models we attribute to ‘reality’ rather than actual representation of it (Bawden, 2003). Within this perception, for example, ‘knowing about agriculture’ is viewed as inseparable from its environments, and inseparable from the thoughts, beliefs, and feelings’ of those who seek to improve it (Bawden, 2003), in other words, their worldviews and their own participation in the ‘system’.

Contextual relativism

This stretch from ‘ontological systemicity’ to ‘epistemological systemicity’ also requires an epistemological stance of contextual relativism. Contextual relativism perceives many forms of reliable knowledge, capable of being validated by their contexts, which is not a straightforward task (Bawden, 2018a). To validate knowledge by our contexts, we need integrated systems of knowing, in which cultural, ecological, spiritual, ethical, moral, aesthetic judgement criteria (or dimensions of development) are as significant as the more common and restricted focus of technical, practical, economic, social, legal and political considerations in our judgements and actions concerning how we should live our lives (Bawden 2003, 2005, 2010).

²³⁵ Meaning, ontologically speaking, reality is not an industrial machine to be predicted and controlled.

Holo-centrism: *ontologically holistic* and *epistemologically contextual*

The vision for learners at Hawkesbury was for them to be able to view the world from many different paradigms (explained more in *Ch. 14, Process: models*). In the final stages of the Hawkesbury program, learners were experientially introduced to situations benefiting from a “holocentric” worldview, which is very distinct from the dominant-cultural-paradigm in which most students would enter Hawkesbury. A *holocentric* paradigmatic stance blends an *ontologically holistic*²³⁶ and *epistemologically contextual* stance (Bawden 2010, 2016). In this paradigmatic ‘window on to the world’, we perceive the intrinsically complex and dynamic interconnectedness of reality, and thus we seek to match, or reciprocate this complex, dynamic, multi-dimensional environment with equally complex, dynamic, integrated ways of being and knowing (2005, 2010). A *holocentric* stance preferences *holism* over atomism, *organicism* over mechanism, *particularism* over universalism, *contextual relativism* over objectivism, *pluralism* over monism (2016b). This does not mean that other ways of knowing should be forgotten or not included; rather, that we develop the ability to contextualise all ways of knowing in relation to each other; e.g. learning is inclusive of ‘either/or’ *and* ‘both/and’.

Learning as healing separation

An essential epistemological belief informing the Hawkesbury pedagogies was the necessity for truth, learning and knowing to achieve ethical and just societies. Implicit in the quest for inclusive well-being is the need to learn together; we *heal via learning together* (1995).

One of the central ways that Richard suggests groups of people seek to develop inclusive well-being (e.g. ethical action through relationships, or responsible, ethical ecologically sustainable development) is by organising and participating in Critical Learning Systems. Ch. 14 (*Process: models*) probes this pedagogy in more detail. Much of Richard’s writing details how, for example, universities can transform into Critical Learning Systems to *couple with* their local environments through ‘co-learning bonds’ (1995). He repeatedly calls for the academy to conceive of itself as a Critical Learning System comprised of *interacting systemic beings, who co-evolve (learn) together such that ethical*

²³⁶ E.g. beliefs in holism, emergence, embeddedness and interdependence as ontological characteristics.

improvements can be seen: in the universities and systemic beings themselves, as well as their environments, and importantly the relationships between them (1995).

In essence, universities should seek to *heal wounded communities and rehabilitate environments* and *reconstruct relationships* both interpersonal as well as with the land (1995; B&P, 1998). Specifically, within Hawkesbury, the staff was “determined to reconstruct their own conceptual maps which *embraced the vital inter-relationships* between farmers and both their land and their communities, recognising the context within which they operated as ‘irreducible wholes’ comprising emergence (Bawden & Packham, 1998).

An important process of Critical Learning Systems is deep *self-reflexivity*. Critical learning systems are a ‘constant and multi-dimensional flow of conversations between individuals who are consistently’: learning about the issue at hand; learning about the process of learning; learning about the paradigmatic and worldview assumptions that frame both of these other dimensions of learning; and their responses in relation to reflecting on all of that (2003, 2004, 2018). Contrary to the common tendency within the dominant-cultural-paradigm, the notion of self-reflexivity is deeply embedded within Richard’s philosophical premises for learning. We must build in critical self-reflexivity in order to grow and nourish the ability to recognise, integrate and transcend paradigms. For him, the nature of scholarship, or meaning making, is about learning how to be critically self-reflexive, and the cycles of reflection and action as a means of designing new paradigms appropriate to ecologically sustainable development (1995).

The Hawkesbury vignette above demonstrates how overcoming the harms of separation was infused within their epistemological praxis. They sought to overcome separation of learners from one another, the separation of learning from real world contexts, and separation of academe from the community. While the Leadership for Sustainability Education program shares these aims, Heather’s vignette above focused more on the epistemological beliefs that heal the separation within areas of people’s lives and selves, and within ways of knowing (e.g. rational and imaginal). Similarly, Joy’s vignette below also heals the divide between rational and sensory/emotional knowing. But Joy also places stronger emphasis on the role and agency of materiality in stimulating learners’ senses and emotions.

Vignette: Agential realist (food) pedagogy

A radically relational *onto-epistemology* as a premise for transformative sustainability learning

Through Joy's doctoral inquiry, she read and contemplated paradigms quite different from the dominant paradigm. Living systems philosophy (Fritjof Capra), neuroscience (Antonio Damasio, Immordino-Yang), new materialist (Karen Barad), and transformative sustainability educators (Stephen Sterling, Elizabeth Lange, David Orr), as well as her own critical reflections on learning, helped shape her pedagogical philosophy or premise, towards a less separatist, more *relational* onto-epistemological orientation.

Allowing the performative agency of materials to create third-order learning

Joy describes her ontological stance as *posthumanist agential realism*. As touched upon in *Ch. 11.1*, an agential realist ontology perceives reality as phenomena. 'Phenomena' as the orienting concept of reality requires a perception of 'inseparable entanglement' or of 'performative dances' (2017b). This is quite different from the dominant ontological perspective of inert materials occasionally interacting (*Ch. 11.1*).

'Performative' is another term Joy adapts from Karen Barad. 'Performative', similar to intra-action (*Ch. 11.1*), is a concept which highlights how every 'thing' is performative. In other words, both subject and object perform together, both have agency, so that ontologically, the distinction fades: both are acted upon and act in a process of always becoming (2017b). Joy often invokes Giles Deleuze and Felix Guattari's similar concept of (be)coming to describe her ontological premise, e.g. when entities/processes come together they both change their own value to create new and inseparable phenomena (Deleuze and Guattari, 1987, in 2017a).

Based on this ontological stance, Joy intentionally creates space and time in her learning experiences for the *material to positively act within the learning and 'perform with' the students*. Most often, in her published examples, this agential material is food and materials for food preparation, sharing and eating; but more broadly, she recognises that in a learning moment, everything 'matters' (has performative agency), e.g. what is said, felt, seen, touched, smelled, heard co-constitutes a performative learning intra-action (2018). The implication of this onto-epistemological belief is that meaning is based on how the simultaneous coming-together/apart creates 'a difference that makes a difference' in

someone's way of being and perceiving (2018). In other words, there is learning in addition to 'content' conveyed in words and concepts.

Allowing the performative agency of materials to stimulate senses and emotions

Joy's epistemological stance includes beyond-separatist logics-of-perception. Based on her deep reading of neuroscience and application of these insights in her own classes, she recognises the interdependency between the mind and the body, between feelings, relationships, emotions and cognition. These perspectives of learning are also explored and reiterated in some ecologies of transformative learning. For example, John Heron, John Dirkx, Lyle Yorks and Elizabeth Kasl, influenced by William James, advocate for and research more holistic and embodied learning experiences, in which the emotional and physical selves are included (2017b). In alignment with these theories, Joy views emotion as the 'rudder' and trigger for thought in learning (2017b). As opposed to creating learning spaces, in which emotions are dampened, Joy's learning spaces attempt to *create the conditions for the intuitive, emotional, sensory ways of knowing to be activated and entwine with the learning content, the students as individuals, and the class collectively*. This inclusion of individual emotions (and thus each student's unique memories) means that learning outcomes are also viewed as change in the person (which will be emergent and unpredictable), in addition to change in the ability of the student to perform (Feriz and Aziz, 2005 in 2017b).

Important in Joy's epistemological stance of 'emotion as a rudder' in learning is Antonio Damasio's somatic marker hypothesis (2005, p. 165- 204). The somatic marker hypothesis postulates that our emotional responses guide our decision-making, much more than dominant forms of education tend to recognise. More specifically, this hypothesis suggests *somatic feelings* trigger emotions (somatic markers) associated with previous experiences, and emotions in turn guide our rational thought and behaviour.²³⁷

Traditional teaching tends to focus primarily on two somatic feelings: vision and hearing. Using Antonio Damasio's hypothesis, Joy seeks to create visceral, or *sensory induced learning*, beyond just vision and hearing (2017). She designs novel learning environments and contexts to "invite felt experiences into the room", and work with environments and

²³⁷ Antonio Damasio describes somatic feelings as both interoceptive (internally focused) and exteroceptive (externally engaged). Interoceptive are the more internal sensations and feelings (pain, temperature, gut sense, tenseness, organ movement and functionality, etc), and exteroceptive are the senses more commonly associated with interacting with the environment: vision, hearing, smelling, tasting, touching (2005).

activities that ignite *emotional thought* (or simultaneous emotion and cognitive learning) (Immordino-Yang and Damasio, 2007, in 2017b). In the context of food, Joy explores the process of how students learn when working with food and through the sensory processes of cooking, eating, sharing memories, cleaning (2017b).

Joy views her *ontology and epistemology as inseparable*. Her ontological *agential realist* relationally creates the conditions for enacting an epistemological *emotional/cognitive* relationality. What do I mean by that? From Joy's perspective, the objects in her courses, such as engagement with food itself, as well as food selection, preparation and eating trigger exteroceptive and interoceptive senses, and thus emotions. Joy perceives that the performative agency of the material helps to create visceral<>cognitive learning in which feelings, emotion, course content, and patterns of living and being become conscious and entwine to emerge into new meaning patterns (learning) (2017a). In other words, Joy draws upon her ontological and epistemological stance to create learning conditions in which participants can *emotionally connect the learning content <> process, emotion <> cognition, body <> mind, and subject <> object*. Through these experiences, learners see less separation between themselves and the food they eat, and our food and the natural environment, and our food systems choices and the impacts on us/nature. She has observed how this learning then transfers into more socially and ecologically conscious lives, outside of the 'class/kitchen' room (2017b).

Summary of epistemological premises in the form of potential threshold concepts

The Leadership for Sustainability Education, Hawkesbury Agricultural College, and kitchen-based learning each have very diverse onto-epistemological beliefs and discourses. Yet, through this diversity, I offer illustrative epistemological 'threshold concepts' emerging from the vignettes and paradigmatic vision above (*Table 5*). Importantly, the table also illustrates how these stretched epistemological positions emerge from relational logics-of-perception; a characteristic shared across the vignettes.

| Epistemic complexification: potential threshold concepts for moving from dualism to multiplicity (plurality) to contextual relativism | | |
|---|--|--|
| Multiplicity, plurality, diversity | Knowledge is not concrete and absolute. Fulsome knowing is created by engaging multiple perspectives, including less-heard or marginalised perspectives. There are many ways of knowing which are often marginalised, such as women, Indigenous, working class. Recognition of everyone's radically diverse emotional/historical complexity and worldview. | Dissolving the divide between right and wrong, superior and inferior ways of knowing. |
| Contextual relativism | Learning through reductionism alone does not allow for the perception of emergence. Holistic knowing observes the parts in relation to 'whole' and in relation to unique context. | Overcoming separation between parts and holistic emergence. |
| | There are many paradigms with unique implications (advantages and blind spots), which can be used integratively to explore a situation. | Overcoming separation between epistemology and other meaning-systems. |
| | Tensions and paradoxes are inherent in complex (sustainability) issues. There is no single right answer. Regeneration and sustainability emerges within interconnected relationships between ecological, socio-cultural, political, economic, historical, and ethical aspects. | Overcoming right and wrong binaries |
| | All knowing and meaning have ethical implications. Holistic knowing includes ethical, aesthetic, spiritual considerations and implications. | |
| Holistic learning: potential threshold concepts for holistic modes of learning | | |
| Trans-rational | Meaningful learning also happens beyond the rational, empirical and abstract modes of knowing. Holistic knowing includes: intuitive, affective, sensorial, emotional, inspirational, aesthetic, spiritual, physical, experiential, reflective ways of knowing by engaging the whole person. | Dissolving the perceived divide between rational and trans-rational. |
| <i>Sense and emotions</i> | Our learning and decisions are influenced by our emotion contexts. Engaging senses, emotions and deep sharing is an important part of the learning process. Learning in a university setting can involve connecting deeply with your visceral senses, emotions and memories, and sharing of stories to co-develop more sustainable patterns of being. | Dissolving the rational/emotional divides |
| <i>Reflexivity</i> | Knowing is reflexive. Self-reflexive critical learning involves tapping into, interactively, three levels of learning about: matters at hand, learning, your worldview. Our actions are manifestations of our worldviews. We can enrich our worldviews by observing and reflecting on our actions with intention to change. | Creating relationships between our actions and our beliefs; reintegrating reflexivity into the dominant-cultural-paradigm. |
| <i>Praxis</i> | A personal philosophy on leadership and education develops and improves praxis. Fulsome learning involves integration of theory and practice. | Dissolving the theory/action divides. |
| <i>Inner and outer development</i> | Learning in a university can be about personal change. It can be an integration of daily practices of living (and the materials they involve), with subject matter content. Knowing has implications for daily living, not just something that can be learned in a text book. The inner work is the outer work, and the students spend time together in safe spaces to process their rites of passage, which strengthen their learning as a group. The students learn as much about themselves as the content and process of the course. | Bridging inner and outer transformation |
| Complexifying roles: potential threshold concepts for agency in the learning process | | |
| Societal vision | Building relationality with other students and facilitators is fundamental to everyone's engagement and learning. Teacher and students do not need to have traditional roles. The students are capable of leading the course, it is not up to the teacher to be the sage on the stage. Teacher engages as facilitator/learner. Both facilitator/learners and learner/facilitators are perceived less as 'Other' and more as guide or friend. | Lessening the teacher/student divide |
| Sense of self | Rather than an individual task, critical and collaborative learning systems can seek improvements towards inclusive well-being (of humans, other living things, our planet). | Decreasing the student/student divide, and learning/real world divide |
| Anthropology | The world and nature are teachers. Nature has the actual and symbolic ability to teach. | Lessening the separation and hierarchy between humanity and nature |

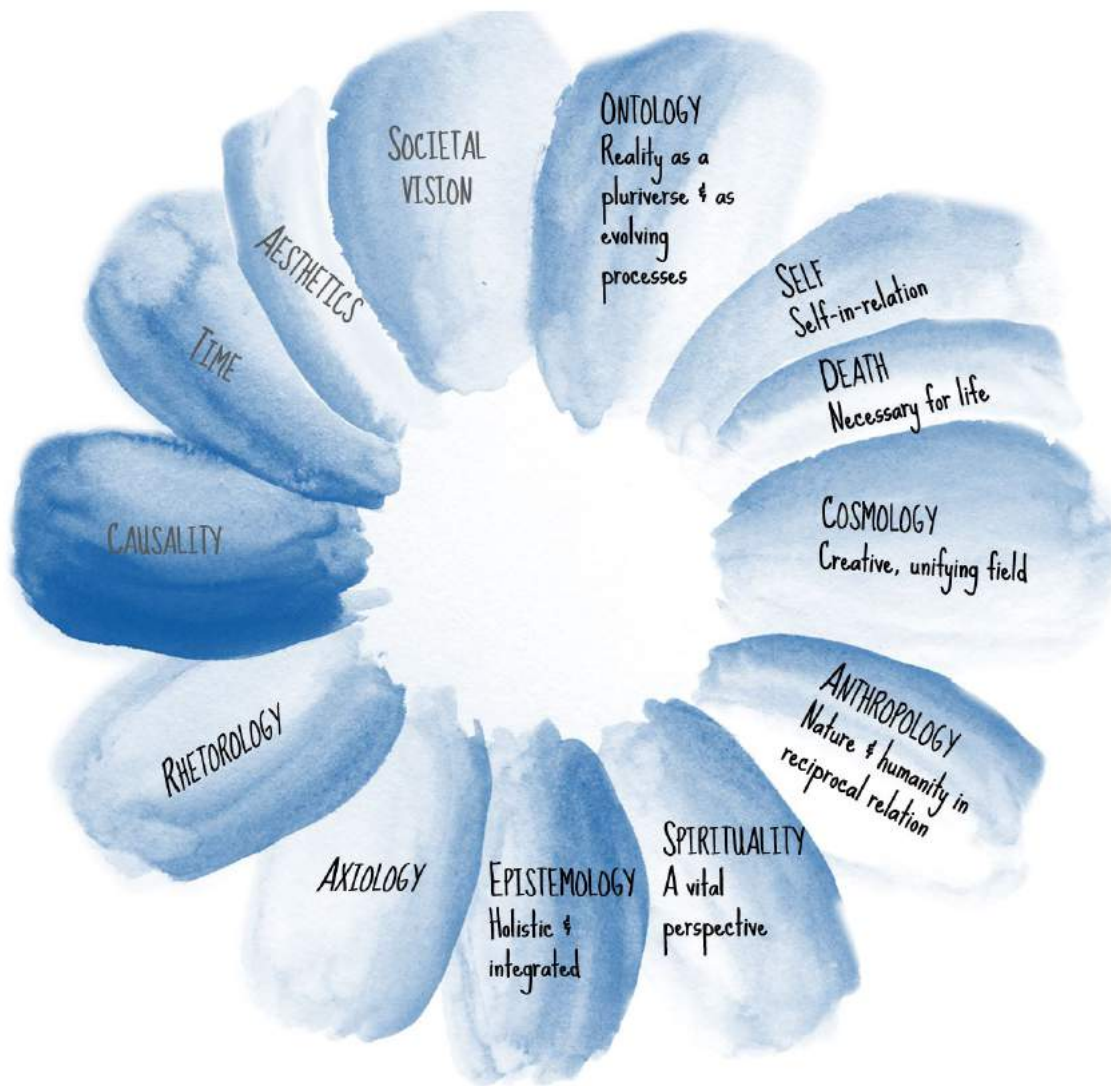
Table 15. Illustrative threshold concepts for potentially expanding epistemological meaning-systems

Recap and next steps

The epistemological beliefs (of truth, learning and knowing) espoused by educators in transformative sustainability learning are distinct from the dominant beliefs critiqued in *Ch 6.7*. However, rather than creating a hierarchical relationship, the epistemological stretches and transformations in *Table 5* can be seen as complementary ways of knowing. They *include and transcend* dominant ways of knowing; they can work in relation, and by bringing them together they create conditions for a change and evolution in ways of knowing. *Ch. 14 (Process: models)* describes how several vignettes seek epistemological integration experientially.

In taking a broad view of all of the meaning-systems discussed so far in this discussion of a vision for premises of transformative sustainability learning (*Premise chapters 8, 11, 12*), these espoused epistemological beliefs are in part enabled by recognising the deep relationality within which human life exists (e.g. an expanded sense of relationality through our onto-self-cosmological beliefs summarised in *Visual 58*).

This section continues to explore additional paradigmatic and worldview beliefs espoused within transformative sustainability learning, which influence the process of learning itself, moving on to premises of axiology and then rhetorology.



Visual 58. Summary of relational onto-to-epi meaning-systems (and the next two in *italics*)

12.10 Axiology: ethical (relational) knowing in action

Regenerating our axiological perceptions and beliefs

What do I value in life? How did and do I express or obtain these values? What do I strive for?

What is a good life? Which morals do I try to uphold and which circumstances? How do I express these morals? How is it important for me to be in this world? What would Goddess Diana, Shakti, Gaia, Mother Theresa, Mohammed, Jesus, Buddha, Krishna do?

When I look across my days and what I experience when meeting my needs (eating food, accessing goods, mobility, running errands, gaining knowledge, speaking with friends, colleagues, strangers), what is the patterning of values within these experiences: Ethical silence? Convenience, efficiency, certainty? Generative for self, community, planet?

.....

The dominant-cultural-paradigm was critiqued for its valuing of **efficiency, certainty, authority, hierarchy** and **domination** (Ch. 6.9). As complementary to these values, transformative sustainability learning envisions axiological manifestations of **compassion**, and the imperative of recognising **the inseparability between our axiological, ontological and epistemological** meaning-systems. This section sketches these espoused axiological beliefs.

The end of moral muteness

In the axiological vision put forward by transformative sustainability learning educators, “moral muteness is no longer possible” (Lange, 2018b). They argue that the perceived moral muteness in dominant, rational, techno-scientific ways of knowing was always only ever a myth as our axiologies actually inter-steep with and are inseparable from our ontological and epistemological views (Lange 2018b, O’Neil, 2018). Moreover, moral muteness is certainly impossible in a relational onto-epistemology.

Elizabeth Lange and Joy O’Neil invoke Karen Barad’s agential realism (or the recognition of material’s agency in co-creating reality) to explain this unavoidability of ethics and reciprocity. Karen’s new materialism (material as agential) demands an ethical stance because if we view “all non-living and living things on Earth as co-constitutive”, it is much harder to exclude these “entities or phenomena from ethical consideration” (Lange, 2018b). In recognising the role of the nonhuman (material and living) as agentic forces, we begin to feel the “binding obligations of entanglements” (Barad, 2012 in O’Neil, 2018). We become responsible for listening to the other and responding to the other, because in a

sense we are part of the other as well. We are all (Earth, material, human, more-than human) co-constituting each other. Instead of seeing difference and “insensible otherness”, we recognise and face our responsibility “to the infinitude of the other, welcoming the stranger whose very existence is the possibility of touching and being touched” (Barad, 2012).

Extreme self-love

David Selby agrees that an ontological perception of unity can foster axiological complementarity between humans, nature and others (2002). If I am the same as Others (i.e. there is a continuity between self and other humans, nature, non-living, more-than humans) and it is rational to act in my own self-interest, then “it is rational for me to act in the best interests” of the other (Callicott, 1985 in Selby, 2002). Selby acknowledges that this could also be interpreted as a profound form of narcissism, or self-love and interest. Narcissism, when practiced within a separatist ontology can manifest forms of unsustainability, but in a relational ontology he argues it would have an entirely regenerative meaning and effect on communities and nature.

Deep respect and compassion

In a relational reality, we are encouraged to ask and reflect on how our actions contribute to the coherence and resilience of the system (Lazlo in Lange 2018b; Laszlo, 2018). Thus, this profoundly deep kinship prompts *respect for all* (land, humans, plants, insects, animals, etc.) as we would our most loved ones (Allen, 1986 in Lange, 2018b). By keeping our actions in accordance with a perspective of interconnectedness, we act with a different set of values are highlighted: *caring, compassion, justice, respect, cooperation, affiliation, connectedness, empathetic sensitivity* (Lange 2018b; O’Neil 2018, Selby, 2002).

Stephen Sterling and colleagues retell a story that demonstrates how this type of learning can emerge within a set of open and supportive conditions. They tell the story of how one student set about to intentionally find out whether he could shift his own value set (after recognising his own unhelpful preoccupation with utility and efficiency in the learning setting) by practicing daily acts of generosity over a month, and studying his own shifts of in values and consciousness (Sterling et al., 2018). This student was surprised to see how his perceptions shifted, once he intentionally engaged with relational ways of being.

Two vignettes below further elucidate axiological premises for transformative sustainability learning. Even though using different discourses, both demonstrate how the

logic-of-perception of relationality profoundly changes how axiology is perceived in relation to epistemology, and the types of values that are desired.

Vignette: Hawkesbury Bachelor of Systems Agriculture

Ethical knowing in action (means) for ethical outcomes (ends)

Richard is ever reiterating the inseparability between intellect and ethics. In essence, his writing argues that *all knowing and meaning is axiological*, in that all knowledge and meaning has ethical and moral implications: we cannot be objective, our morals are intrinsic (2010). Once we (re)cognise this and (re)claim the lost art of moral reasoning to reconcile the scientific with the moral (2003) or integrate the ethical into the scientific (2010), our actions (and impacts) in this world will improve (2004). We will be better suited to enact ethically defensible action, or ethically responsible development (actions for change, improvement) (2004, 2005). Thus, he sees no separation between ethical scientific/intellectual knowing and the notion of action. In other words, not only is all knowing ethical, but *all ethical knowing should be used for ethical action*. Ethics guide our ways of being. Ethical knowing is essential in the quest for betterment, improvement, or for paths of responsible and sustainable progress (Bawden, 2005c).

But who determines whether actions are ethically defensible and responsible? Within the context of epistemological systemicism and ontological holism, Richard defines ethically defensible actions as those which respect and improve inclusive (relational) well-being (2002). And inclusive well-being includes what is both right and good for all: fellow human beings, other living organisms through to nature writ large and the ecology of the whole planet (1995, 2003, 2004, 2010).

For Richard, *relationships are at the core of ethically defensible action*. In fact, the notion of *relationality* weaves through three dynamics of ethically defensible action: a) its metaphysical stance, b) the ends it seeks, and c) the means to achieve it. From Richard's perspective, at the *metaphysical* level, the essence of morality would seem to be a 'deep appreciation of and profound respect for *one's relationships with others*' (2003). Guided by this axiological stance, the 'ends' or purpose of 'ethically defensible' (inclusive well-being) practices are thus to improve the *quality of our inter-relationships* between ourselves as 'human beings and our natural-cum-social realities' (1995). And how do we do this? Alignment between the metaphysical, the means and the ends, meaning: improving and healing relationships *requires an inclusion of those directly involved* in or affected by such development endeavours (2005). This process of collective, relational

learning (e.g. *the means*) requires a focus on **social relationships**, because morality lies in these shared networks and consensual action, not alone in any one individual. 'The means' must involve being relational and recognising the legitimacy of the other (1995).

The insight above, that ethically defensible action requires both means and ends that are integrated and in alignment (i.e. to improve quality of relationships as 'an end', we must ensure we do it as 'a means') is not commonly practiced in the dominant-cultural-paradigm. Richard argues that, in fact, many of the challenges we face today are because of the ability of the dominant-cultural-paradigm to **separate** means and ends (2003, 2004). Many of the decisions made today, for example as related to agriculture, are ethically *indefensible* means towards somewhat more ethically defensible ends (Bawden & Packham, 1998). As demonstrated above in the weaving of relationality through both the means and ends, Richard is not seeing means and ends as 'different', and thus judging them differently. Rather, **means and ends should be integrated and both morally and ethically judged** (2003, 2004), particularly in terms of the quest for betterment of societies (2003, 2005).

Vignette: Leadership for Sustainability Education

Fostering relational values

Within the living systems paradigm, different values come to the fore. Instead of the values entwined with **individualism** and **separateness** (such as status, acquisition, efficiency, commodification, profits, hierarchy), which exploit people and the earth, the living system paradigm prioritises an *inherent value* in nature, all living things and ecological and cultural diversity (Burns & Briley, 2015; Burns et al., 2015).

Learning *as* sustainability in a living system paradigm engages values at a very deep, embodied, lived level, within our way of being (Burns, et al., 2015; Burns, 2016a, b). Learning experiences are designed and enacted to also cultivate values such as **inclusivity, diversity, authentic relationships, community, collaboration, equity, justice, openness, resiliency, flexibility, balance, deep gratitude, hope, humility, care, compassion, love, and not least, joy in relation to Earth, self and others** (Williams et al., 2014; Burns, 2015; Burns et al., 2015). The values interwoven within a living systems paradigm, **of an ethic and practice of care**, also extends to the notion of self. By perceiving self as interbeing with others and the planet, self-care is really an act that is larger than self. Engaging in somatic learning can bring holism and healing by connecting the physical self to the greater social and planetary issues (Burns, 2015).

Summary of axiological premises in the form of potential threshold concepts

The axiological premises of transformative sustainability learning are quite distinct from and complementary to those of the dominant-cultural-paradigm (*Ch. 6.9*). Bringing them together, we can encourage change and evolution in the dominant axiologies. Using diverse discourses (e.g. living systems, posthumanism, systemic development), the vignettes and the literature all agree that moral muteness is not possible in transformative sustainability learning. All knowing is moral, and from a relational-logic-of-perception emerges values of respect, compassion, and inclusive well-being. These premises are illustrated in potential threshold concepts in *Table 16*.

| Illustrative axiological threshold concepts | Beyond-separatist perceptions |
|--|---|
| Ethical consideration should be equally applied to goals and the means we use to achieve our goals. | Overcoming separation between means and ends. |
| The essence of morality is a deep appreciation and profound respect for our relationships. | Overcoming separation between self and others; and people and nature). |
| Developing your own sustainability values and ethics is fundamental to being a sustainability leader. | Lessening divide between knowing and ethics. |
| We can step beyond our productivity focused society and incorporate activities that embody and value the appreciation of going slow and building relationality with space and with others. | Overcoming individualist, utilitarian notions of learning, by creating relationality to improve learning and being. |

Table 16. Illustrative threshold concepts for potentially expanding axiological meaning-systems

12.11 Rhetorology: need to complexify our beliefs

Complexifying and sensitising our rhetorological perceptions

Can language describe an objective reality? Does all language contain a worldview? How can language do harm? What kinds of harm? Can species only communicate with each other? Do mechanisms for cross-species communication exist? Or human and nature communication?



In response to the dominant belief in ***static, objective linguistic representations of an external reality*** in which human language is superior (*Ch. 6.8*), several transformative sustainability learning educators offer quite distinct alternative perceptions of communication and language, including ***communicating with the more-than-human, and even the cosmic plenum***.

In terms of expanding our views of language itself, educators wrote about communicating with the more-than-human, or transcending human written/spoken language. For example, M.J. Barrett and her colleagues (2016) provide the opportunity for students to experience, contemplate and critically reflect on the idea that ***nature literally has the ability to speak***. Drawing on an animist ontology (e.g. that all entities/particles have an inner experience), they offer exercises to experiment with the belief and perception that plants, animals, and spirits exist in communicative relationships with humans.²³⁸ Martha Chaves and her colleagues also demonstrate trans-human communication during the traditional Misak ceremonies of speaking to the spirits of the land (2017). At the cosmic level, Elizabeth Lange provokes us to consider, through her invocation of field theory, the existence of a cosmic field of information that communicates to the visible world on how to pattern and become into being (2018b).

Stephen Sterling and his colleagues (2018) focus on the notion of discourse, more in line with the poststructuralist critiques above to expand dominant beliefs about language and communication. In their postgraduate course, Schumacher staff explicitly articulate their belief in the ***agentic forces of language and communication***:

There is a suspicion of claims that [language] can, in any meaningful sense, provide an objective, value-free description of some pre-existing reality. It is,

²³⁸ This view is becoming less marginalised in the media and in the academy. See Marcia Gagliano's work, *Thus Spoke the Plant* (Gagliano, 2018), and her reviews in popular media, like the New York Times.

rather, seen as being embedded in, arising from, and reinforcing the dominant worldview, which, when unquestioned and unchallenged, it tends to insidiously reinforce. In short, we recognise that **linguistic devices such as metaphor and narrative function in our construction of reality**—and that prevailing linguistic forms tend to privilege the interests of the powerful, disenfranchising, and delegitimising other epistemologies or worldviews (Sterling, et al., 2018).

During their course, Schumacher students and staff maintained a “playfully irreverent relationship with language”, focusing on deconstructing words and their hidden power, history, connotative meaning, and bias (Sterling et al., 2018). For example, an area of the classroom is devoted to “the recording of words and phrases that are encoded with the ideological patterning of systems, values, and behaviours we are seeking to transcend, as well as of alternatives that could be more helpful” (Sterling et al., 2018).

Summary of rhetorological premises in the form of illustrative threshold concepts

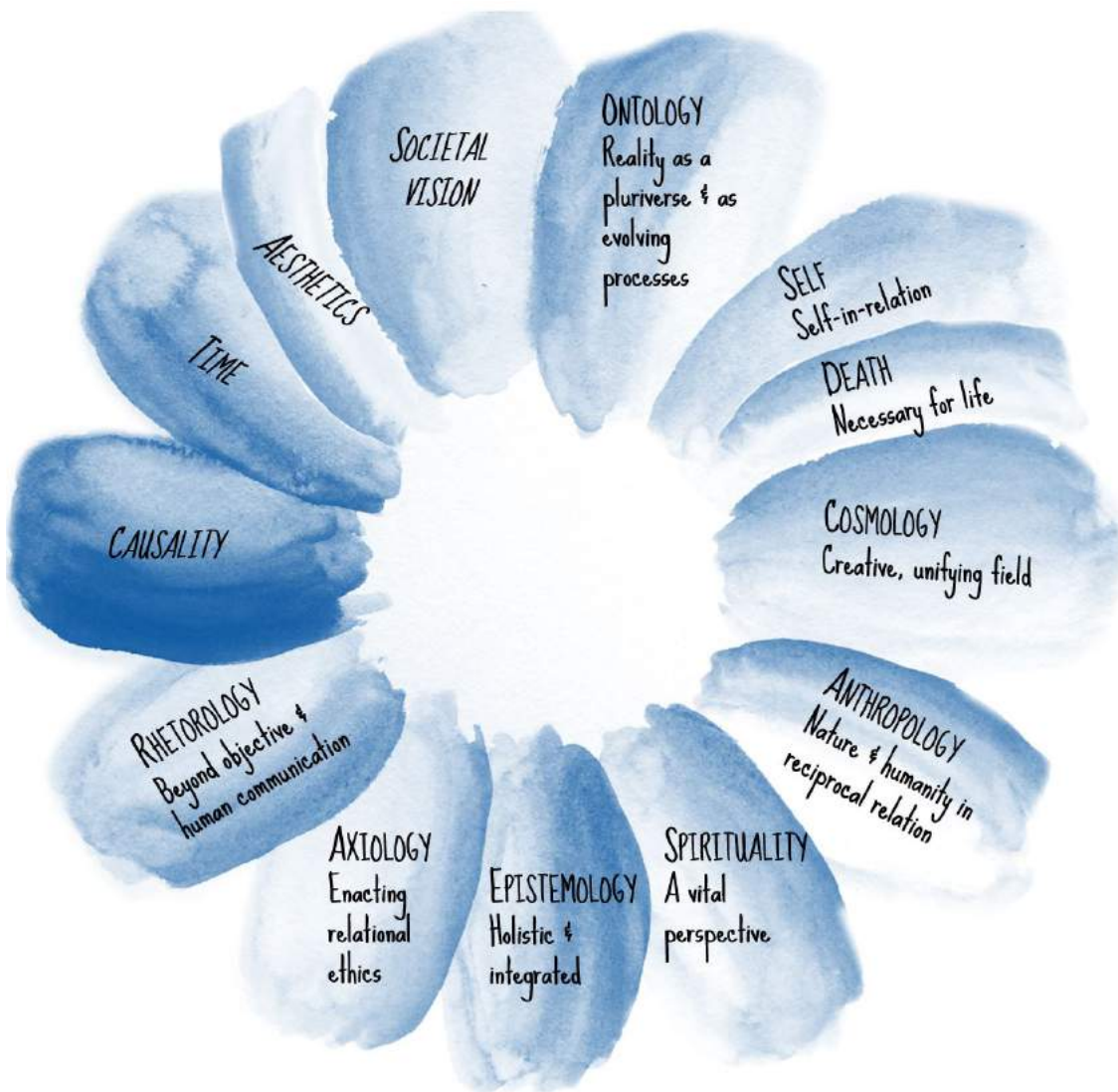
Illustrative threshold concepts arising in the literature review and the vignettes for rhetorological meaning-systems are summarised in *Table 17*.

| Illustrative rhetorological threshold concepts | Beyond-separatist perceptions |
|---|---|
| We can communicate with non-human nature and non-human nature can communicate with us. | Overcoming separation between humans and nature. |
| The power of dominant beliefs (represented in discourse) supports and/or undermines particular ways of knowing and being as in/valid. | Overcoming perceived separation between objectivity and subjectivity. |

Table 17. Illustrative threshold concepts for potentially expanding rhetorological meaning-systems

Recap and next steps

So far, I have demonstrated how the premises of transformative sustainability learning seeks to extend beyond the dominant paradigm (*Ch. 6, Premise: **meaning-systems***) as evidenced by stretches, shifts, complexifications within many meaning-systems (*Visual 59*). These transformations are enabled by a simple but profound shift towards relational logics-of-perception. The remaining meaning-systems I explore are time, causality, aesthetics and societal vision. I also reveal a similar patterning of relational logics-of-perception in these meaning-systems, and the expanded beliefs this perception enables (*Visual 59*).



Visual 59. Summary of relational onto-to-rhetorological meaning-systems (and those remaining)

12.12 Causality: beyond linear beliefs

Complexifying our perceptions of causality

When do I perceive causality as a linear 'x leads to y'? When do I move linearly towards predefined goals, or allow the unexpected to emerge? When do I perceive causality as quite complex? When do I perceive causes and effects as mutually co-arising? Is seeking causality a futile exercise, as what we encounter is emergent from the host of transactions at work?



Dominant beliefs of causality as a **linear process** can strip our consciousness and questions of perceptions of complexity (e.g. context, the impact of time, unintended consequences, etc.) (Ch. 6.3). Paradigmatically aware educators explore how **non-linear causality**, such as emergent causality, or more radical notions of mutual co-arising, or universal causality, may offer enhanced perceptions of reality.

In their third-order reflections and diffractions, transformative sustainability learning educators drew upon several fields to expand dominant notions of causality, including quantum physics, systems theories, and postmodernism; each of which I briefly articulate now.

At the quantum level, causality is determined by *nonlocal coherence*, meaning that the interactions are not locally determined but rather are influenced by some factor beyond local time and space (Ch. 9.4). Elizabeth Lange engages the insights of Albert Einstein, Werner Heisenberg, Niels Bohr, and David Bohm to discuss and integrate non-linear causality (Lange, 2018b). Within our macro world, systems and complexity onto-epistemologies help us to perceive beyond any single end point.

Systems theories heighten our awareness of multiple and circular causality, via balancing and reinforcing feedback loops. That said, they also encourage us to recognise that the complexity that exists is beyond disentanglement and comprehensive accounting (Lange, 2018b).

The postmodern philosophies expand perceptions of causality more towards Buddhist notions of mutual co-arising (Sebastian, 2018), or the belief that processes are both causes and effects at the same time. Humans, materials, more-than-humans are both acting (Subject) and acted upon (Object), simultaneously (Lange 2018b, O'Neil 2018).

By engaging with these diverse discourses of cause and effect, worldview-reflexive

educators can increase their own consciousness on how linear logic manifests in their courses, and in their own perceptions of reality, and in the society around them. Using this insight, learning experiences can be developed to complexify the (relation-destroying) actions undertaken in a linear logic. The following vignette provides an example of this within the Leadership for Sustainability Education program.

Vignette: Leadership for Sustainability Education master's

Conditions for emergence, rather than linear logic

Heather's learning process seeks to move beyond linear assumptions. She recognises that transformative sustainability learning is not a linear process, in which educators can bring students from point A to point B. Rather in a living systems paradigm, educators can set up the conditions for change to occur through a necessary mix of structure and fluidity to allow for emergence. This paradigm allows educators to let go of obtaining pre-determined outcomes, particularly in terms of 'changing learners'. For both educators and students in the learning process, the invitation is opened to perceive, value and notice the roles of chaos and coherence. Rather than linear, learning is iterative and interconnected; it's: economic, cultural, historical, relational, ecological, spatial, etc. (Burns, 2015).

The Leadership for Sustainability Education program also illustrates how non-linear causality can influence perceptions and 'enactions of leadership'.²³⁹ For example, leadership in the dominant-cultural-paradigm has tended to be perceived (and enacted) by the single, male sage at the *top of the hierarchy*, who holds all of the wisdom to guide a group of people *predictably and linearly* through a challenging situation. Leaders tends to be perceived in a *binary state of having or not having* leadership qualities.

In contrast, Heather engages a living systems ontology to enact a new paradigm of leadership. From the perspective of a relational ontology, leadership is found in the between-ness, between people and situations. In other words, leadership is a shared, distributed process. Sustainability leaders learn to trust that different things can emerge when we truly collaborate together, so instead of leading hierarchically (*separate and superior*), we are leading with (*relationally*) (Burns et al., 2015).

²³⁹ This phrase may sound lengthy, but it's meant to highlight the notion of orders of learning. We can lead (first-order), and/or we can be aware of how we are 'enacting' the process of leading, as a means to improve it (second-order), and/or we can consider philosophical worldview beliefs to explore completely different alternatives for enacting the process of leadership (third-order).

Simply stated, sustainability leadership identifies and empowers the leader that exists in each person (Burns et al., 2015). Each student is enabled to perceive and strengthen their own leadership and collective ways of doing and being. With experience being primary, students practice and enact leadership as decentralised, dynamic, emergent, non-linear and *exhibited collectively within the relating* (Burns, et al., 2015; Burns, 2015). In this sense, Heather describes the process of becoming a 'leader for sustainability' as potentially being a shift, stretch, transformation in worldview depending on where learners are starting from (Burns et al., 2015).

The following quote illustrates the benefits of letting go of the desire for linearity and control as it manifests in collective inquiry for change. Learners experiment with an emerging process and develop comfort with allowing change and flexibility. That is, becoming a sustainability leader can mean letting go of control, and valuing disorder and emergence. Several of Heather's learners reflected on this point after the course:

One of the things I've learned from the experience of this class is that you can't come up with a master plan and then expect others to just implement it...My biggest challenge has been learning to let go of a certain amount of control and input, and then learning how to nondestructively reassert my voice...". Students came to value disorder and chaos as a productive element of an emergent leadership process. Taylor explained the importance of leaders "not providing detailed directions or answers but asking hard questions and encouraging disorder...In her final paper, Alice commented, "I've been learning that it's okay to deviate from that linear path, that everything is fluid; it's not always linear (Burns, 2016a).

Instead of creating a project in a linear way (determining the problem and the solution, and setting goals, and "charging ahead no matter who is left behind"), projects in the Leadership for Sustainability Education can be developed in non-linear ways (through practicing and noticing the importance of emergence, chaos, information, coherence).

The Hawkesbury agricultural course is also based on facilitating experiences within increasingly complex notions of emergence, which is interpreted more broadly in the following *Ch. 14, Process*.

Potential threshold concepts arising from the vignettes relating to causality

Perceptions and beliefs about causality inform the premises of transformative sustainability learning. These complex conceptions of causality are quite distinct and

complementary to those of the dominant-cultural-paradigm (Ch. 6.3), and hence have the potential to provoke changes in dominant beliefs of causality. Using diverse discourses (e.g. living systems, posthumanism, systems theories, quantum sciences), the vignettes and the literature call for a beyond-linear perception of causality. These premises are illustrated in potential threshold concepts in *Table 18*.

| Illustrative threshold concepts for causality | Beyond-separatist perceptions |
|--|---|
| Very different worldview perceptions and beliefs about causality exist. These various beliefs of causality manifest in many ways in our actions and have significant implications for the types of outcomes we create. We can perceive how linear views of reality are an extremely reductive view of the complex relationships within which we exist. | Moving beyond notions of right and wrong way to do things. |
| Becoming a sustainability leader can mean seeing the productive element of disorder and creating the conditions for unplanned emergence. | Lessening perception of humans as separate from and superior to material reality. |

Table 18. Illustrative threshold concepts for potentially expanding beliefs about causality

In sum, beliefs about causality are an important meaning-systems of our worldviews. Third-order reflexive scholar-educators can bring awareness to their beliefs about causality and then create the conditions for learners to engage in developing their awareness of their own perceptions and enactments of causality.

The next two meaning-systems that I observed informing the premises of transformative sustainability learning are beliefs of *time* and *aesthetics*.

12.13 Time: Beyond linear beliefs

Evolving our perceptions of time

When do I perceive time in terms of a linear past, present, and future? When do I perceive circular movements of time? When do I perceive the past, present and future as an ever-present collective? Can I communicate across time and space?



Perceptions of time featured just once in my reading of transformative sustainability literature.²⁴⁰ In her discussion of philosophical premises of transformative sustainability

²⁴⁰ I should note that Michel Alhadef-Jones is making significant headway in exploring notion of time in relation to transformative learning and emancipatory learning, e.g. how does the social construction of time

learning (2018b), Elizabeth Lange recognises and moves beyond dominant perceptions of *linear, clockwork* time (Ch. 6.2) by invoking three diverse philosophies of time.

The first view is synthesised from the “key ideas shared in quantum physics, living systems theory, Indigenous philosophies, and Eastern spirituality”, which is of time as “*relative and in motion, flowing at different rates in different dimensions*” (2018b).

The second view emerges from complexity theory, and is the insight for which Ilya Prigogine was given the Nobel Prize in 1977 (Ch. 9.3). As time passes, conditions and processes interact, dissipative and autopoietic structures²⁴¹ bifurcate and re-organise into greater forms of complexity. In this conception, change accumulates and change is *irreversible over time*, as opposed to the Newtonian view of reversibility (Lange, 2018b).

Finally, Elizabeth Lange explains how field theory (12.4) has implications for our notions of time. Field theory stretches us to conceive of *the past as ever-present* by “creating the context out of which selected paths of change are chosen” (Laszlo, 2008, p. 118, in Lange, 2018b).

Why and how do educators engage with these different perceptions of time in learning experiences? In M.J. Barrett’s courses, she and her colleagues create the conditions for students to perceive how communication might be possible *across time*, space and species, as recognised in Indigenous cosmologies (Tetlich 2011c in Barrett, 2013), in order for learners to be able to embody ontological humility, epistemological agility, and valuing diversity when working with people from beyond-dominant cultures.

Elizabeth Lange mentioned meditative practices, rhythms and repeated phrases to develop nonordinary levels of consciousness in which “*space and time disappear* and a higher multi-dimensional reality is experienced” (Lange, 2018b), similar to experiences discussed in Ch. 11.4. If students gain an awareness that their beliefs about time are just that – perhaps partially correct, but incomplete - then experiences of additional perspectives on time have a greater chance of also being seen as valuable, and potentially representing additional, meaningful, beyond-dominant, more relational ways of being.

Bob Jickling, leader in environmental education, asks how we as educators can find ways

influence individual and social action (Alhadeff-Jones, 2016, p. 2)? While I did not engage with his work in this inquiry into transformative sustainability learning, it would no doubt offer significant stretches and complexifications of our concept of time.

²⁴¹ E.g. self-organising and learning structures in symbiosis with their environment, as originally described and continually explored by Humberto Maturana and Francisco Varela.

to step out of the linear time as it manifests in the modern school system and encounter time working in different ways (Jickling, Blenkinsop, Morse, & Jensen, 2018). The following vignette provides an example of transcending dominant notions of time as a response to the question posed by Bob Jickling (et al., 2018).

Vignette: Semester in Dialogue, Simon Fraser University

Conditions for transcending dominant notion of time

The Semester in Dialogue course runs for 12 weeks, five days a week. While the course is incredibly busy (Process chapter 14), each Friday is dedicated to flow. On 'Flow Fridays', the students and the educators embody a different experience of time, a slowness or a meandering time. This experience allows students to observe what emerges when we perceive time less as a measure of productivity and more as a quality:

On Fridays, we have a new thing this year called Flow Fridays which was all about getting out of the project and just into a different Flow state and it was amazing. A lot of the students, they're so wound up these days, they're so anxious, and so many of them are on medication and the world is just wound up, I guess. And so, we take them to the beach or go for a hike, or go to these weird gardens and they were like, "we can't, we have so much work to do". And we'd say, "no, this is exactly why you should go." And the lesson was 'Flow Fridays' are so important for my mental health, for stopping work, because of [what] our productivity kind of world [imposes on us].

As above with Heather's meditative processes for creating relationality amongst students, several of Janet's students were resistant to these days at first, with questions of "What is the purpose of exploring parks, why are we not 'learning'" and responses of "We don't have time to do this". This is an opportunity incorporate these moments into reflection and learning about the assumptions underpinning these emotions: "Why are we so busy today? Why do we think being together in nature in the place of our learning is not relevant? Why do we conceive of learning as only taking place within a room in a university?" These discussions can lead to third-order reflection, illustrated in the threshold concepts below.

Potential threshold concepts relating to beliefs of *time*

Perceptions and beliefs about time can inform the premises of transformative sustainability learning. These notions of time are quite distinct and complementary to

those of the dominant-cultural-paradigm (*Ch. 6.3*), and hence can create the conditions for an evolution in the dominant notions of time. Using diverse discourses (quantum physics, living systems theory, Indigenous philosophies, and Eastern spirituality), the vignettes and the literature call for building an awareness of qualitatively different experiences of and beliefs about time. These premises are illustrated in potential threshold concepts in *Table 19*.

| Illustrative threshold concepts for time | Beyond-separatist perceptions |
|---|--|
| We humans can communicate across time. | Moving beyond separatist notions of past, present and future. |
| We do not have to buy solely into the productivity notion of time. Through intentional engaging in other activities, we can experience time in vastly different ways. | Blurring the line between objective measurable time, and subjective/relative time. |

Table 19. Illustrative threshold concepts for potentially expanding beliefs about time

In sum, our perceptions and beliefs of time are an influential and often unconscious belief in our worldviews. Educator-scholars can develop an awareness of these, and explore how alternative experiences of time open up the space for beyond-dominant ways of being.

12.14 Aesthetics: Appreciation of beauty

That art is a worldview incarnate is especially manifested in epic and lyric poetry as well as in the dramatist or singer of lyrics.

(Naugle, 1998, p. 66)

Aesthetics, or beliefs about beauty, are the final significant and often unconscious set of belief patterns I note in the inquiry.²⁴² Through experience, these beliefs can be made conscious within educators and learners so as to explore the relationship of aesthetics to ways of knowing in general (in an Alexander von Humboldt's and John Dewey's

²⁴² I did not engage with aesthetics as a worldview meaning-system in a systematic and intentional way, as with the others, because of my previous worldview beliefs. When I began my thesis, I did not have an awareness of the importance of aesthetics as a 'meaning' system. During my hermeneutical reading of John Dewey, I considered picking up his book "Art as experience" (1934), but in my state of consciousness then, I could not justify the connection. I considered art to be different to what I was inquiring into. Perhaps this was my automatic response from a culture informing me that art is separate to the hard work of 'achieving sustainability'. Needless to say, my own philosophy has changed over the past four years. Even though I do not have time to re-engage with all of the philosophical and transformative sustainability learning literature comprehensively from this perspective of aesthetics, I provide this section as a provocation on the importance of this meaning-system.

philosophies). In fact, there are schools of thought that argue aesthetics must be engaged in order to meaningfully integrate the inner and outer world (SAIIEER, 2010).²⁴³ For Gregory Bateson, the question of aesthetics was essential, in addition to the sacred and consciousness, in developing a theory of action in the living world (Bateson & Bateson, 1987). Vignette educator Heather Burns incorporates poetry, metaphors, music, and student creations of all kinds to explore the meaning of sustainability, values, and understanding of sustainable improvements (Burns, 2015). The following vignette explains how aesthetics is a significant meaning-system within their learning experience.

Vignette: Semester in Dialogue, Simon Fraser University

Learning that aesthetics matter

As mentioned above in the vignette on transcending dominant notions of time, the ‘Semester in Dialogue’ course is an intense 13-week experience in which the learners, from diverse disciplines, work with city council staff and other stakeholders to design and implement an initiative for improving community well-being and sustainability. Learning about the aesthetic meaning-system is an explicit part of the Semester in Dialogue’s Manifesto:

*We sit in a circle and speak from our hearts and our minds. We learn to listen. We learn to enjoy the long pause that emerges in a rich dialogue. We learn how to design. We find better problems to solve. **We learn that aesthetics matter*** (CityStudio, 2020).

Each day of the week is devoted to different experiential learnings. In addition to Flow Fridays (and the other days discussed next in Ch. 14, Process), Tuesdays are design day. In the studio with a design instructor, the students engage deeply in the philosophy and practice of aesthetics and beauty, in the projects that they develop and collectively bring into being in the city, as part of the class.

The main purpose of the Semester in Dialogue course is to, through collaborative design and learning, take action towards an improved society. This desire for actual change

²⁴³ “The awakening of the aesthetic being, leavened by the ethical, is an essential basis on which to build the powers of reason; a reason that seeks to reach beyond itself towards the harmony of the supra-rational beauty and good.” (SAIIEER, 2010, p. 21).

through the course was also the case for most of the vignettes, which links with our final meaning-system: societal vision.

12.15 Societal vision: Systemic, regenerative societies

Experimenting with other societal visions

How should society ideally be organised to meet everyone's needs (and who is 'everyone')?

What are the types of relationships between governing, spirituality, exchanging? Does economy come first? Or does nature and the environment form the contextual boundaries for all we do? In which forms is unlimited progress (evolution) a desirable possibility: technological, economic, self-development, social diversification?



Our societal vision, as defined in this inquiry, is our perceptions and beliefs about how to organise society.²⁴⁴ Similar to the preceding-philosophers, the third-order-reflexive educators articulated aspects of their societal vision. Preceding-philosophers called for societies in which liberation, hope, equity, ecological balance is prioritised over economic and government ideologies (Dewey, 1927; Freire 1970; Jantsch, 1970; Morin & Kern, 1988). In resonance, transformative sustainability learning educators called for ***regenerative, restorative, democratic, decentralised societies*** (Lange, 2018b; Selby, 2002).²⁴⁵

Educators' views of society were both global and local. Globally, educators argued a fundamental task of transformative sustainability learning is to "make the choice for a sustainable planetary habitat of inter-dependent life forms, over and against the dysfunctional calling of the global competitive marketplace" (O'Sullivan & Taylor 2004, p. 2 in O'Neil, 2018). Locally, Elizabeth Lange also envisions a society that is regenerative, socially just, environmentally and economically restorative. She offers a vision for a transformed economy via economic democracy, parity, and mimicry of biological and natural processes (2018b). While not explicitly stated, the purpose of M.J. Barrett's course is to create a future where Indigenous and non-Indigenous engage effectively in

²⁴⁴ After Annick De Witt's work on worldviews e.g. 2014, in which she defines societal vision as life philosophies on how society should be organised.

²⁴⁵ I note this section does not include a discussion on power, an idea central to sociology. This aspect of the premises of transformative sustainability learning could be further explored and articulated.

developing innovative collective steps to address wicked problems (Barrett et al., 2016).

The following vignette more fully explores an example of societal vision as a premise for transformative sustainability learning.

Vignette: Leadership for Sustainability Education master's

Societal vision as a premise for transformative sustainability learning

In the Leadership for Sustainability Education program, Heather brings forward her vision for societal organisation and the role of learning in relation to this societal vision. Heather is critical of the economic trap societies are caught in, created from the myth of inexhaustible natural resources (Burns, 2015). The vision of continuous growth, rising to even greater heights in the global free trade economy and built on the use of cheap and non-renewable sources of energy, is ecologically and socially costly (Burns, 2015). A societal vision within a living systems paradigm seeks social, ecological and economic justice, based on equitable distribution of power and resources (Williams & Burns et al., 2014). Thus, transformative sustainability learning engages students personally and intellectually as citizens and as creative change-agents in the tensions created by the interconnectedness of our social, ecological, economic, political, historical, personal systems, to work toward more just and equitable futures (Burns, 2015). For example, the students work with dynamics of power, hierarchy, marginalisation and voice within society when engaging in thematic, experiential issues during the program.

Summary of *societal visions* in the form of threshold concepts

The vignette and literature synthesised above illustrate threshold concepts for societal visions, which could potentially stretch learners existing worldviews (*Table 20*). These beliefs could inform the experiences of the learning, and thus be made conscious, articulated and reflected upon with learners (e.g. as in how these beliefs manifest in our lives and in society).

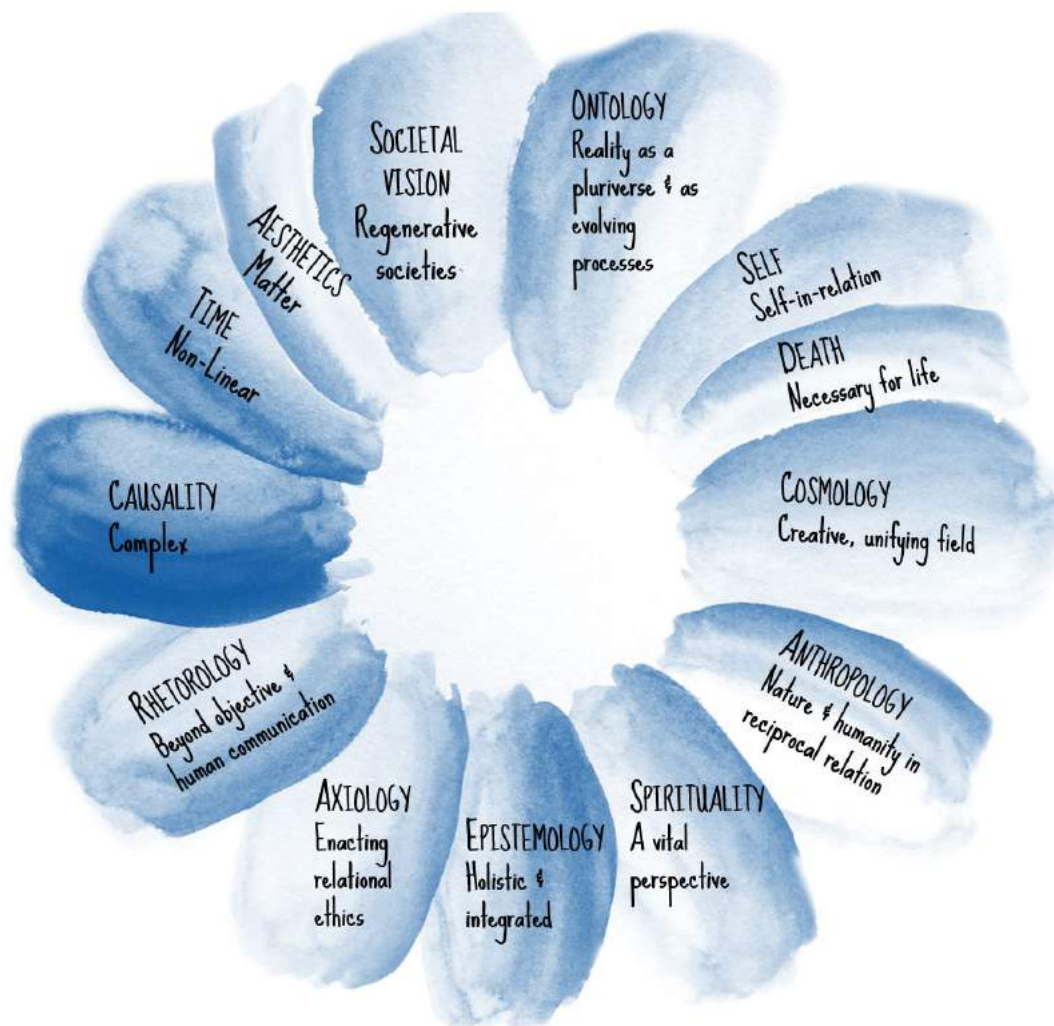
| Illustrative societal vision threshold concepts | Beyond-separatist perceptions |
|--|---|
| Mechanisms of power create oppressive forces, which marginalise and can also be collectively resisted. | Lessening the divide of power and powerless. |
| I exist within, create and am shaped by forces, contexts and encounters reflecting racism, sexism, classism, and anthropocentrism. | Lessening the divide between these issues as concepts and one's lived experience. |
| Impactful learning happens outside the walls of the university, in partnership with the city. | Removing the barriers between learning and living. |

Table 20. Illustrative, potentially transformative threshold concepts for our societal visions

In sum, societal visions are an important meaning-system in our worldviews. Reflexive scholar-educators can bring awareness to their unconscious and conscious beliefs for a societal vision. With this awareness, they can create the conditions for learners to experientially engage in developing awareness of their own societal beliefs.

12.16 Summary

The preceding analytic and synthetic process of *Premise chapter 12*, and more broadly *Premise chapters 6-12*, has sought to “signpost and articulate a more systemic, holistic, and integrative worldview” to “underpin this work” of transformative sustainability learning and “offer a more whole way of seeing and being fit for our threatened and fractured times”, as Stephen Sterling and colleagues suggest we must (Sterling et al., 2018). Elizabeth Lange and others agree that the type of worldview shifts revealed and probed in *Premise chapters 1-7* are a powerful foundation for transformative sustainability learning and moreover, are necessary to facilitate a cultural shift (Burns, 2018; Hathaway, 2017; Lange, 2018a, 2018b; O’Sullivan, 1999).



Visual 60. Meaning-systems infused with relational and processual logics-of-perception

Chapter 13:

Synthesis

This brief chapter summarises and synthesises the preceding seven chapters, which collectively begin to cohere into the premises of transformative sustainability learning.

To articulate the philosophical premises that could underpin transformative sustainability learning, I robustly interwove several important perspectives including preceding-philosophers of transformative sustainability learning, recent literature, and vignettes of transformative sustainability learning. Employing emergent hermeneutical processes, I surfaced and advanced philosophical *critiques* (Ch. 6 and 7) and *visions* (Ch. 8, 11, and 12) for two levels of reality: at the deepest level of our logic-of-perception (Ch. 7, 8, and 11) and then our individual worldviews and cultural paradigms (Ch. 6 and 12).

13.1 Exploration of logics-of-perception

The dominant paradigmatic logic, as I have cohered from five philosophers and vignette-educators is an either/or, *disjunctive logic*. As we perceive, so we create. We think we are separate from nature and so we design our cities and homes and institutions as separate from nature. This perception<>enaction of *disjunction* is enabled in a noun-focused, static, mechanical disjointed view of reality. This type of logic separates the world into Cartesian coordinates and forgets that this separation is only a temporary pause of time. This logic forgets that there is also relationality, intra-action and evolution dissolving these coordinates as soon as they are conceived. This type of extreme boundary setting and separation has led to many atrocities (Obeng-Odoom, 2016), e.g. where “the ‘self’ maintains and stabilizes itself by eliminating or dominating what it takes to be the other, the non-I” (Barad, 2014).

A defining feature in the hermeneutical interpretation of the preceding-philosophers and vignette-educators was their “changed way of seeing”(Sriskandarajah et al., 2010). Though their terminology differed, each had intentions for complexifying the dominant fragmenting perceptions towards relational logics-of-perception (*Premise chapters 8, 11*). Vignette-educators adopted and enacted these relational logics-of-perceptions from various philosophical works, namely general systems theory, posthumanist philosophies, and other cultural philosophies.

An integral question of this inquiry is then: *how should the dominant culture transition towards beyond-separatist logics-of-perception? And, what should be the relationship between a separatist (dominant) and relational, processual, evolving logics-of-perception?*

Amongst the preceding-philosophers was an assertion that the ‘logic’ of separation still holds value, and should be placed within context of a relational logic. For example, Basarab Nicolescu argues that the black or white, excluded middle, technocratic, complicated perception is valid in certain times of say *driving*, or in *situations of extreme danger*. But even these assertions can be questioned.

What if we used relational, processual, evolutionary logic for designing our mobility infrastructure and services? For example, most driving in Hanoi, Vietnam is through a relational, situational awareness: it is a perception of all that is moving around you, and movement-in-relation-to-others, that guides driving. Societies steeped in the dominant-cultural-paradigm have developed road networks according to either/or logic, perceiving that we must use this logic within it to survive. However sometimes this logic is just as deadly.²⁴⁶

This exploration into the numerous additional relational, processual and evolutionary logics, prompts us to ask: how well do the overall mobility systems align with the logic of

²⁴⁶ For example, of relevance is a tweet I read when taking a break from writing this section. The tweet responded to article about the death of a pedestrian by a driverless uber car. Both the report and the caption of the tweet demonstrate the repercussions of binary logic forming technological intelligence and increasingly dictating our relations with the world. The excerpt of the report states: *Despite the fact that the car detected Herzberg with more than enough time to stop, it was traveling at 43.5 mph when it struck her and threw her 75 feet. When the car first detected her presence, 5.6 seconds before impact, it classified her as a vehicle. Then it changed its mind to “other”, then to vehicle again, back to “other”, then to bicycle, then to “other” again, and finally back to bicycle. It never guessed Herzberg was on foot for a simple galling reason: Uber didn’t tell its car to look for pedestrians outside of crosswalks.*

In response to this report, the Tweeter captioned: *“Oh but when I say that a computer science establishment that fetishizes formalised, reductionist ontologies of the world will have long-reaching, hard to predict detrimental impacts in human well-being, people look at my funny”* Avdi Grimm, 4:27 am, 7/11/19.

our interdependent and relation-dependent Gaia?²⁴⁷ Are there other mobility options that allow spaces of relational perception, such as walking, biking? Aside from the social organisation of mobility, there is also the technology itself. To what degree do our technologies (fossil fuel engines) respect or denigrate the logics of relation and collective ethical-wellbeing? How could we and should we design transport systems that are more infused with relational logic? Are social and technical systems created using separatist logic fundamentally misaligned with the life and evolutionary sustaining logics of relationality?

And what about situations of extreme danger? Must we also act in such moments with a binary logic of right/wrong? Nora Bateson recalls a story where when driving down the California road with her father Gregory Bateson, Gregory stopped to pick up a hitch-hiker who subsequently pulled out a knife and demanded money. Even in this moment of potentially extreme danger, Gregory immediately asked of the armed hitch-hiker: “*Well, how did we end up here?*”, knowing that this person was not ‘bad’ as opposed to ‘good’, but rather a complex being emerging from contextual learning throughout his life. And presumably, by phrasing the question as ‘we’, he acknowledged that it wasn’t just a situation that the hitch-hiker found himself in, but a situation they all shared in this moment and that Gregory was willing to help. Through Gregory’s relational, compassionate response, the person in that moment of being a ‘hitchhiker-would-be-robber’, opened up, and began relating, and in the end, Gregory was able to offer help to this person to step into a new moment of being ‘vulnerable’ and ‘honest’.

Gregory Bateson’s response was automatic, instinctual, enabled by a deeply engrained relational, contextual, *beyond-separatist logic-of-perception*.²⁴⁸ How would a dualistic response, rejecting context and relationality, perhaps have caused even greater harm to Gregory, his daughter, and the person being a robber in that moment? How do we also remember context, regardless of the situation and its urgency? Where would that lead us? For each the preceding-philosophers, and Indigenous cultures, remembering context is paramount; for relationships, processes, transformations are found and honoured when we perceive the context, as opposed to excising a bit and separating it from that which

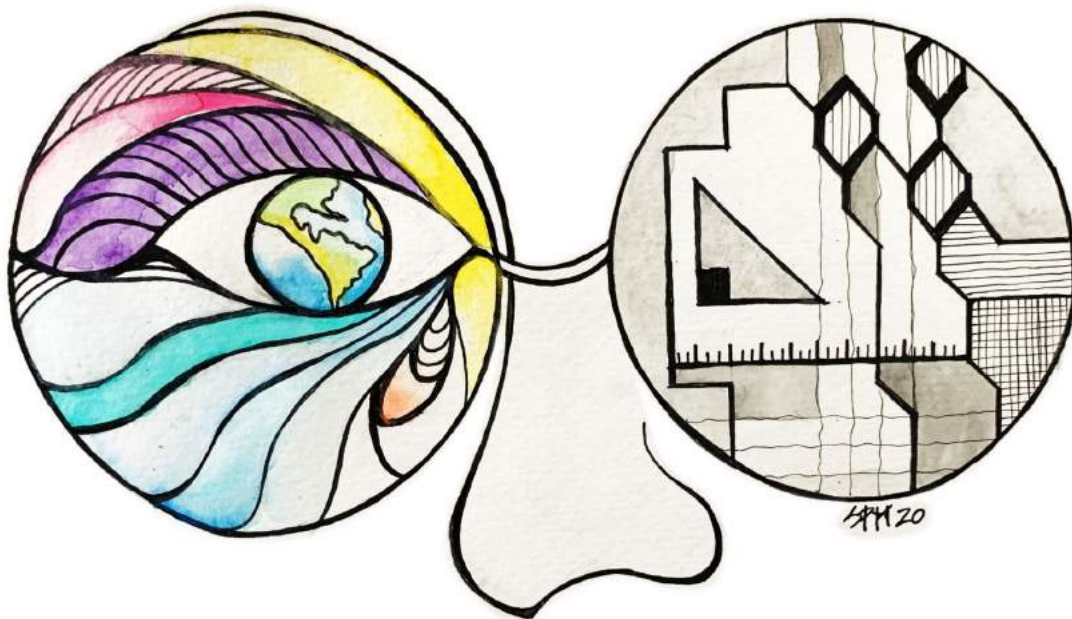
²⁴⁷ ‘Gaia’ as in James Lovelock’s scientific *and* moral theory that the Earth is alive in that she is able to heal and self-regulate; a theory quite controversial in its own right, as an re-integration of onto-epi-axi-spirituality (Barrotta, 2011).

²⁴⁸ As Gregory and Nora Bateson would say, he had absorbed systemic thinking, perception, awareness, consciousness into his elbow. This is not an intellectual exercise for him, but rather a way of being-and-perceiving-in-relation-with-the-world-and-self.

creates it and from what which it contributes to. Should we equate the need to act quickly with the need to use reductionist logic? What if we can act quickly, in relational ways, as demonstrated by the story of the hitchhiker above?

The ‘answers’ to these questions are to be found in the context within which they arise in our specific inquiries and actions, but the important point here is to remember to ask these questions: which logic-of-perception are we using, and how are they working in relation to each other and the world? Is our use of certain logics-of-perception based on the context or are they based on our cultural indoctrination of ‘common sense’?

Importantly, the perception of *difference* and *reduction* is not harmful in and of itself. The perception of *distinction* helps us to perceive and value diversity. It is just when distinction alone becomes separation, which all too often becomes hierarchy, which then all too often becomes unhelpful perceptions of unity (e.g. a monoculture, rather than unity in diversity). Our challenge then is to be aware of what perceptions we rely on and can intentionally bring to the moments of our days.



Artwork 10. Perception of relation and process, with distinction (Seth P. Morrison, 2020)

13.2 Exploration of meaning-systems

Our logics-of-perception infuse and in-form our worldviews and paradigms, or “third-order premises”. One of my major contributions in this inquiry is the enriched, expanded

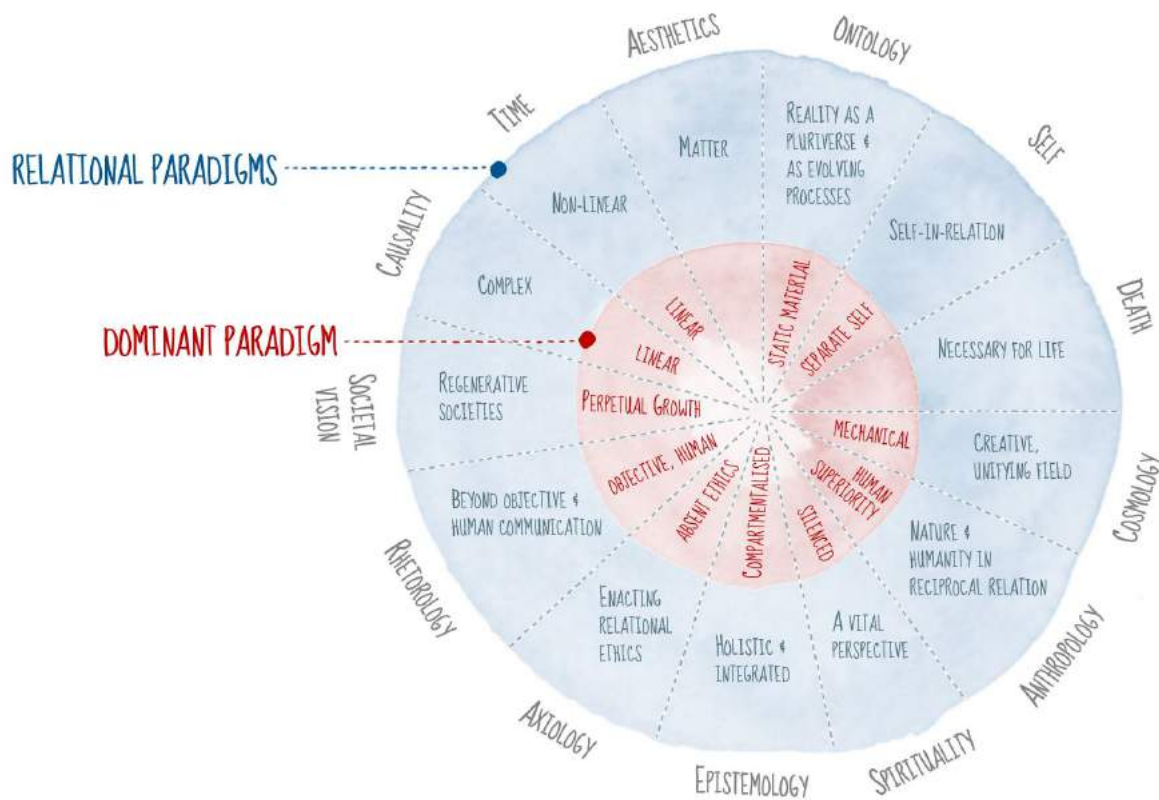
and synthesised notion of third-order premises of more systemic, holistic and integrative worldviews by explicating often unrecognised meaning-systems.²⁴⁹ I distilled these potential meaning-system shifts and transformations into illustrative threshold concepts for life-long learners (*Ch. 12, Premise: meaning-systems*). As I demonstrate in the following *Chapter 14*, these threshold concepts are imbued in the process (context) of *experiential learning*, rather than intellectual points within which to begin a lecture. I must reiterate a very important distinction here: these beliefs are not to imbue *in the learners*, but rather *in the contexts*. By imbuing the contexts with these beliefs, this enables a felt experience of these ways of being, which enables learners to perceive, feel, or ‘grok’ other worldviews, and thus expand their own, if desired.

These third-order premises can only be born from moments of transformative experience, critical reflection and diffraction. Preceding-philosophers and vignette-educators describe their own transformative, third-order learnings that enabled a stretching, nuancing, transcending and/or complexifying of their own worldview meaning-systems (*Premise chapters 9 and 10*). Through their own transformative moments, these philosophers and educators tend to arrive at similar conclusions: that is, the dominant-cultural-paradigm creates a wickedly efficient assemblage of global proportions, which is dampening life-giving relationing faster than relations can regenerate and evolve.

The vignette-educators all described their transformative learning experiences as profound in terms of explaining why they design the learning experiences as they do. And despite the unique transformative experiences of each vignette-educator, and their own philosophical premises and diverse discourses, they espouse resonant visions for stretching, shifting and complexifying worldviews; the primary resonance being a diffusion of relational logics-of-perception throughout all the meaning-systems (*Visual 61*).

In *Visual 61*, I summarise the specific critiques of the dominant-cultural-paradigm (**inner circle**) and the potential meaning-system expansions (**outer circle**). By placing the visions on the outer circle, I am invoking the metaphor of nourishing additional beliefs which contextualise previous beliefs, e.g. learners participating in transformative sustainability learning have the opportunity to **expand consciousness** beyond current tendencies of perception, and embody additional ways of being.

²⁴⁹ And yet, infinite ways exist to explore our meaning-systems: When you think of the words ‘house-keeping’, do activities like vacuuming and laundry come to mind? Or does regeneration of soil/native species processes come to mind? Or both? Or neither?



Visual 61. Transformative sustainability learning offers experiences of relational meaning-systems

The above visual integrates the philosophical **critiques** and **visions (e.g. desired worldview beliefs to inform learning experiences)** to reiterate the richness and diversity of meaning-systems engaged in transformative sustainability learning. I also seek to demonstrate the importance of being able to perceive a) many paradigms/worldviews in relation to each other, and b) the concepts of meaning-systems in relation to one another. In the following discussion, I articulate why these abilities could be beneficial.

The importance of paradigmatic complementarity

Our challenge is to do a careful reading of many worldview premises to see what can emerge from their creative play, rather than pitting one against the other (Gunnlaugson, 2004). To not see complementarity is to contribute to epistemological damage, by ‘distancing and othering’ the dominant-cultural-paradigm (Bozalek & Zembylas, 2017). In other words, we perpetuate onto the dominant-cultural-paradigm, what the dominant-cultural-paradigm has done unto others. Instead, we must ask ourselves,

What might be some of the key characteristics of an ecological worldview, one that enables us to align and reintegrate nature, culture, consciousness,

*and ethics in a new way that simultaneously **preserves the dignity of modernity** and reconnects humanity to the wider community of life, and indeed the cosmos itself? (Hathaway, 2017).*

Answering this question whilst avoiding the traps of separatist and hierarchical thinking is challenging, but possible. The philosophical premises (offered in *Premise chapters 1-7*) are a canvas of articulated beliefs synthesised from philosophers, vignettes, literature. This is a canvas upon which to play with reflection and diffraction into other, inclusive ways of perceiving. It is offered as a creative impetus to provide additional means of strengthening our own curiosity for third-order reflections on “*the problems and situations mobilizing us*” (Stengers, 2005, p. 994). Unfortunately, while striving to become aware of separatist and hierarchical thinking within the content, I could be critiqued for replicating this same ‘logic-of-perception’ within my meaning-making process by framing the discussion as a **critique** and a **vision**. However, my intention is not to engage in any epistemological damage.

In other words, this philosophical critique and vision is also not synonymous with a playbook for what is right and wrong, or a “ready-made system of belief” (Engels in Bateson, 1972, p. vii). Ready-made systems of belief “lose the chance to do some truly creative thinking, and perhaps nothing less will save us” (Engels in Bateson, 1972, p. vii).

As we strengthen and act on our curiosity for third-order considerations, we slow down our reasoning and our action. We explore ourselves and our contexts from different states of awareness, and with qualitatively different questions. It is not that we stop acting or reasoning, but that we use different states of consciousness in order to enrich our perception-judging<> action assemblages (*Visual 28*). By bringing diversity together (be it cultures, disciplines, norms, religions, ages, genders), and rendering this difference productive: it allows for the creation of “middle grounds” (Chaves et al., 2017).²⁵⁰ Lewis Williams also echoes this point: she argues we should integrate the positivist, critical, participatory and Indigenous outcomes, while respecting the differences. By doing so, the outcomes could be dual progress towards improving Indigenous well-being and resilience, and human/planetary well-being. The Indigenous onto-epistemology can help decolonise the non-Indigenous, and the non-Indigenous can collectively work towards broader,

²⁵⁰ Specifically here, Chaves et al. were referencing a period of time when colonisers and Indigenous tribes to the Great Lakes Region in the US created a space for mutual learning and blending of worldviews (White, 2011 in Chaves, et al., 2017).

institutional decolonisation.

In this vein of celebrating paradigmatic complementarity, I would also prefer that my inquiry contributes to the development of original ways of knowing and becoming, beyond just the requisite 'original contribution to knowledge'. The purpose of the insights I've gathered within the *Premise segment* is to create an awareness of our deep beliefs, so that we can collectively experiment with our own daily perception and enactions towards more 'systemic, integrative, holistic' ways of being and becoming, as educators, scholars, and as life-long learners.

This shift in perspective (from right or wrong knowledge to relational, nested and emergent *ways of knowing* based on paradigmatic integration) means we are more likely to be humble in relation to: a) *ourselves*, b) our *inquiries* and c) in relation with *one another*. I remain humble in that I recognise I do not have the answers, but rather I am a conscientiously trying to develop my awareness of how my own worldview works in action, and what relationships it might be (re)generating, ignoring, blind to, or destroying. In regards to our *inquiries*, we can recognise that perhaps in certain situations, we need to view things reductively in order to develop an insight to a specific question, while remembering this reductive question sits within a much broader context and set of relations. We develop the ability to both zoom in and zoom out. This humility also creates the space for us not to judge *others*, for we might do as someone else, if we were them:

Upon each of us, the wound of Separation, the pain of the world, lands in a different way. We seek our medicine according to the configuration of that wound. To judge someone for doing that would be like to condemn a baby for crying. To condemn what we see as selfish, greedy, egoic, or evil behavior and to seek to suppress it by force without addressing the underlying wound is futile: the pain will always find another expression. Herein lies a key realization of interbeing. It says, "I would do as you do, if I were you. We are one" (Eisenstein, 2013).

The importance of relationality in the comparison of meaning-systems

The separatist logic-of-perception of the dominant-cultural-paradigm has not only created beliefs based on separation, but also the meaning-systems themselves are perceived as separate. For example, epistemology in the dominant-cultural-paradigm is separate from spirituality. Axiology is separate to epistemology. Cosmology is separate from self. Ontology is separate from aesthetics. Etcetera, etcetera. Our challenge is to perceive how

meaning-systems interrelate; and then strengthen our capacity to notice when separatist and relational beliefs are in action, notice what these beliefs enable/disable, and notice the conclusions toward which those enable/disablements tend.

However, when writing and reading the visions of relational meaning-systems (*Premise chapter 12*), the separation amongst all of the meaning-systems began to dissolve. In a non-separatist or relational logic-of-perception, the meaning-systems become so intertwined that the discussions of particular meaning-systems became blurred. Within a non-separatist, radically relational worldview, our views of reality (ontology), our 'self', we humans and nature (anthropology), the cosmos, spirituality, knowing and learning (epistemology), our languages (rhetorology), our societies (societal vision) are conceived of as intertwining. In a worldview infused with a non-separatist logic-of-perception, to look into any meaning-system is potentially to look into all meaning-systems. Overcoming this tendency to separate is precisely the logic of invoking the term meaning-systems.

This idea of a non-separatist logic fusing all meaning-systems illuminates one way to understand Gregory Bateson's third-order transformative learning. He interpreted third-order learning to be born of 'resolving contraries' experienced in our contexts (*Ch. 2, Spheres of inquiry*). As described by Bateson, resolving these contraries can lead to dangerous, simplified and mystical experiences (2000):

*Even the attempt at level III can be dangerous, and some fall by the wayside. These are often labelled by psychiatry as psychotic, and many of them find themselves **inhibited from using the first-person pronoun**. For others, more successful, the resolution of the contraries may be a collapsing of much that was learned at level II, revealing a simplicity in which hunger leads directly to eat-ing, and the **identified self is no longer in charge of organizing** the behavior. These are the incorruptible innocents of the world. For others, more creative, the resolution of contraries reveals a world in **which personal identity merges into all the processes of relationship in some vast ecology or aesthetics of cosmic interaction**. That any of these can survive seems almost miraculous, but some are perhaps saved from being swept away on oceanic feeling by their ability to focus in on the minutiae of life. Every detail of the universe is seen as proposing a view of the whole. These are the people for whom Blake wrote the famous advice in the "Auguries of Innocence:"*

*To see the World in a Grain of Sand,
And a Heaven in a Wild Flower,
Hold Infinity in the palm of your hand,
And Eternity in an hour.*

On one hand, each of these outcomes (highlighted in the quote above in blue, e.g. inhibited from using first-person pronoun, etc.) sounds like uncertain territory for a university course to be striving towards. Bateson's quote raises images of learners lost in an Enlightened state of second-person, cosmic awareness. And yet, descriptions of the underlying unity of self, cosmos, nature and others imply that types of experiences might be necessary to fully 'grok' this worldview. And perhaps we can find steps forward in Blake's poem. It is not that we must always inhabit only this perception of 'the world in a grain of sand', but to experientially know that this perception exists, and to be able to integrate it with many other perceptions.

More specifically, Bateson's description of third-order learning is also resonant with the descriptions of consciousness within transformative sustainability learning. Transformative sustainability learning is often described as 'a shift, stretch or transformation in consciousness' towards *planetary, transformative earth, biosphere, ecological, collective, participative, holistic* or an *everyday consciousness of connections* to inspire solidarity and harmony with each other and with nature (Sterling et al., 2018; O'Neil 2018; Selby, 2002; Lange, 2018b; Jantsch, 1976b; Bawden, 2005). These notions of consciousness are also resonant with those introduced in *Ch. 2, Spheres of inquiry* and *Ch. 11, Premise: relational perceptions*.²⁵¹ Perhaps Gregory Bateson's and transformative sustainability learning's notion of third-order learning are resonant in that they are an experience of non-separateness across all meaning-systems, e.g. within the core of one's very being and existence.

These relational and nature-based consciousnesses are in stark contrast with the dominant '*optical delusion of consciousness*' allowing *the experience of ourselves as something separate from the rest* (Albert Einstein in Suzuki in Lange, 2018b).²⁵² I interpret this "optical delusion of consciousness" as born from the entire collective of

²⁵¹ E.g. consciousness in which boundaries dissolve (Taylor & Elias, 2012, p. 158), and/or we are conscious of a sense of unity (Combs, 2016), similar to those described by those of mystics or Buddhists (Kolb, 2015).

²⁵² Finding a primary source of this quote from Albert Einstein is challenging (Haymond, 2019)

separatist beliefs patterning across the dominant-cultural-paradigm: of *self, humanity, nature* and *cosmos* as deeply and irrevocably divided things. Radical nonduality opens us up to 'positive dis-illusion' (Sterling, 2019) across all meaning-systems.

In contrast, a minimalist nonduality might absorb nonduality logic into a subsection of our meaning-systems (our onto-epistemologies) and thus one can still maintain the notion of separateness in other meaning-systems (similar to the philosophers compared in *Ch. 9, Premise: philosophers' activating-events*). In other words, a minimalist nonduality maintains a belief of *only* a 'separate self'²⁵³ while changing other perceptions of reality (ontology) and the means of understanding it (epistemology).

The implications of engaging with a radical nonduality and minimalist nonduality can be explored via the various interpretations of Albert Einstein's famous statement. At times, he is quoted as "*no problem can be solved from the same level of **consciousness** that created it*" (Lange, 2018b). Other times he is quoted as "*we cannot solve our problems with the same **thinking** we used when we created them*" (Howlett, Ferreira, & Blomfield, 2016). The intents of both quotes are highly inter-related, as consciousness, and epistemology are arguably inseparable, yet changing only our level of thinking (epistemology) is not synonymous with changing the qualities and awareness of consciousness. How does invoking 'consciousness' make differences that matter? Invoking **consciousness** could more fully imply a change towards relationality in the *collective set of meaning-systems*, whereas when we invoke a change in **thinking**, it tends to have connotative meanings of improved problem solving.

I suggest the discussion about logic-of-perception is related to the notion of consciousness. By experimenting with and absorbing relational, processual, and evolving logics into all of our meaning-systems, perhaps we are better able to address the 'optical delusion' in the dominant consciousness rejected by Albert Einstein. In the context of this inquiry then, a provocation to transformative consciousness might be a radical infusion of relationality and process within all of our meaning-systems: ontology, sense of self, cosmology, time, causality, anthropology, epistemology, axiology, spirituality, death, rhetorology, sociology.

²⁵³ Separate self as in the critiques of a *Ch. 6.7*. This statement is different from the competency and art of 'knowing thyself' through critical reflexivity. In other words, through developing a self-witness, we can become aware of when we are acting based on beliefs of our 'self' as separate or self-in-relation, and why.

Generative questions for further exploration

So, the question becomes, perhaps, how do we create experiences in which learners can become aware not only of their worldviews, but also other, more relational ways of perceiving-judging-being? What would make accessible within a college learning experience this experience of radical relationality, while celebrating our incredible diversity? And how to do this without pushing learners too far from their comfort zone, and ensuring it is an experience to also be critically reflected on?

Not everyone who engages in transformative sustainability learning strives for Gregory Bateson's description. What happens when the self and ego dissolves? We might make great strides in improving our ways of perceiving, relating and acting in the world, and the beauty and magic of, and reverence for, the cosmos might rush in; but then so does the pain of the world. This is the space of profound feeling, and are we prepared for this as educators? How might this be an (unconscious) incentive for staying within the space of **minimalist nonduality**?

What are the implications of integrating, more holistically and intentionally, a variety of paradigmatic beliefs in a learning context? Does a holistic and intentional engagement with many meaning-systems provide more entry points into building awareness of the impact of our own worldviews and the dominant paradigm, and paradigms in general?

What happens if our ontological beliefs, as related to our sense of our interbeing selves and sense of oneness with nature, are the entry points to worldview stretching? How is worldview stretching an embodied, intuitive, experience, beginning profoundly with one's own direct sense of (interbeing) self and one's direct perception of one's relationship to nature and others?

If we design learning experiences in which the contexts contain relational views of self, cosmology, time, space, causality and anthropology, how will epistemological stretches become not only more obvious, but also necessary and rich?

Next steps

So ends the premises pilgrimage in this inquiry. The next chapter explores how educators, within the blended light of a *critique* of the dominant-cultural-paradigm, their own transformings, and an *envisioned* philosophical premise, are designing and implementing transformative sustainability learning processes.

Process

Orienting these chapters in relation to the previous

As already stated, not every educator who uses the term ‘transformative sustainability learning’ engages with the critiques of the dominant paradigm which are implicit in pedagogies relevant to transformative sustainability learning (*Ch. 2, Spheres of inquiry; Ch. 5, Perspectives; Ch. 6, Premise: meaning-systems*). The educators that are ‘paradigmatically aware’ do, and they embody this critique which means they design learning experiences in a qualitatively different way, the implications of which are explored in the following two chapters.

Processes which manifest from dominant philosophical (onto-epi-axi-etc.) beliefs, arguably indoctrinate limited assumptions about learning, knowing, being within learners. The processes of ‘sage on a stage’, ‘linear power point presentations’, ‘students ordered in rows’, and ‘classes only within the four walls of a university room’ all embed assumptions about knowing, knowledge, truth (*Ch. 6, Premise: meaning-systems*). These processes are less helpful in building perceptions of reality and learning as emergent, complex, relational, and inseparable from the act of collective living (*Ch. 12, Premise: meaning-systems*). In sum, societies will have a harder time shifting towards being more just and ethically aware, and regenerating a more inhabitable planet, if we do not both critically reflect on the mechanistic, separatist beliefs embedded within the context of formalised learning (*Ch. 7, Premise: myth of separation*), and curate meaningful pedagogical processes born from relational, integral, holistic philosophical premises (*Ch. 11, Premise: relational perceptions*).

As hypothesised by Gregory Bateson, if we want to create conditions for transformative learning, a powerful avenue for doing so is changing the contexts and processes of the learning experience to be imbued with different philosophical premises (*Ch., 2, Spheres of inquiry*). Similarly, the four vignette-educators in this inquiry recognise that their philosophical stance influences the processes in which the content is taught. Through their personal transformative experiences, worldview<>paradigm conscientisation²⁵⁴ and profound critique of the dominant-cultural-paradigm (*Ch. 10, Premise: educators’ transformative learning*), the educators demonstrate an awareness that if the process, and the medium²⁵⁵, of sustainability education does not change, then there is a disconnect

²⁵⁴ ‘Worldview<>paradigm conscientisation’ here refers to an awareness of the intra-action between one’s individual worldview and social paradigms (*Ch. 2, Spheres of inquiry*), as well as the implications of each.

²⁵⁵ Marshall McLuhan – respected Canadian philosopher of media – suggested that the medium is more powerful in terms of influencing human learning and behaviour, than the message (1964). Marshall McLuhan’s

between what the content is trying to achieve (more resilient futures), and where the learners are actually being led (reinforcing unhelpful perceptions of ways of being in the world).

In light of all of the above, the vignettes in these *Process chapters (14 and 15)* demonstrate experiments in creating conditions for fostering new perceptions-and-beliefs-in-action. In other words, there is “*an intent on the part of the designers/teachers born of their own learning, to construct a learning system through which they can encourage others to explore epistemic*” (Sterling, 2003, p. 289) and worldview change.

Purpose of the Process segment

The primary purpose of these two chapters is to harvest insights and questions which support the creative, contextual, and ethical design and curation of transformative sustainability learning. For example:

- If transformative sustainability learning seeks to stretch, enhance, complexify our perceptions and beliefs, what processes does transformative sustainability learning create for learners to experience other paradigms and worldviews, as a means of bringing awareness to one’s deep beliefs and the hidden dynamics of reality influencing our behaviours, in order to develop enriched consciousness and ways of being? In other words, how are the pedagogies and practices designed and curated to create the conditions for worldview-stretching?
- These courses are based on a new vision, but when and how are the learners brought into a discussion of the philosophical premises of the learning?
- What are the ethical considerations of these learning experiences? Is it also unethical *to not* engage in this space of transformative sustainability learning?

Scholarly process for developing the chapters

To explore this question, these next two chapters present analysis and synthesis of both the vignettes’ individual processes and their shared qualities which create the conditions

central thesis is very similar to Gregory Bateson’s discussion of context, e.g. that we absorb the philosophical premises of our context (Bateson, 2000). Both Marshall McLuhan and Gregory Bateson suggest if one wants to create conditions for transformative learning, a powerful avenue for doing so is changing the context, medium, or process of the learning. Janet Moore invokes Marshall McLuhan in her thesis to explain why she perceives the ‘process of learning’ to also be the ‘content of the learning’ (Moore, 2004).

for paradigmatic and worldview conscientising, experimenting and complexifying.

The insights in these *Process chapters* emerge from a writing method that resonates with post qualitative inquiry. Using a writing-as-method approach, the meaning in the following narrative emerges through a dynamic shaping between my writing, reflections, pauses, and diversity of 'data sources' (Richardson, 2000). This patterning is an active 'wording of the world' rather than a presentation of a final analysis (Richardson, 2000).

In critiquing a writing-as-method process, post qualitative scholars consider 'validity' through the metaphor of crystallisation, rather than triangulation (Richardson & St. Pierre, 2005):

The central imaginary for "validity" for postmodernist texts is not the triangle – a rigid, fixed, two-dimensional object. Rather, the central imaginary is the crystal, which combines symmetry and substance with an infinite variety of shapes, substances, transmutations, multi-dimensionality, and angles of approach. Crystals grow, change and are altered, but they are not amorphous. Crystals are prisms that reflect externalities and refract within themselves, creating different colours, patterns, and arrays casting off in different directions. What we see depends on our angle of repose – not triangulation but rather crystallization... Crystallization, without losing structure, deconstructs the traditional idea of "validity"; we feel how there is no single truth, and we see how texts validate themselves. Crystallization provides us with a deepened, complex, and thoroughly partial understanding of the topic. Paradoxically, we know more and doubt what we know. Ingeniously, we know there is always more to know (Richardson & St. Pierre, 2005).

Therefore, I suggest the value of the *Process chapters* is in how the text validates itself, meaning do I offer a credible account and a deepened meaning of phenomena that could be signified as transformative sustainability learning? I suggest the text is rich with the possibility of interpretations and responses to improve our collective meaning-making, and instead of closing the dialogue, the text can *create* generative questions about how to design philosophically informed learning as a means of awakening and complexifying learners' perceptions (including one's own).

Content and order of chapters

There are two *Process chapters*. The first chapter explores how new contexts (or mediums) for learning were created for stretching, enhancing and healing dominant separatist ways of being (while also celebrating distinction and diversity). I explore these new contexts for learning in terms of both the *diverse models and the processes* of each course/program. I then summarise a profound shared quality across the diverse vignettes: growing of relationality.

In the second chapter, I use the analytical framing of three orders-of-learning to compare processes within the vignettes for learning-about-content, learning-about-learning, and learning about worldviews. I then offer a discussion about the disorientations and ethics of these types of transformative experiences, as these are crucial aspects for consideration when designing transformative sustainability learning.

Chapter 14:

Creating models and processes for learning

14.1 Purpose and contents of this chapter

The purpose of this *chapter* is to firstly ground the preceding philosophical discussion in practice and secondly learn from the diversity of approaches to transformative sustainability learning.

The philosophical premises inspire beyond-dominant ways of conceiving and curating learning. They are changing the way we create change. In order to ground the philosophical premises in diverse processes, I link a selection of illustrative threshold concepts (in *Ch. 12, Premise: [meaning-systems](#)*) to the learning processes within the vignettes. My intention is to illustrate how the vignettes *create the conditions for* shifts, nuances, deep transformations in learners and cultures to occur.

To learn from the diverse vignettes, I present the unique 'learning model' of each vignette; including the Burns Model of transformative sustainability learning, the O'Neil Nested Learning Model, the Hawkesbury heuristic, and the City Studio theory of change. The purpose is to demonstrate the diverse approaches for contributing to cultural, paradigmatic shifts, stretches and complexifications, as a means of recognising that one correct model does not exist, and to contribute to the dialogue of how to design, curate and facilitate these types of learning experiences.

To learn from the diverse vignettes, I also articulate the defining features of each learning process in text, as well as in a visual cartography of each course's processes.²⁵⁶ These cartographies seek to illustrate (comprehensively and yet succinctly) how each vignette educator curates 'processes of learning'.²⁵⁷ Similar to other visual processes of this inquiry²⁵⁸, the intension of these visuals is to assist in re-perceiving learning experiences. For example, instead of conceiving learning as 'linear journeys', the visuals suggest experiences as 'conditions created' for learning.

I present the vignettes in the order of shortest (one-week experience) to longest (three-year undergraduate program). Coincidentally, the order also loosely begins with those educators who are more recent to 'transformative learning' towards those who have been experimenting for longer.²⁵⁹ I conclude with a brief discussion on the complementarity of the vignettes, as well as their shared quality of building and strengthening relationality and healing separation in several dimensions.

14.2 Re-introduction to the vignettes

Philosophically-speaking, these vignettes demonstrate the '*unity in diversity*' of educators working in the space of transformative sustainability learning. *Unity* exists amongst these educators in their over-arching aim. Each educator has re-conceived learning in order to create the conditions for learners and themselves to enrich their ways of perceiving/ knowing/ acting beyond the dominant paradigmatic tendencies. Each educator strives to design learning experiences which create conditions for ways of being that are better suited to perceiving/knowing/acting on and with our Earth, and each other.

²⁵⁶ Importantly, the metaphor of cartography reminds us that the 'map' is never the objective territory, but rather an interpretation, from which we can gather insights about both the world and the cartographer.

²⁵⁷ Not having observed or taken part in these learning processes, it would be impossible for me to consider the depth and nuance of each vignette. No doubt I have glimpsed a small sliver of what occurs in these learning experiences via the in-depth interviews and reading of supporting literature and course materials. Therefore, these visuals also represent an attempt to balance *comprehensiveness* of describing the courses (as a means of honouring their diversity and contextualising an integrative discussion) and *succinctness* (based on the depth provided by my research methods).

²⁵⁸ Such as the extended meaning-system heuristics in *Ch. 6 and 11*, and the symbolic integration of beyond-Boolean myths in *Ch. 10*.

²⁵⁹ As a caveat, the depth of the vignettes varies based on many conditions: the duration of the course, the time and support available for the facilitators to write about their course, etc. So, the length of the vignettes reflects the diversity of contexts and histories of each vignette, and is not a reflection of the value of the vignette.

Despite this similar aim, the educators felt their programs were unique, and rightly so (Table 21). Each course has a unique location, length and history with the educator. Each educator has their own story, learning experiences, worldview and paradigmatic inquiries and mentors (Premise chapters 5, 6, 7), manifesting in unique theoretical premises and thus learning processes.

| Course | Environmental Cooking [^] | Semester in Dialogue [*] | Leadership for Sustainability Education [`] | Systems Agriculture [~] |
|------------------------------|--|---|--|--|
| Course overview | | | | |
| Location | Vermont, USA | Vancouver, CA | Portland, USA | Sydney, AUS |
| Length | 1 week | 12 weeks | 2-3 years | 3.0 – 3.5 years |
| Level | Undergrad course | Undergrad course | Master's | Bachelor |
| Course premises | | | | |
| Example of purpose (Why) | Build relationships between learners, the content, place, | Inspire action, change, social movement in the community | Help educators 'find their unique purpose | Encourage ethical systemic development of global resources and communities |
| Example of objectives (What) | Nurture practical skills, knowledge and relationships for sustainable food | Build trust and relationships between city and universities through dialogue and design for experimental change-creation projects | Prepare students to engage in complex issues, recognition of spiritual & ethical commitments in sustainability | Facilitate learning of students to embrace and improve the complexity of rural development through their own epistemic development (e.g. inquire systemically and be systemic) |
| Theme / content | Cooking skills, food sustainability | Varies every semester (food, climate change, etc.) | Transformative sustainability learning | Agricultural and rural development |
| Typical students | Learners interested in knowledge and skills of food | Students across many disciplines seeking to improve local issues | Educators in formal and informal education | Those concerned with agricultural and rural development |

[^] (O'Neil, 2017a, 2017b, 2018)

^{*} (Gunnlaugson & Moore, 2009; Moore & Elverum, 2014; VanWynsberghe & Moore, 2008, 2015)

[`] (Burns, 2011, 2016a; Burns et al., 2016; Burns et al., 2015; Burns & Wolf, 2014)

[~] (Bawden, 2000a, 2003, 2004a)

Table 21. Diversity in the four vignettes

In the following sections, I begin with the model and processes of the Environmental Cooking course, before moving to Semester in Dialogue, Leadership for Sustainability Education, and finally Systems Agriculture.

14.3 Food pedagogy: infused with agential realist beliefs

This vignette presents my interpretation of the learning model and process described by Joy for the week-long environmental cooking class, steeped within agential realist beliefs. First, I interpret and discuss the implications of two of Joy's models: one for the *concept* and one for the *process* of transformative sustainability learning. Then I interpret the process of Environmental Cooking class, in terms of its potential threshold concepts.

Model of transformative sustainability learning concept

Joy's model directly articulates her preference for transformative learning, as opposed to other transmissive or transaction forms of learning. Joy describes her intention for transformative learning as "learning *as* sustainability" (O'Neil, 2018). The naming convention "*as*" signals the intent for third-order learning to be an experience, as opposed to what she conceives of as learning *about* (first order) or learning *for* sustainability (second order). Her model also articulates her philosophical premises for designing and interpreting third-order learning (*Figure 2*).

Joy's model of transformative sustainability learning is comprehensive. To articulate this comprehensive conceptualisation of learning-as-sustainability, she maps evolutions of several discourses. These discourses include orders of learning, epochs of the Western paradigm, various logics-of-perception, paradigmatic interpretations of learning, and orders of change (*Figure 2*). More specifically, she interprets the evolutionary trajectory of Western knowing as evolving from reductionist to pragmatic to new materialist. Joy links these paradigmatic epochs to learning *orders* (transmissive, transactional, transformative) and *theories* (behaviourist, constructivist, agential realist).

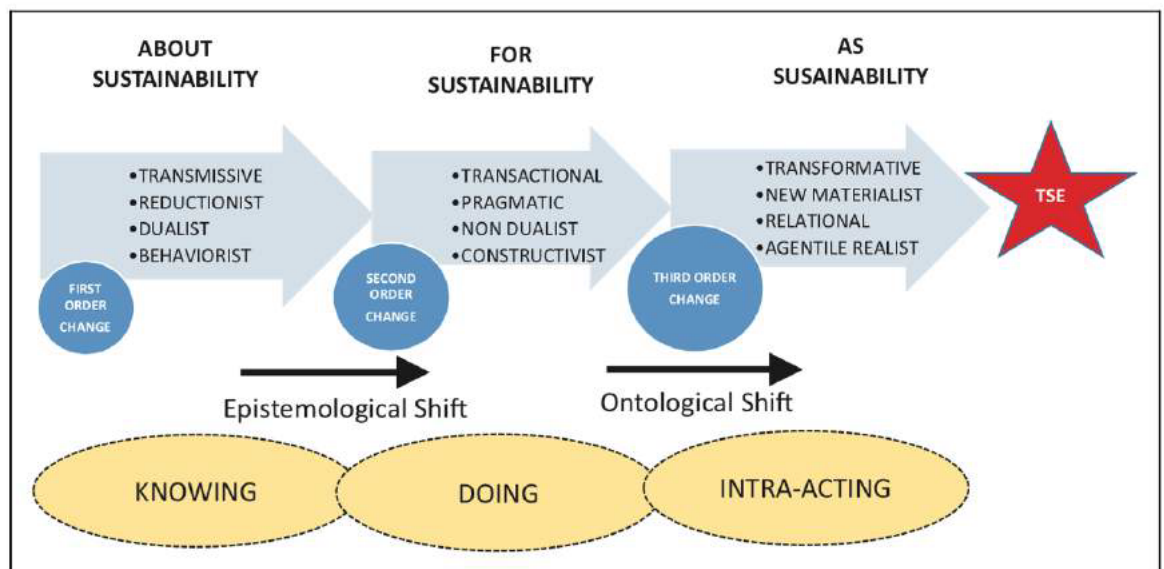


Figure 2. Three orders of change for learning paradigms (in O’Neil, 2018).²⁶⁰

The influence of agential realism, as a posthumanist philosophy, is also evident in Joy’s model. She highlights agential realism as an example of third-order, transformative ‘learning-as-sustainability’ (Figure 2). Less overtly, Joy invokes the discourse of posthumanism’s philosophical vision. Scholars of posthumanism recognise yet criticise the ‘epistemological shift’ in the 1960’s from quantitative to qualitative, as not pushing far enough beyond the dominant-cultural paradigm.²⁶¹ Thus, posthumanists have attempted an ‘ontological shift’ towards recognising the agency of material (amongst other paradigmatic shifts). Joy invokes the posthumanist discussion of these ‘shifts’, to summarise her isomorphic mapping of these various discourses. For example, she describes second order learning as an ‘epistemological shift’ to pragmatic, transactional

²⁶⁰ TSE, or Transformative Sustainability Education, is another signifier of transformative sustainability learning.

²⁶¹ To nuance our understanding of Joy’s model, let’s quickly reacquaint ourselves with the posthumanist critique. Leading posthumanist philosophers and researchers assert that when research and education began critiquing the manifestation of the Newtonian paradigm in learning in the 1960s, these early pioneers first took an ‘epistemological’ turn away from behaviourism and positivism. But Elizabeth St. Pierre, Alecia Jackson, and Lisa Mazzei and other Post scholars suggest that Western paradigmatic reflections and critiques in the 1960s to 1980s only challenged common epistemological assumptions and did not push their paradigmatic reflections far enough into other meaning-systems (such as our ontological and anthropological assumptions). Instead - influenced by Karen Barad, Giles Deleuze, Michel Foucault – Elizabeth St. Pierre and others suggest that we need to recognise how Western *ontological* assumptions (or views of reality as *mechanistic, linear, and controllable*) remain unquestioned, and thus continue to unconsciously become embedded within and influence ‘qualitative, constructivist’ ways of teaching and learning. Posthumanism argues we must undergo a transformation of our ontological and anthropological perceptions if we are to more fully free ourselves and our epistemologies from the Separatist paradigm. As discussed in *Ch. 12, Premise: meaning-systems*, Joy’s work was deeply influenced by Karen Barad and other posthumanist philosopher/educators.

ways of doing, and third-order learning as an ‘ontological shift’ towards transformative, agential realist ways of intra-acting (*Figure 2*).

A profound benefit of Joy’s model is its suggestion that transformative learning involves worldview shifts for the educator. *Figure 2* clearly highlights that ontology is another major meaning-system influencing our perceptions and the learning experiences we design. The model’s languaging prompts educators to ask: what is an ontological turn and how does this relate to my work? The model itself can perhaps trigger conscientisation of one’s views of reality and implications of these ontological views.

In this agential realist ontology, educators are prompted to recognise the influence of the outer material world; we become aware of the agency in the more-than-human world and we cede humanity’s role as the all-knowing Primary Subject. Educators can then seek out, invite in, and allow matter to trigger emotion and affects, and to teach us as a way of creating more holistic ways of knowing and being in the world.

An opportunity to expand and complexify the model is to decouple the mapping between pedagogies and Western epochs. More specifically, linking the Western philosophical ‘turns’ with specific pedagogies implies that certain pedagogies cannot be manifested from relational, integrative worldviews. In other words, a hierarchical interpretation of this model (as opposed to holarchical interpretation, *discussed in 2.2*) implies that pragmatic or experiential learning can only be manifested within an ontology of mechanism and separation. This model (interpreted hierarchically) suggests that experiential pedagogies contain only an epistemological shift, and thus runs the risk of discounting “service-learning projects, “living lab” projects, garden projects, and other action-oriented, hands-on, or experiential activities” (O’Neil, 2018). On the contrary, the other vignettes, for whom experiential learning is primary, demonstrate how experiential pedagogies can be sown from many relational meaning-systems, including ontology. These vignettes too contain ontological shifts in terms of “seeing things differently” and an actual experience of the radical interdependence of the world, e.g. Joy’s criteria for third-order learning (O’Neil, 2018).

Model of transformative sustainability learning process

Joy also offers a layered conceptualisation of three processes of transformative sustainability learning (*Figure 3*). These interdependent layers begin with: 1) engaging the social, emotional, and material to improve 2) learning about content, and enable 3) a

performative transformation. In other words, in her pedagogy, the learning is designed to specifically engage with the emotions as stimulated by material and social interactions.

Joy invokes recent neuroscience studies which suggest that outside of the classroom, people make decisions about which skills and knowledge to invoke, that are grounded in 'emotional thought' (emotion and cognition combined). Thus, to improve the embodiment, memory, and selection of knowledge, skills and ways of being, processes in the 'classroom' should allow for the excitement of and expression of emotion (Immordino-Yang and Damasio, 2007 in O'Neil, 2017b).

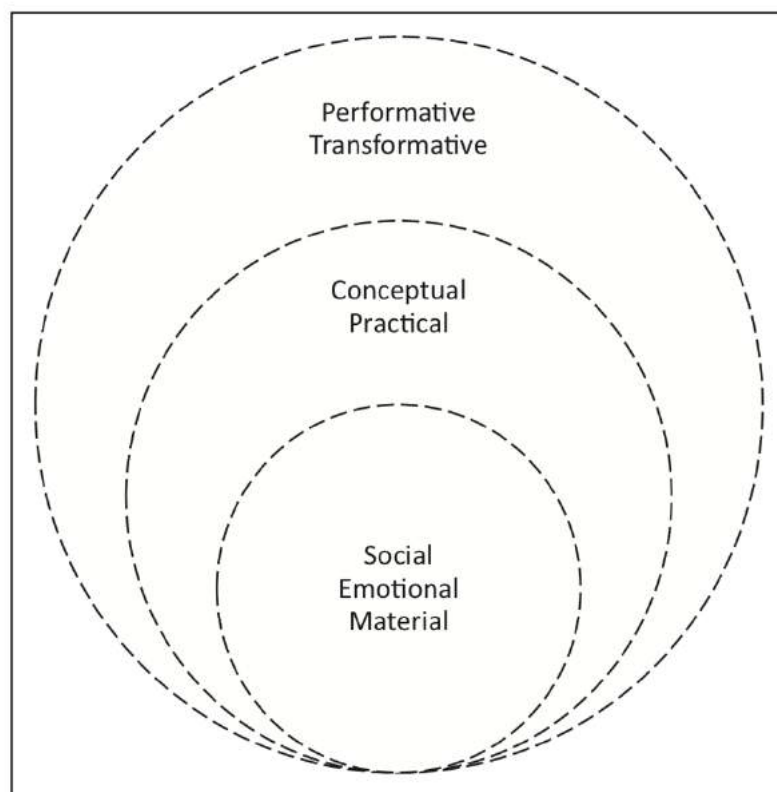


Figure 3. "Nested transformative sustainability learning" (in O'Neil, 2018).

Joy's model is similar to Gregory Bateson, Stephen Sterling, and the Hawkesbury models in that the 'layers' correspond to *interdependent* types of learning that can be observed *simultaneously* within an experience of learning (e.g. a holarchical interpretation of the 'layers' of learning).

However, Joy's model is distinct in several ways. Firstly, the nested transformative sustainability learning model (*Figure 3*) presents the specific type of processes to prioritise in 'the first level' of learning. Specifically, she conceives of transformative learning as social (dialogic) and emotional, with creating space for material to act as a

teacher. It is through these pedagogies, she suggests that learners can better engage with the content (learning level two) and experience a different reality and way of being, which encourages continuing to enact this different way of being (performative transformative). In comparison, other three-tiered models (i.e. Bateson, 2000; Bawden, 2005b; Sterling, 2010) are agnostic on the types of pedagogies. For example, Hawkesbury model (14.6) demonstrates how every pedagogy is an opportunity to learn-about-learning (Hawkesbury's second-order), and how the premises infused in the pedagogy influence the learning and the learners' worldviews (Hawkesbury's third-order).

So, a benefit of Joy's model is that it provides educators with new pedagogies to experiment with. And, if an educator prefers, the 'nested transformative sustainability learning model' (Figure 3) can be complemented with the Hawkesbury model, for example, in order to prompt reflections on what learners can learn-about-learning and learn-about-worldviews by engaging with social, emotional, material learning (Figure 8).

A second distinction of the nested intra-active transformative sustainably learning model (Figure 3), is the idea that transformation of worldviews is unconscious, as it is triggered by the 'performance' of the material's agency' (O'Neil, 2018).²⁶² In other words, Joy's premises suggest a learning design which takes into account that affective, material and

²⁶² As I interpret it, there are two main ways in which Joy explains transformative learning as unconscious. Firstly, through a posthumanist definition of ontology, and secondly, through interpretations of transformative learning literature.

In regards to the first: Ontology can be defined in several ways, with different implication for how we conceive of transformative learning. In several branches of transformative learning, ontology refers to a 'meaning-system' embedded deep in our unconsciousness, which influences our patterns of emotion, thought, action. When ontology is conceived of as a *signifier of a deep meaning-system*, third-order-learning is conceived as: 'seeing our worldview' and thus acting differently (Sterling, 2010), learning about our worldview (Bawden, 2016b), learning about our deep meaning-systems (Mezirow, 2012), or questioning and changing our unexamined philosophical, aesthetic, ethical, abstract premises embedded within our sequences of life (Bateson, 2000). In drawing upon posthumanist philosophy's definition of 'ontology', here ontology is a signifier of 'being, as in a 'real, embodied experience' (O'Neil, 2018), or 'ontos' (Beeman and Blenkinsop, 2019). If the posthumanist definition of ontology as an experience of 'being' is invoked, third-order change can be defined as an experience of reality as living in relationality (or 'learning *as* sustainability') with other humans and the more-than-human. Thus, a posthumanist view of 'ontology' as 'experiences' (rather than largely unconscious beliefs of what is), creates the space for third-order learning to be conceived of as an unconscious experience.

In regards to the second: Joy's explains transformative learning as an unconscious engagement with 'ways of being' through her interpretation of Stephen Sterling, Gregory Bateson, and John Dirkx. For example, in her 2018 contribution to the Journal of Transformative Education's special issue on transformative sustainability learning, Joy suggests that Gregory Bateson's articulation of second order learning is conscious (p. 372) versus third-order as "**unconscious** as it just happens in our intra-active relations" (p. 372). Similarly, she states Stephen Sterling's argument as: knowing or learning at the third-order "**may not be conscious, moving into ontology and cosmology**" (p. 372). Finally, John Dirkx is also invoked to justify this stance of unconscious transformative learning, interpreting his Jungian approach to transformative learning as one in which "**meaning-making is predominantly unconscious and emotional (affective) leading to intra-personal development and subsequent interpersonal transformation**" (Dirkx, 1998 in, O'Neil, 2018, p. 375).

social will invoke memories, appreciation, caring, or an emotional bond to a person or place, which will ultimately help people live more socially and ecologically conscious lives. These experiences of “empathetic, feeling resonance and felt participation” will bring, for example, a “holistic, full meaning to consciousness, and our full consciousness to our restorative change in relational (be)coming and (re)membering” (O’Neil, 2017a).

Other models suggest transformative learning must also include a conscious element. These models suggest that if the transformation of worldview beliefs is unconscious, this is a type of replacement of worldview premises, without recognising the implications (Bateson’s ‘second-order learning’, 2010).

Arguably, both conscious and unconscious realms are important (Lange, 2015); thus these two perspectives of unconscious-performative and conscious awareness of third-order-learning can be diffracted together to encourage educators to delve deeper into the questions of what is consciousness, and how do the conscious and unconscious work together in transformative learning. For example, perhaps a change within the learners is unconscious, and at times later becomes conscious outside the arbitrary timelines of a university course. By including both perspectives we can maintain a more complex conception of transformative and restorative learning

Processes of ‘learning as sustainability’ in an agential realist paradigm

This section introduces the actual processes of the environmental cooking course, as designed and interpreted from an agential realist perspective. The processes are summarised visually at the end of this section in *Cartography 1*.

Before the course, this learning experience begins with the educator reflecting on processes and spaces for the materiality and sociality of the topic to perform on and with the learners, i.e. which places and materials can be integrated into the experience, and how might students be involved in those places to allow for the material to become active teachers in the course (*box A in Cartography 1*).

Developing a learning experience within Joy’s relational premises might mean it is a theme related to our daily living. This type of theme enables a more personal and intimate space for authentic sharing and relationship building. In fact, one of the unique features of this course, compared with the other vignettes, is its basis in a practice integral to our daily being, i.e., that of nourishing ourselves with food. From the perspective of university education as a means for contributing to economic output, this daily practice may appear to be a narrow focus. Yet as William Blake suggests, this ‘grain of sand’ provides access to

the whole universe, in that our practices of ‘environmental cooking’ can be connected to where we source our food, the implications of how we source it, and even to whether and how dominant beliefs such as individualism manifest in these practices of food systems (*box B in Cartography 1*). Because food nourishment is an act we share across all of humanity, and is an integral part of our cultures, this is a process that everyone can, on some level, connect around, **thereby creating the avenues for authentic relationing with each other**. As well, slow and embodied learning are pedagogies for accessing unitive states of consciousness (Selby, 2002).

Once the facilitator selects the ‘material and spatial actants’ (O’Neil, 2018), the course cycles through daily iterations of engaging with these material and spatial actants, for a week, or several weekends in a row. Either way, the environmental cooking course cycles through patterns of sourcing, preparing, philosophising, emoting, and sensing with food and others. In essence, this cycling enables a deepening of learners’ *praxis* in environmental cooking, as well as emotional cognition, and **relating with self, others, and place**.

This slow and intentional engagement with food and cooking provides access to our multiple internal ways of knowing: interoceptive, exteroceptive, intuitive and emotions (*box B in Cartography 1; Ch. 12.9*). As our emotions are consciously connected to our memories and to our rational and cognitive processes, this approach to learning creates the conditions for learners to engage in a more meaningful and holistic way by transcending the **Cartesian separation**. This reintegration of rational and emotional within the learning process can:

“potentially be a healing place for the students, the process connects in a different way that’s not hidden agenda, or hidden curriculum. Right? Where you don’t know what it is but there’s something, so you can foster those learning moments while you’re teaching the task at hand”.

In the case of environmental cooking, the healing might be triggered because food is such a valuable part of our human existence, and over time, we have built up layers upon layers of emotion, meaning, habits and patterns around food, so that an act of smelling or tasting in complete presence and awareness with others provides avenues for relationing with and healing our internal sub-conscious and past memories. As one student reflected at the end of a course:

I feel like the cooking and that strong interaction with food and yourself helps educate us. Like, if we didn’t have the food, we would just be reading.

We would not actually feel it. It's just a stronger connection. I feel like relationships can build (from O'Neil, 2018).

Most of the examples of 'transformative learning' were personal stories of shifts in how people engaged with food (i.e. slowed down, ate more healthily, cooked more at home), thought about themselves in relation to their family and food (i.e. proud of their new skills despite cultural gendered norms around cooking), or began to speak amongst the class members and receive support around painful memories (for example one learner who had not tasted a peach until she was 20 because her family could not afford fresh food) (O'Neil, 2017b).

In sum, the emotions and material 'perform' on and with the learners to not only improve learning about content, but also to form, or reform, actual relationships in many dimensions:

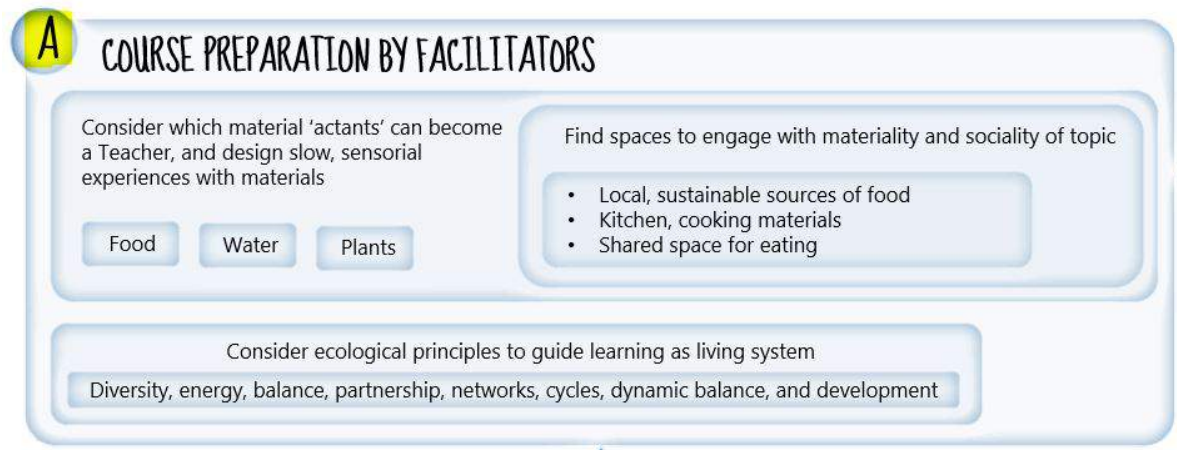
*Engaging in a performative experience with food and cooking, students encounter not only an **epistemological** relationship with the subject matter, in this case, food but also an **ontological** relationship with food, each other, the cooking room, the grocery store, and myself as educator/learner and the gardens of origin — a (re)formed relationship extending beyond classroom relationships and into the community and into a more encompassing social and ecological world" (2018).*

In Joy's theory of change, the students' way of being-in-the-world, or how they do what they do, has changed, in that they are more emotionally and materially engaged (as opposed to perceiving learning as separate from emotion and themselves as separate from the food that they eat, and the food they eat as separate from nature). So, during and after the learning experience, the way learners do what they do takes into account strengthened relationality with their memories, emotions, food, nature, and each other. Joy refers to this as changing the 'doings-in-action' (2018); or 'what it is you are doing when you are doing what you are doing' (to paraphrase Ray Ison, personal communication, January 23, 2017).

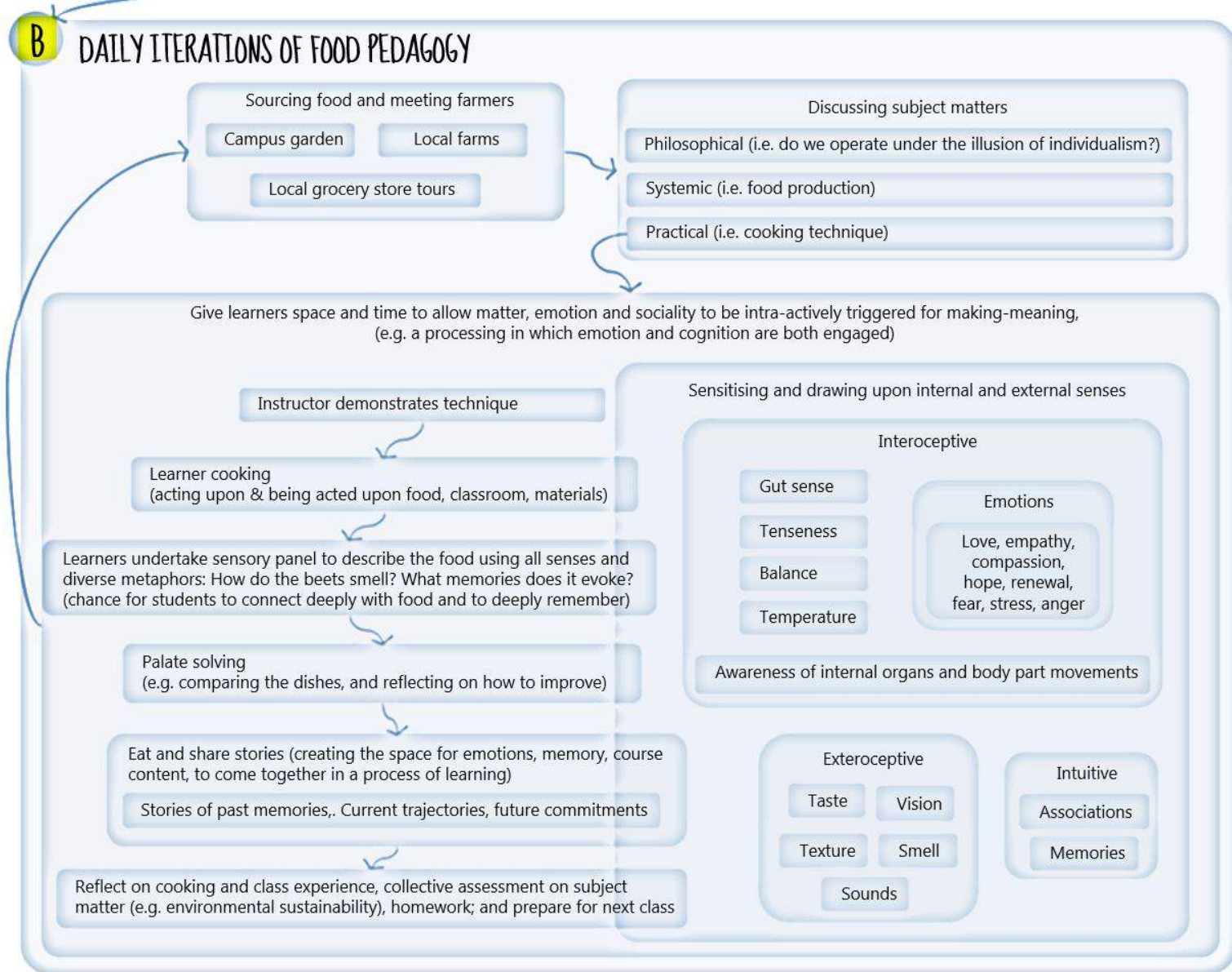
The *cartography* below summarises the process for Joy's week-long environmental cooking class, but first I offer a few notes about reading the cartography.²⁶³ This visual is inspired by the concept of 'nested systems', therefore the biggest circles represent the higher level, or more abstract ideas, and each circle within represents another level of

²⁶³ (based on Capra & O'Neil, 2019; O'Neil, 2017a, 2017b, 2018).

detail. I have also included arrows to provide a general sense of flow of the course. To help illustrate the assemblages between learning processes and the more relational, ontological beliefs these processes embody (informed from the facilitators' own transformative learning), this cartography also links the potential threshold concepts I've suggested could arise within the learning experience.



| MEANING-SYSTEM | POTENTIAL THRESHOLD CONCEPTS |
|----------------|--|
| Ontology | Both humans and food/world are agential subjects who have no a priori meaning before coming together |
| Ontology | "Embodying and enacting deep relationality that is sustainability as a third order change. If we are to be in the world, in this relational being, we would take care of it as if it both had agency and mattered for something" (Perspective of post humanist ontology) |



| MEANING-SYSTEM | POTENTIAL THRESHOLD CONCEPTS |
|----------------|--|
| Epistemology | Learning and meaning-making can involve connecting deeply with your visceral senses, emotions and your memories, By engaging materially, as opposed to only rationally, the content connects better. |
| Epistemology | Knowing is also embodied, not just something that can be learned in a text book, Knowing also has implications for daily living. Learning in a university can also be about personal change. |
| Epistemology | Knowledge is not only concrete and absolute. |
| Epistemology | Our decisions and learning are influenced by our emotional contexts. |

| MEANING-SYSTEM | POTENTIAL THRESHOLD CONCEPTS |
|----------------------|---|
| Social vision / self | Teacher and students do not have to have traditional roles. Teacher engages as facilitator/learner. Facilitator/learner and learner/facilitators are perceived less as 'Other' and more as friend, Respect for everyone's diverse emotional/historical complexity within the shared human need of eating. |

Cartography 1. Interpretation of learning processes for agential realist food pedagogy

Cartography 1 demonstrates how Joy uses the intra-actions of materiality, sociality, feelings, emotions and memories, as a way of developing an ontological change in the learning experience. In a sense, learners and facilitators experience a 'sense of unity' in which the *engagement with food is simultaneously the engagement with their past, their complex inner worlds, each other, nature, and human-natural systems*. This sense of unity is one that I will pick up again in the discussion of this chapter. The continual development and strengthening of praxis (a spiralling), demonstrated in the above vignette, is also a theme we will revisit in *chapter 15 (Process: three-orders)*.

Moving on from a week-long course in 'environmental cooking', I next present my interpretation of a 13-week, full-time course in dialogue and design.

14.4 Semester in Dialogue, Simon Fraser University

The 'Semester in Dialogue' course is a 13-week long, full-time course run from Simon Fraser University in Vancouver, British Columbia, typically with 20 students drawn from a range of disciplines and 3 facilitators. This vignette is largely from the perspective of Janet Moore, one of the three course coordinators.

The Semester in Dialogue was created by Mark Winston and Janet was hired to expand the program into 3 semesters per year. The model was dialogue focused, with its goal being for students to create a large public dialogue. Janet's focus had always been more project based and she wanted a community partner that would be there every term. Janet and her colleagues created CityStudio and Janet brought her teaching over to CityStudio as a new opportunity for connecting with a community partner - the City staff.

In essence, CityStudio seeks to *integrate* the university and learning into local government. The purpose of the CityStudio model is specifically to avoid situations where experiential and community-based learning turns into drop-in/drop-out projects, where from the perspective of the community, one moment the students and facilitators are 'here and then they're gone'. So, when Vancouver City Hall asked for ideas, Janet encouraged colleagues to pitch CityStudio so that they could embed themselves in city hall.²⁶⁴ The

²⁶⁴ Six years later, the relationships between the university and the city, and the projects the city is offering Janet and her colleagues are "mind-blowing". According to Janet: "We now have the city staff in the classroom every Monday morning because they feel like it's so valuable, they come there and they know that these 20 students are launching one of the projects with them. So, it's totally transforming city hall" (Moore, personal communication, December 12, 2017).

model informing ‘Semester in Dialogue’ and CityStudio is explored next.

Learning model

Janet discussed the theory of change informing the Semester in Dialogue in her interview with me. Complementary to the O’Neil nested model of learning (*Figure 3*), the CityStudio model (within which Semester in Dialogue is embedded) is a broader theory of how learning contributes to cultural shifts (*Figure 4*). Transformation of individual worldviews and ‘transformative learning’ is not explicitly mentioned in the model, and Janet disagrees with the notion of educators setting out to intentionally transform someone other than themselves (discussed next in *chapter 15*). Instead, the Semester in Dialogue concept focusses on groups of people coming together, and a cultural shift is more generally envisioned through *growing relationships within a community* via processes of collective learning, experimenting, and acting (*Figure 4*).



Figure 4. A theory of change for CityStudio (in Elverum, 2019)²⁶⁵

At its essence, this model highlights the need to overcome the separation between *knowing and doing*, and *learning in the universities and the needs of the community*.

²⁶⁵ Image tweeted by Janet’s colleague Duane Elverum on Twitter: @DuaneElverum, 20 January 2019.

This model also reiterates that learning is experiential, in the relating, dialoguing, doing, and reflecting together.

A huge part of the transformation is that for the 13-weeks, the 3 instructors and 20 students *meet in circle* for 40 hours a week. In other words, the project-based nature of the program is important but really the dialogue and *the circle* is the teaching.

Learning processes within the Semester in Dialogue

This section and the following cartography (*Cartography 2*) illustrates learning processes of the 'Semester in Dialogue' course that I discussed with Janet.²⁶⁶ To illustrate the potential threshold concepts which I suggest could manifest in the Semester in Dialogue course, I interweave them in the written description (in footnotes), rather than presenting them visually in the cartography.²⁶⁷

Each semester course begins with significant preparatory work by the facilitator. Janet and her colleagues will select a new topic that is of interest to the city, themselves, and of benefit for the community and the students (*integration*). Janet will line up the guest speakers, field trips, readings, and select 20 interdisciplinary students from across the university (*integration*) to participate in the course (*box A, Cartography 2*).

To start the course well, the importance of the first week cannot be over-emphasised. Janet describes how this first week is crucial in setting expectations about the learning experience for the next 12 weeks. She states upfront in the first five minutes to the students that *this type of learning is going to be completely different from most, and more likely all, learning experiences the students have had in the past*. In a sense, she is immediately drawing the student's attention to the importance of different ways of learning. The students themselves will lead the course, e.g. they'll "make the course not take the course" (*potential threshold concept*).²⁶⁸

Janet also reiterates the course will be an emergent process based on a loose structure, so what is needed in this learning context is trust in one another and trust in the process

²⁶⁶ Janet mentioned the work load of the courses are so demanding, that it is challenging to find time to write about these experiences in journal articles, thus this cartography is largely based on our conversation.

²⁶⁷ This is primarily because of space: the first vignette, being a week long, had a more succinct visual, in which I could also fit the threshold concepts; but this creative constraint is also a learning opportunity to reflect on the implications of different types of presentations of analysis/synthesis.

²⁶⁸ *Epistemological stretch*: Students are capable of leading and making the course; it is not up to the teacher to be the sage on the stage; *knowing comes from doing and reflecting*, taking collective leadership decisions.

(*potential threshold concept*).²⁶⁹ To develop and enrich trust, Janet and the students give each other permission for offering and receiving open feedback, and to practice this type of honest feedback throughout the course. Janet warns the students that they will receive more feedback in this course they ever have, and she too is prepared for the same in return (*potential threshold concept*).²⁷⁰ Another important aspect of this first week, is beginning a *praxis* for dialogue. Learners practice deep listening, non-judgement, and challenging their own perspective - skills they will continue to expand upon and enrich over the semester (*box B, Cartography 2*).

Importantly, this context and expectation setting does not happen in a university classroom, but rather takes place in a two-day retreat off campus. This retreat helps to create the conditions for recognising this learning experience as more than just a group of students with an educator, but rather, a group of humans with shared interests, who are about to jump into a shared, intense journey.

After the retreat, the 'place' of this vignette continues to be profound. The course is based in a CityStudio site (outside of the university) closer to Town Hall, so that those city staff who have joined the course can easily attend. The course engages students and city staff in topics of relevance *to the community, the city and students (integration)*. The topics are thematic topics - food security, climate change, supporting refugees (*potential threshold concept*).²⁷¹ And Janet believes that the topics cannot be collaboratively experienced, inquired into, felt, experienced deeply inside the university walls (*potential threshold concept*).²⁷²

The structure of each week is roughly the same over the 13-week course. One day each week is devoted to a process relevant to collaborative inquiry and design for change, e.g. leadership (Mondays), design (Tuesdays), reflection and leadership (Wednesdays), dialoguing (Thursdays), and being together in place (Fridays). By having set days devoted to these processes, learners are provided with the theory and with time to practice, which then enriches and deepens their *praxis* over the remaining 12 weeks. For example, on design days, the students engage holistically with design, beauty, aesthetics and form

²⁶⁹ *Epistemological stretch*: Learning is not a linear journey from A to B, but rather is emergent and contextual.

²⁷⁰ *Societal-vision stretch*: Universities are places where it is okay to give open and honest feedback about each other, beyond just academic feedback.

²⁷¹ *Epistemological stretch*: Actionable, change creation knowing is not single disciplinary knowledge alone, but thematic knowing generated from collective critical, dialogic and action inquiry into complex issues.

²⁷² *Epistemological stretch*: Impactful learning happens in relation with the world, rather than in isolation in the university walls.

through both philosophical abstraction and practical action related to their projects (*potential threshold concept*).²⁷³ *Cartography 2* demonstrates how these activities interrelate over the progression of the semester, as well as the weekly iterations.

Perhaps unique to Semester in Dialogue is shared inner work on Wednesdays (or 'reflection and leadership days') and Flow Fridays. On these days, the learners have permission and the opportunity to collectively engage in deeply reflective inner work with a counsellor (Wednesday), as well as the time to explore their local community together, to visit the unique places, for example by biking (Flow Fridays²⁷⁴ in 12.13).

In regards to Reflection Days (inner work on Wednesdays), Janet and her fellow facilitators say, "the inner work is the outer work". Thus, the students can choose to spend time together in safe spaces to process: their emotions and challenges of this course; the rites of passage they are experiencing at this time in their life (coming to the end of their undergraduate experience); and the state of the world in general. Janet explains that in the course, students are given the space to do the inner work:

I've learned it's a rite of passage. This is a time for a rite of passage of young people, when they're 22, and they're about to leave school. They're becoming adults, right? If you give them a space where they feel safe, and feel they can be trusted, they are going to take that opportunity to do their [inner] work. And so [the students always say], "aren't we just doing projects here, why are we all crying about this stuff?" And it's because they've taken up that space, right? And overtime, I've learned to see that's what we're doing. It's not like I started this program thinking, 'oh, this is a rite of passage'. Now I understand it.

During Semester in Dialogue, the students learn as much about themselves, as the content (e.g. food security, well-being, etc.) and processes (e.g. leading, dialogue, design) of the course. As well, this sharing strengthens their relationality as a group. The boundaries around university classroom, social dialogue and design for community improvement,

²⁷³ *Aesthetics/epistemological stretch*: Philosophical and practical engagement around beauty, aesthetics and form are an important context of experimentation and learning for regenerative shifts.

²⁷⁴ *Axiological/societal vision /epistemological stretch*: We can step beyond our productivity focused society; we do not need to buy into that. We can have Flow Friday's which help embody and value the appreciation of going slow and building relationality with space and with others. This is a desirable end in itself as well as a means to improve the efficacy of their experimental projects for cultural shifts.

collective coaching and inner work, all blur, and merge into an *integrated* experience (*potential threshold concept*).²⁷⁵ An essence of *unity*, of *oneness*, of *integration*.

In fact, *a dissolution of hard divides* was one of Janet's criteria that the class is working well. Through her Semester in Dialogue, students are able to break out of disciplinary silos and university silos to collaboratively engage with city staff and community members in collective change creation. At several points in her interview, Janet talked about how blurred lines are a good sign: "You know you are doing things right when you get mixed up about who's who in the room, and what we are doing: education? City strategies?". The way the course is structured, there comes to be a point when there is much less difference between the 20 students from different disciplines, city staff, university facilitators and more of a *unity in diversity* of concerned, activated citizens.

Linking back to the CityStudio's theory of change (*Figure 4*), the semester culminates in a large project in which the students collaboratively launch an experimental design which also meets the needs of the community, town hall, and themselves as learners (*integration*). Importantly, this experimental project has been based off ten weeks of exploring the situation across many contexts, probing and diverse dialogues, and in many modes of learning (i.e. abstracting, imagining, aesthetically assessing, emotionally processing, and intuitively listening) (*potential threshold concept*).²⁷⁶ The experimental project often has the aspect of taking a big risk:

We think things that actually show up change that place. One time the students made a blanket fort. It was a really odd thing that they wanted, and like 200, 300 people went through the blanket fort on a rainy night. And there were 50 kids in it, and it was like "oh my god". They just had this intuitive idea that we need more blanket forts in cities, right? And it was amazing, and that's behaviour change. It's like leaping, taking a risk. Risk taking is big.

In sum, the course is active, and taught 'in the doing' because as Janet has repeatedly witnessed, 'behaviour changes behaviour'. The learners' behaviours that change relate to the course processes, characteristics of learning, and ways of being in relation together. The processes of the course (which is also the content), are the praxis of leadership,

²⁷⁵ *Epistemological stretch*: Learning, social change, and inner work can be one in the same.

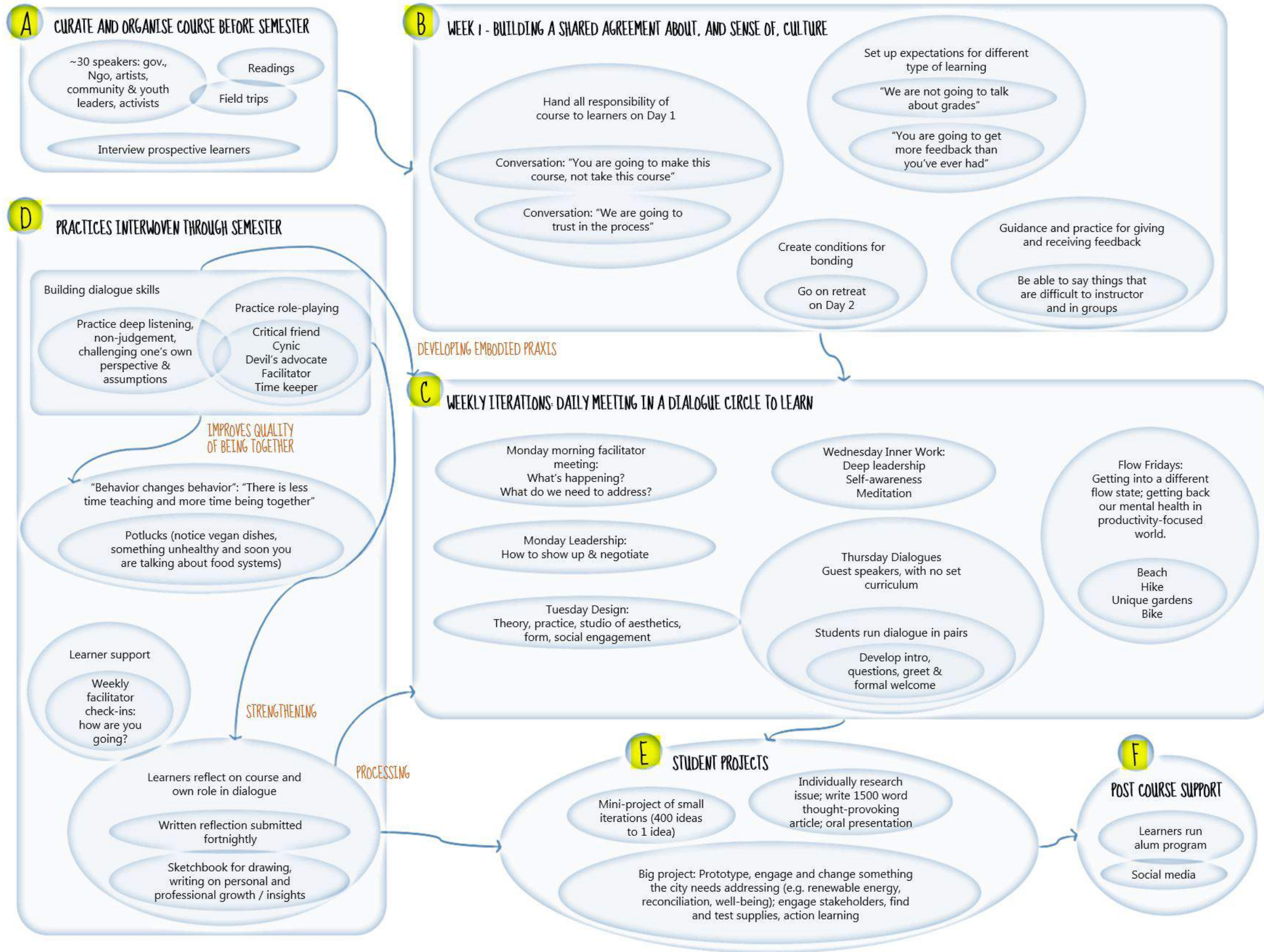
²⁷⁶ *Epistemological stretch*: Many ways of knowing exist, and are valuable to recognise and integrate with the rational, i.e. aesthetic, intuitive, emotional, etc.

design, inner work, and dialogue. As mentioned, the learners develop these behaviours and praxis over 10 weeks. In addition to these processes, the course facilitators and learners collectively practice behaviours of curiosity, non-judgement, optimism, and taking innovative risks. At the end of the course, the students have these lived competencies (behaviours), which they can take forward as means of helping to realise more resilient futures. Essentially, the learners, staff and city experience *being together in relational, authentic ways* (potential threshold concept).²⁷⁷ This idea is very similar to Joy's notion of performative transformative: it is the embodiment of the being/doing that creates the profound learning.

The cartography below summarises the course by outlining: the course preparation undertaken by the course facilitators (A); the importance of the first week in setting the context with students (B); the weekly repeating focus areas of the course over the 12 weeks (C); the supportive practices for students woven throughout the semester (D); the student projects (E); and importantly, the course support (F).²⁷⁸

²⁷⁷ *Onto-epistemological stretch*: Behaviour changes behaviour. Biking, riding buses, dialoguing respectfully with people who you disagree with, designing creatively - by engaging in these acts together over 12 weeks leads to a change in a way of being. Being together relationally creates change; challenging the common assumption that changes in knowing leads to changes in being.

²⁷⁸ (compiled from interview and Moore & Winston, 2019)



Cartography 2. Interpretation of learning processes for Semester in Dialogue

Parts of Semester in Dialogue resonate with Environmental Cooking. The implicit importance of *praxis* (integration of philosophy, action, reflection) again was demonstrated, as well as the experience of *integration* and *unification* of previously disparate ideas, processes and phenomena.

In addition, both engaged with change as a way of being together *differently*. Janet's approach of being together in new relational behaviours as a means of creating an enduring change in how people are in the world, resonates with Joy's suggestion that transformative sustainability learning is a subtle 'performative' process, formed through experiences of relational processes (O'Neil, 2018).

Both vignettes highlight the *agency of material* that shows up in the learning experience. In Semester in Dialogue, the students design their own materials to bring into a place, based on the agency the students hope the materials might have, such as the example in the blanket fort. This similar awareness of the agency of material highlights the linkages between design theories of agency and posthumanist theories of agency (e.g. Bruno Latour spans both philosophical fields). Regardless of their source, these ontological beliefs about the agency of material infuse (e.g. through the philosophical premises of learning) and inform the context of learning, which enables experiences for the students to learn *differently*.

I next present my interpretation of Heather's perspectives on a multiple-year master's program. As this master's program is for educators, the philosophical premises informing the learning context are explored with learners, as part of their learning content.

14.5 Leadership for Sustainability Education: infused with living systems beliefs

This vignette is of the *Leadership for Sustainability Education* master's program at Portland State University, Oregon, and particularly from the perspective of Heather Burns who has been co-running the program since 2010. This two to three-year master's program welcomes diverse educators seeking to integrate sustainability into their pedagogy. As Heather's course more consciously engages learners with 'threshold concepts', I annotate this vignette with specific sections of the *Premise segment*.

Burns Model of Sustainability Pedagogy

The process of sustainability education curated within the Leadership for Sustainability Education program can be summarised as a:

process for *transforming perspectives and opening hearts*

in order to *enact regenerative change and healing* in the world

(Burns et al., 2016).

To create this process, Heather draws upon her Burns Model of Sustainability Pedagogy (Burns, 2009).²⁷⁹ The Burns Model of Sustainability Pedagogy synthesises five sustainability-related learning theories into a pragmatic design method. The five integrated pedagogies are summarised in *Figure 5*.

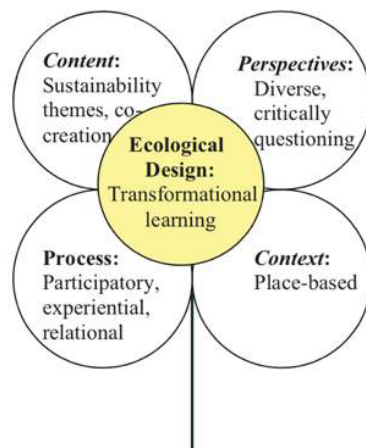


Figure 5. Burns Model of Sustainability Pedagogy (in Burns, 2009, 2011, 2013, 2015, 2016a)

A strength of this model is that each of the identified pedagogies are born from more relational logics-of-perception (*Ch. 11, Premise: relational perceptions*). In *Table 22 I* identify how these pedagogies can heal the manifestation of separateness within learning design.

²⁷⁹ As well as additional enriching principles as her praxis evolves over time, e.g. Indigenous wisdom (Burns, 2015).

| Pedagogy | Inspirations | <i>How the pedagogies heal the manifestation of separateness</i> |
|--|---|---|
| <i>Content:</i> Systemic and interconnected, thematic, interdisciplinary | Fritjof Capra Donella Meadows Lev Vygotsky ²⁸⁰ | <i>Non-fragmented</i> content |
| <i>Critical perspectives</i> | Paulo Freire bell hooks | <i>Complexifying binaries</i> of powerful vs powerless, ‘us’ vs ‘Others’ |
| <i>Experiential process</i> | John Dewey David Kolb | Philosophy, action, reflection are <i>all integrated</i> ; and the learner is <i>part of the situation</i> |
| <i>Context:</i> Place-based learning | David Orr | Growing <i>meaningful relationships</i> to place and community |
| <i>Ecological design</i> of transformative learning (e.g. permaculture practices of observation, visioning, planning, development, implementation) | Toby Hemenway ²⁸¹ | <i>Integrating learning</i> between a) experiences and b) philosophical premises manifest in those experiences as they relate to your worldview |

Table 22. Sustainability pedagogies integrated in the Burns Model of Sustainability Pedagogy

By synthesising these sustainability pedagogies, the application of the Burns Model can stretch teaching beyond transmissive learning towards transformative learning *as* sustainability, or learning in which participants are making changes, internally in themselves and collectively as a group in the world (Burns, 2009, p. 66; 2011, 2013, 2015, 2016a).

Educators who have undergone their own onto-epistemic development will engage with these pedagogies as intended. However, educators steeped within the dominant-cultural-paradigm may implement these pedagogies in more reductionist, mechanist ways. The Burns model is then, in a sense complemented by Joy’s concept model, which can prompt a third-order-reflection within the educator, by pointing out the importance of ontological awareness (*Figure 2*).

At first glance, the pedagogies in the Burn’s model (*Figure 5*) are distinct and complementary to the O’Neil nested model (*Figure 3*). However, as we’ll see, both

²⁸⁰ Lev Vygotsky is a learning and development psychologist, whose premises were infused with a relational approach (Shotter, 2006).

²⁸¹ Toby Hemenway is a writer on permaculture principles. Relational premises aren’t explicit in Hemenway’s work (Burns, 2009, p. 173), but are a principle of permaculture more broadly.

vignettes create space for emotion to enter the learning experience, and view relational learning as essential.

Learning processes within the Leadership for Sustainability Education program

This section interprets the processes of the master's program as a whole, however most of my interpretation is around the significance of the first term²⁸² together as a group of learners (*box B, Cartography 3*).

In the first term, students build a meaningful relationship with themselves and each other. Similar to the intentions of Janet's initial retreat together, Heather creates the conditions in this term for the group to transform from a co-hort into a 'co-heart' (Burns et al., 2016). The co-heart style is intended to increase the felt community connection amongst students in the program (Burns et al., 2015; Williams et al., 2014). The students spend much of their time being and doing together in reflective and somatic ways, that allow them to bring their whole selves to the learning experience. These processes help to transcend notion of 'separate group of individual learners' into more *complex conception of 'collective learners sharing a collaborative learning journey, in which they will have both their own and shared meaning-making'*. According to Heather, students building a strong and meaningful relationship with their whole selves and each other is fundamental for their learning (Burns, 2009, p. 173).

Another significant feature of this first term together is that the group jumps straight into conditions that seek to develop their awareness of their own worldview, and to experiment and diffract²⁸³ into stretched, nuanced, transformed perceptions. This third-order learning in the first term is enabled around the theme of leadership:

*We are doing a lot of initial work in that class around breaking down paradigms, and kind of, **embracing a new ontology**. We use the book "Leadership and the New Science", introducing a lot of the new science ideas, and as well as Indigenous ideas, and all the ways of knowing, and then constructing it- a new concept of leadership, as more collective and relational, and collaborative.*

²⁸² Their school year operates on a four-term cycle.

²⁸³ Meaning, in this inquiry, the ability to step into stretched, nuanced worldview beliefs and beliefs in action.

Through cycles and intermeshings of theoretical reading, collaborative action, and reflection, the learners explore the dominant paradigmatic assumptions of individual leadership, and its implications (e.g. *Ch. 6.4*). In short, the learners and facilitators in this term are consciously critiquing the dominant paradigm and their embeddedness within it.

Simultaneously, the learners collaboratively experiment with other paradigmatic views of leadership, e.g. they practice distributed, self-organising, emergent leadership (e.g. *12.11*). In this process, learners have the opportunity to not only act, but to ‘stand on the balcony’ and observe themselves acting, as it relates to different paradigmatic interpretations of leadership, and their own worldviews (Burns, 2016a). This first course sets the learners up for the rest of the program as an experiment in diffracting into other ways of perceiving based on more relational onto-epi-axi-etc. beliefs. Through this term, the learners appreciate the role of the collective action and deep reflection in helping themselves and one another develop third-order, diffractive abilities.

Similar to Joy and Janet, it was important for Heather to reintegrate emotion back into university learning processes (*12.9*). In *Advanced Leadership for Sustainability* (their first course together), Heather demonstrates with her students the value of paying attention to emotions during the challenging case-in-point, experiential education process, i.e. of trying to collectively undertake a project while learning about and developing a new leadership style embedded within different worldview beliefs.

The students found these emotion experiences quite challenging, but then upon reflection, realised the benefit in experiencing these emotions as part of the learning process (Burns, 2016b). Particularly in relation to their third-order learning, students learned that emotion can signal a reaction indicating that their worldview is being challenged, and to be able to share emotions in order to engage with the challenge, as opposed to disengaging with the process.

Whereas Joy used a profound engagement and presence with food and sharing of stories to create the space for emotions, and Janet created space for inner work with a counsellor, Heather also fosters emotion in transformative sustainability learning by bringing in art:

Inviting art into learning is an interesting way to make emotional learning more accessible for students. Poetry, metaphor, music, and student creations of all kinds can be incorporated into learning (Dirkx, 2001) to explore the meaning of sustainability, our values, and understanding of sustainable solutions (Burns, 2015).

As a facilitator of transformative sustainability learning, Heather is very interested in how we can regenerate and heal on many levels. This is part of the reason why Heather seeks to integrate so many ways of knowing: she is very interested in how facilitators can bring the *whole person* into learning (a whole person who has traditionally been dissected and various components prioritised in learning experiences). For example, to draw in the whole person, Heather also uses meditation:

I typically start my classes with an opening circle, and in that opening circle, we do some meditation, we do some movements, some meditative movement, and we do usually a check-in of some kind, just kind of a social check-in. But I find that that totally shifts the space and field of what's going on in the classroom. And somehow it puts us all on a similar, cohesive place, and helps open the space for learning. And helps get us out of just a purely intellectual or even a social critical space, but you know, invites that soul-level participation, or that whole person participation.

Beyond inviting in and healing the separations within a person, Heather is attempting to find ways for her and the learners to experience themselves as healers. Previously, Heather's personal feeling was one of "saving the world": "let's make this change, let's do it!". But, recently Heather has been contemplating Margaret Wheatley's *Who Do We Choose to Be?* (2017). In this book, Margaret Wheatley suggests that signs are everywhere of societies in decline, and as such, much healing - personal, social, ecological - needs to be done. Margaret Wheatley thus poses the question of: how do we see ourselves as healers (e.g. beyond change-makers)? Heather has been contemplating this question, and how the Leadership for Sustainability Education program can help wake people up to their true purpose. Like Janet, Heather recognises that many of the students are distraught, and living in despair much of the time. So Heather sees her role as helping students figure out how to be good educators, leaders and healers in these times, and part of her role in this is facilitating a space where they can 'just be' together.

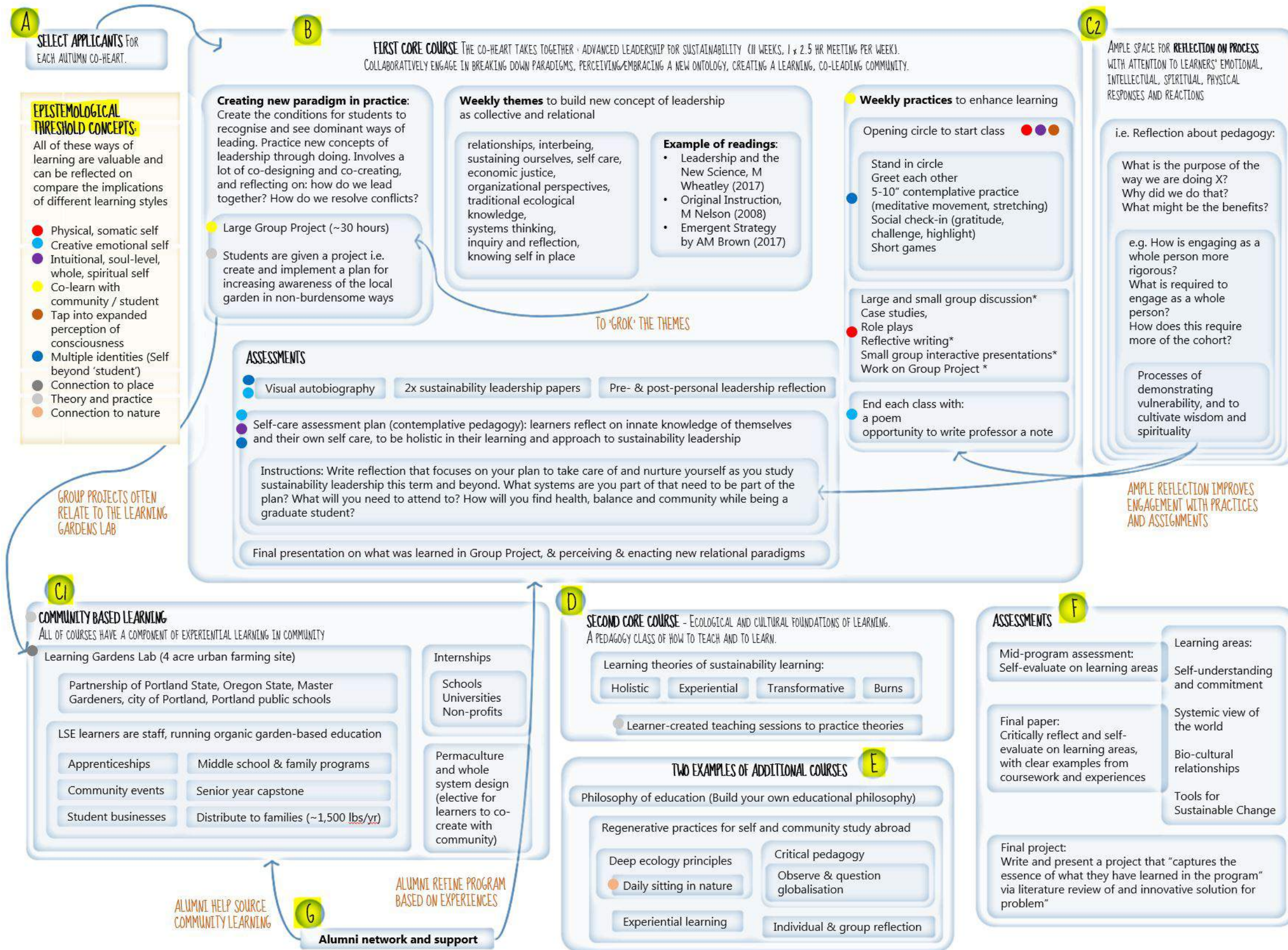
For Heather, being together is more than just physical, social and emotional presence; it also includes an expanded sense of consciousness of *interbeing* (Ch. 11, Premise: *relational perceptions*). Heather incorporates several processes into her learning to facilitate this. For example, she encourages nature sitting in her classes, where for 30 - 60 minutes a day, individuals can be 'present and observe the natural world around them and their relationship to it' (Burns & Briley, 2015). In these moments, the ability to perceive *interbeing* with nature might be glimpsed and nourished.

Another defining feature (shared with the following Hawkesbury vignette), is that the assessments put the onus on the individual. Each student must reflect, justify and communicate how they have learned in relation to the objectives of the master's program. These criteria include self-knowing, systemic perspectives, and acquiring tools for how learners can contribute to regenerative healing in the world (*box F, Cartography 3*). The reasons for and benefits of this type of assessment is that it reiterates that the onus is on the learner to be aware of their own learning in the course. As well, the journey and learning of each student is unique. All of the courses are integrated with experiential, case-in-point learning and whole-body learning, to which each student will bring their own unique worldviews and make-meaning of the experience in their own way, yet their experiences will all relate to the key learning areas.

Cartography 3 provides an overview of the main learning features and design of the Leadership of Sustainability Education program including: aspects of the first and second classes taken as a collective 'co-heart' (box B, D); important pedagogical principles of the whole program (box C); examples of the additional electives (box E); student assessments (box F), and program support (similar to Semester in Dialogue) (box G).

In Heather's cartography, I have experimented with a legend that highlights the multiple ways of learning Heather invokes to enrich learners' experiences.²⁸⁴ As the legend in *Cartography 3* implies, these ways of learning include: somatic, creative, emotional, intuitional, peer with peer, with place, with nature, with collective consciousness, with our multiple selves and identities. Each of these expanded ways of knowing represent potential epistemological threshold concepts, in that learners have not often been encouraged to learn in these ways because of the dominant-cultural-paradigm beliefs and perceptions (*Ch. 6 and 7*).

²⁸⁴ Compiled from many sources of Heather's writing and our interview (Burns, 2016a, 2016b; Burns et al., 2016; Burns et al., 2015; Burns & Wolf, 2014; PSU, 2017; Williams et al., 2014).



Cartography 3. Interpretation of learning processes in Leadership for Sustainability Education

Similar to Joy and Janet, Heather also adopts a pedagogy of praxis. Whereas Joy and Janet's shorter courses develop a praxis for the content and processes of the course, the longer multiple-year Master's program also develops a form of third-order praxis for 'breaking down Western paradigms' (e.g. learners engaging in conscious contemplations of their own worldviews and the implication of the dominant paradigm, and experimenting with different beliefs in action). This is not to say that conscious third-order reflections did not happen in the shorter courses, but rather that this third-order praxis was a more explicit written and discussed intention of the Leadership for Sustainability Education program.

The next vignette on Hawkesbury Agricultural College²⁸⁵, also has a more explicit engagement with a praxis of worldview awareness and reflection. Similar to the Leadership for Sustainability Education master's, learners consciously engage with their own third-order, transformative learning. In the following section, I demonstrate how the conscientisation and complexification of worldviews are triggered through: a) experiences imbued with increasingly complex and systemic premises, as well as through b) explicitly celebrating and taking advantage of diverse perspectives in group work.

14.6 Hawkesbury Bachelor of Systems Agriculture: infused with critical systemic beliefs

In this vignette, I interpret and synthesise details of the Hawkesbury three-year Bachelor program. Hawkesbury staff created this program for learners involved in or concerned about the well-being of rural and agricultural Australia.

A key purpose of the program was to challenge the entire constellation of mechanistic and reductionist beliefs, values, and techniques shared by the rural development community (Bawden, 2005b, 2005c). The Hawkesbury staff challenged these beliefs by facilitating transformational self-development of learners. Richard explains that their collective historical review as a group of colleagues (*Ch. 9, Premise: philosophers' activating-events*) provided their urgent and focused 'transformative' mission:

The motivation for these 'transformations' came from a historical analysis of the preceding thirty years of 'developments' of modern, intensive agriculture and the identification of a complex spectrum of destructive (if unintended)

²⁸⁵ A component of the University of Western Sydney University - now Western Sydney University - since 1988.

outcomes on both the bio-physical and socio-cultural environments. It is difficult to overstate the extent to which we accepted this 'process of undevelopment' as an imperative to change the prevailing essentially techno-centric practices. This historical analysis gave us a specified (and urgent) focus.

To meet this urgent need of improving the practice of agriculture beyond the dominant techno-scientific approach, Hawkesbury staff developed their own transformative learning models and processes. A foundational aspect of their approach is *systemic self-development*. Their quest was to create conditions for learners to develop from a place of being *only able to see unconsciously through the worldview they have presumably unconsciously absorbed, to being able to see the world consciously through various distinct, yet complementary worldviews* (Bawden, 2000a, 2003, 2004a, 2005b, 2005c). This was a primary premise of the Hawkesbury pedagogy: ***in order to change the world, we must change ourselves.***

Changing the way we take action in the world is highly interdependent with changing the way we perceive and value that world. Innovation is thus grounded in perception (Bawden, 2000a).

Transformative systemic development must start with systemic self-transformation (Bawden, 2004a).

Transformation of any system requires as a prerequisite the transformation of worldview of those involved...to change the way we do things, we must change the way we see them (Bawden, 2010b).

The transformation of prevailing worldviews [is a] pre-requisite for transforming systems in the material and social worlds...Sustainable transformative developments of systems in the material and social worlds are dependent upon prerequisite [worldview] beliefs and value assumptions (Bawden, 2016b).

In other words, the Hawkesbury model recognises the ***inseparability*** between 'systemic acts of development in the real world' and 'worldview developments of those who participate in the acts' (Bawden, 2005c). Richard and his colleagues developed the 'systemic learning and development' model and pedagogy to pursue this interconnected ***internal and external transformation.***

To explain and interpret Hawkesbury's approach to transformative learning, I first introduce their *model* of systemic learning for self-development, and then I interpret their *process* of critical learning systems (for self-development). It must be noted that the Hawkesbury experiences, as described by Richard in this vignette, took place from 1978 to the mid-1990s. Thus, there has been much time for reflection on the experiences, and hence this vignette draws on more literature than in previous vignettes.

Model of systemic learning for self-development

The learning model, developed over two decades of co-learning by Richard Bawden and his colleagues, has been described as a model of 'systemic learning and development' (Bawden, McKenzie, & Packham, 2007). Richard and his colleagues defined their model of learner self-development broadly in terms of ontological and epistemological perspectives.²⁸⁶ As mentioned in the *Ch. 12, meaning-systems*, the Hawkesbury group explored processes and conditions for helping learners expand beyond perceptions largely in a dominant *techno-centric* worldview to being able to perceive and embody a more *holo-centric* worldview,²⁸⁷ which I explain below.

According to Hawkesbury staff, a 'holo-centric' worldview has a 'holistic' ontology and 'contextually relativist' epistemology. In a holistic ontology, the concept of emergence influences perceptions and concepts (*Ch. 11.1, Premise: relational perceptions*). In a 'contextually relativist' epistemology, one judges and integrates many forms of knowing based on the contexts and ethics of the situation (*Visual 62*).

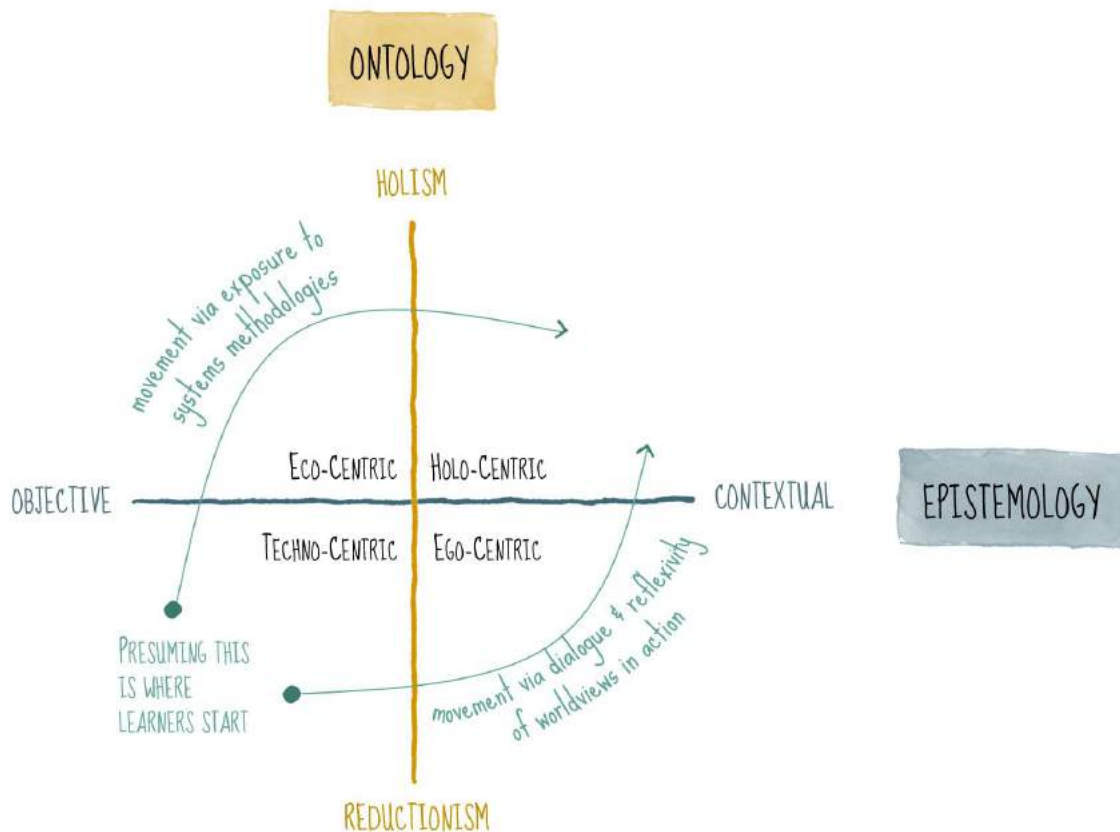
The holo-centric worldview can be defined as distinct from other worldviews in using a matrix comprised of ontological and epistemological opposites. Ontological beliefs of *reductionism* can be opposed to *holism*. Epistemological beliefs of *objectivism* can be opposed to *contextualism*. From this matrix emerges four worldview archetypes (*Visual 62*). In addition to *techno-* and *holo-centric*, the other two worldview archetypes (*ego-* and *eco-centric*) play an important role in their model of 'systemic learning and development'.

Learners presumably enter the undergraduate program, largely incubated within in the

²⁸⁶ Originally as a synthesis of the work of Gordon Douglass's schools of sustainability thought and Stephen Cotgrove's and Alan Miller's cognitive styles (Bawden, 1991).

²⁸⁷ That said, the Hawkesbury crew recognised that this concept of 'holocentric' is only an archetype, and that the characteristics of worldview beliefs and paradigmatic perspectives are virtually infinite; but at least the discussion of onto-epistemological archetypes provides a heuristic for discussion (Bawden, 2018b). The Hawkesbury writing does not hyphenate the worldview archetypes, but I do in this section in the hope that this makes the four archetypes easier to read.

techno-centric paradigm (bottom left corner of Visual 62). During the undergraduate programs, learners develop perception and abilities to apply diverse ontological, epistemological and axiological assumptions within each 'window pane' to an inquiry, and thus over time, learn the implications for meaning that will arise from each perspective. These four 'windows on the world' become panes through which facilitators create experiences for inquiry, and learners perceive and inquire into situations.



Visual 62. Pathways for paradigmatic-enriching from 'techno-centric' to 'holo-centric'

In the Hawkesbury model, Richard and his colleagues came to identify their core mission as the facilitation of the transformation of worldviews from the *techno-centric* which characterised prevailing approaches to agricultural development to *egocentric* and *eco-centric* and then finally to *holo-centric* worldviews (Bawden, 2018b). In doing so, we can conceive of two pathways to develop learners' worldview awareness and transformation in initiating better, more ethical and regenerative action within the world.

The first avenue was to bring awareness of worldviews through *experiential and reflective praxis (ego-centric route)* in diverse groups of people, e.g. "praxial dialectics of worldviews" (Bawden, 2018b), represented by the *lower arrow in Visual 62*. The second avenue was to bring awareness to paradigmatic beliefs through increasingly advanced

inquiries in which *the experiences* themselves reflect increasingly complex onto-epi-axiological features (*eco-centric route*) (Bawden, 2005c). In Hawkesbury, this was engaging the students with increasingly complex systems tools, from hard to soft to critical systemics represented by the *upper arrow in Visual 62*.²⁸⁸

How do these two abstract pathways translate into pedagogical processes? I'll explore these complementary pathways below. First, I begin with the *ego-centric* route, in which learners are engaged in experiential learning with critical systemic reflection (e.g. reflection along three dimensions of learning) to gain awareness of how worldviews become visible in our praxes. Then, I explain the *eco-centric* route, in which learners are engaged with increasingly complex systemic inquiries and tools over the three-year undergraduate program to gain paradigmatic awareness of various systems approaches. These two routes worked in parallel, in essence bridging the *inner and the outer transformations*.

Process of Critical Learning Systems (*ego-centric* development)

A signature process of the Hawkesbury learning system was the integration of critical reflexivity with experiential and inspirational learning. First, I explain 'experiential and inspirational learning systems', and then 'critical systemic reflection' (or reflexivity).

Figure 8 then summarises Hawkesbury's conceived interconnections between these processes.

Experiential and inspirational learning systems

Within a Critical Learning Systems pedagogy, all learning is experiential (similar to the three preceding vignettes). Richard refers to experience as a '*totality*', in the Deweyian sense: 'experience not merely in the sense of recognising empirical problems, but also recognising in its primary integrity, *no division between act and material, subject and object, but contains both in an unanalysed totality*' (Dewey, 1910 in Bawden, 2005c).

Building from John Dewey's experiential education, and integrating Paulo Freire's *Pedagogy of the Oppressed*, David Kolb's *Experiential Learning Theory*, and their own interpretation of Peter Checkland's *Soft Systems Methodology*, Richard and his colleagues argue that experience is at the heart of learning and is the source for developing critical,

²⁸⁸ Which works well because systems thinking and tools also loosely mirror the cultural evolution of the dominant paradigm. For example, the first wave of systems thinking is within a mechanistic metaphor, the second wave of systems thinking recognises the role of the subjective, the third wave of systems thinking is more critical and includes notions of power, and the fourth wave explores notions of 'deep relationality'.

systemic consciousness (Bawden, 2005b, 2005c). Similar to the previous vignettes, the pedagogy assumes the learner is an active problem-solver, innovative and creative (Bawden, 2000a; Bawden et al., 1984). And learning is moving beyond the intellect, to a deeply felt knowing in the fibre of one's being ('groking').

Experiential learning at Hawkesbury was conceived of as four inter-relating learning sub-systems. These four sub-systems combine in a continuing 'recursive' flux (Bawden, 2004a, Bawden, 2010a).²⁸⁹ The first two sub-systems are processes of 'finding out' and the second set are processes of 'taking action' (*Figure 7*). *Finding-out* integrates *observing*²⁹⁰ and *thinking*²⁹¹. Taking-action integrates *planning*²⁹² and *acting*²⁹³ (Bawden, 2000a, 2000b, 2004a, 2016b; Bawden & Packham, 1998).

The Hawkesbury team also recognise the value of what they refer to as the inspirational learning, complementary to experiential learning (*Figure 6*). Richard explains (1998) that experiential learning can be conceived of transforming experience into meaning (through the operation of intellectual reasoning and consequential ethics), inspirational learning transforms insight into meaning (through intuitive, emotional, moral and aesthetic judgements). Inspirational learning, in contrast to experiential learning, asks us:

not to immerse ourselves in the 'real external world of the concrete' (the sensual) nor to 'conceptualize the abstract' (the conceptual), but to 'disengage' from 'reality' and seek the experience of 'internal insight' through some form of meditation or contemplation" (Bawden, 2005c).

Richard recognises the tensions between the 'experiential' and 'inspirational' ways of making meaning, but argues that the tensions allow a more meaningful action and praxis to emerge (2003). The conceived relationships between the concrete, abstract, and spiritual worlds are visualised in *Figure 6*.

²⁸⁹ As opposed to the common interpretations of David Kolb's learning process as a separate cycle.

²⁹⁰ i.e. focusing on observation through immersion in concrete experiences.

²⁹¹ i.e. transforming observations into abstract conceptions or theories in explanation; applying propositional knowledge.

²⁹² i.e. design of plans for action based theories/concepts and observations.

²⁹³ i.e. application of such designs in adaptive or transformative action.

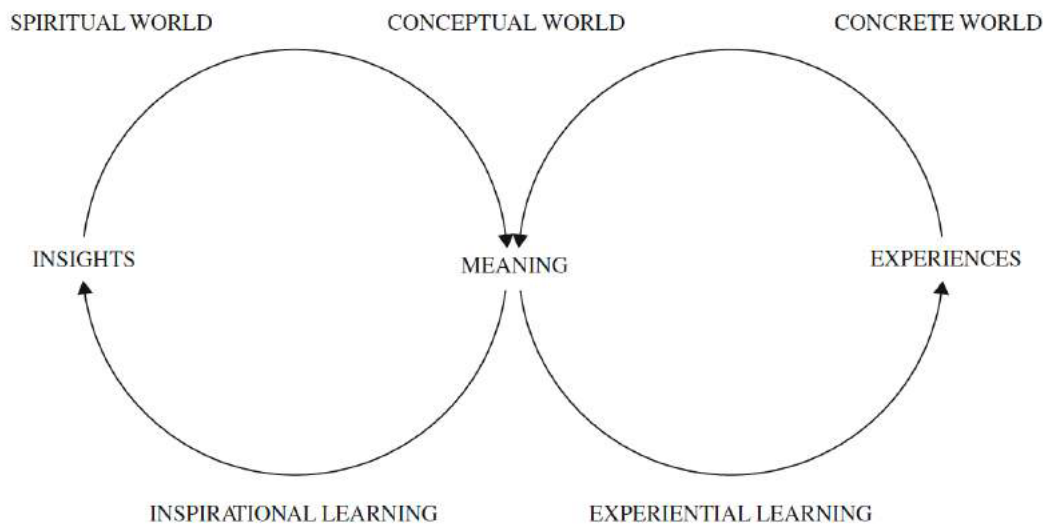


Figure 6. Meaning emerges from the concrete, abstract and 'spiritual' worlds (in Bawden, 2010a).

Similar to experiential learning, inspirational learning was also conceived of as fluxing sub-systems. These sub-systems were described as: meditating (disengaging), focussing, accepting and applying (2018b, *Figure 7*).

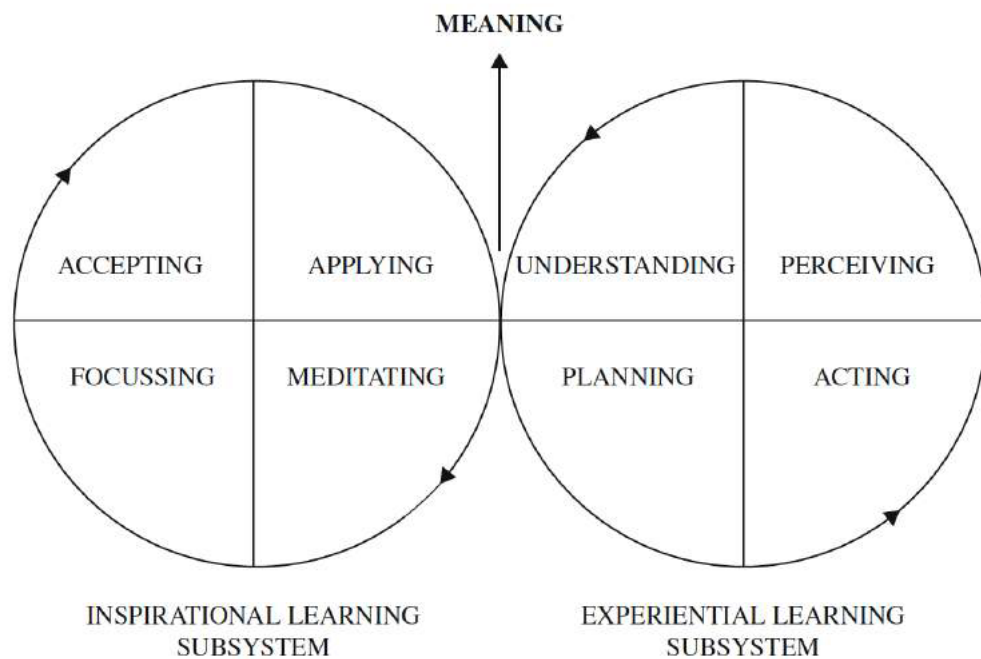


Figure 7. Learning system and sub-systems that generate meaning for actions (Bawden, 2010a)

Students were introduced to these foundational pedagogies within the first week of the program, in order to explain why their course may feel different to any other type of learning the students had experienced in the past (similar to Janet's explanations in the first week of Semester in Dialogue).

Critical systemic reflection (reflexive learning)

Moving beyond experiential and inspirational learning, the next important component in the Hawkesbury pedagogy is critical systemic reflection, or reflexive learning. Critical systemic reflection refers to the ability to reflect on any experience along three dimensions (explained below). Hawkesbury staff believed that reflecting along these three dimensions of learning is imperative in helping the students stretch from a *techno-centric* to *holo-centric* worldview (via *ego-centrism*).

Hawkesbury's dimensions of critical systemic reflection (reflexive learning) represent a pragmatic synthesis of work by scholars who all sought to explore ideas relevant to transformative learning, or worldview development. This work includes William Perry's stages of student development²⁹⁴, Karen Kitchener's levels of cognition, and Marcia Salner's observations for efficacious teaching of systems theories. *Table 23* briefly compares these orders of learning (referred to by Richard as dimensions of reflection).

The common thread in these frameworks as articulated by Karen Kitchener, Marcia Salner and the Hawkesbury faculty is that we can always reflect on what we do as we do it in at least three ways. Firstly, what are we learning about the matters at hand and why? Secondly, what are we learning about the process of learning and why? Thirdly, what are we learning about our own worldviews, or the paradigmatic beliefs at play in this situation, and why does that matter?

²⁹⁴ William Perry and his team observed that epistemic development 'characteristically progresses' from 'dualistic assumptions' about the world and how we come to know (i.e. more objectivist/reductionist paradigmatic lens), towards multiplicity (e.g. a recognition of an infinity of perspectives) towards perceptions and assumptions grounded in 'contextual relativism' (e.g. the importance of context in defining truth and value) (Bawden, 2003).

| Dimension (order) | Individual cognition (Kitchener, 1983) | Systems learning (Salner, 1986) ²⁹⁵ | Hawkesbury critical systemic reflections* |
|-------------------|--|---|---|
| One | Learning (read, memorise, compute) | Knowledge content | Learn about the matters as hand |
| Two | Meta-learning (monitor progress while engaged in first order tasks) | Awareness of competences for, inquiring | Learning-about-learning <ul style="list-style-type: none"> • Learn about the process through which the matter at hand is being learned • Develop criticality of our inquiry processes and the implications of the approach we take • Shape practices in response to new worldview assumptions • Reflect critically about the consequences of changing the way learning happens |
| Three | Epistemic learning (reflect on limits, certainty, criteria of knowing) | Reflecting on why one thinks the way one does, in order to develop towards more complex perceptions | Learning about worldviews <ul style="list-style-type: none"> • Learn about the nature of knowledge and being • Reflect on significance of paradigmatic assumptions that frame the way learning is conducted and knowledge is created • Challenge and change worldview assumptions • Engage with other paradigmatic approaches • Explore the possibility of infinite ways of perceiving, knowing, being |

*(Bawden, 2003, 2004, 2005, 2018; Bawden & Packham, 1998)

Table 23. Summary of frameworks inspiring Hawkesbury's critical systemic reflection

Reflecting along these three orders enables significant learner development. By learning *how to reflect* on a) how and why we are learning about a matter at hand (first-order), or b) how and why we are learning-about-learning (second-order), learners *learn how to*

²⁹⁵ Marcia Salner's 1986 paper describes the shared pattern between student development (from dualism, to multiplicity, to contextual relativism *à la* Perry - hence I have left William Perry out of this table) and the development of science (from foundationalism, to subjectivism, to contextual integration *à la* Kuhn). She argues that if students do not have more complex epistemological processes (e.g. that of contextual relativism or contextual integration), they will apply the systems tools in simplistic ways that do not achieve the intention of systems theories, e.g. in a holistic view that seeks to move beyond dualist perceptions. This profound insight resonated with Hawkesbury faculty's experience.

create different, more complex ways of learning and knowing. Importantly, *learning how to engage* with ‘third-order’ reflection helps learners *learn how to* see the influence of our worldviews on our actions, and to create more ethical or beneficial alternatives. In essence, developing critical reflexivity competencies along these three dimensions enables learner development by creating conditions for students *to learn how to learn, and learn how to continually improve their learning*.

Experiential learning is essential for learners to develop through critical reflexivity

Hawkesbury firmly believed that the only way to develop critical systemic competencies (critical reflexivity along these three dimensions) is through experiential learning. William Perry, and later Marcia Salner, suggested that moving from epistemic dualism to multiplicity to contextual relativism *requires* considerable *experiential challenges*, and once the perception and competency of contextual relativism is created, it demands a continual commitment to *experiential* refinement (Bawden, 2005c). As Richard argues, there is no point being told (transmissively) that you have a worldview, you have to find out for yourself:

What you do in the world is an expression of how you see the world. So, if you want to change what it is that you do, you've got to change the way you see the world. But you can't see the world differently until something encourages you to say "I've got to see the world differently" ...While the students are doing their projects, we'd get them to reflect deeply about who they are, what they value, what they believe in.

In sum, a Critical Learning Systems pedagogy encourages facilitators to design experiential learning about matters at hand such that all three highly interdependent dimensions of critical reflection are encouraged (Bawden, 2002, 2005, 2007; Salner, 1986). Learning then consists not only of fluxing experiential and inspirational sub-systems, but also a ‘nested holarchy’ of self-reflection at three levels, with each system influencing and being influenced by each other (Bawden, 2004b).

Figure 8 summarises how (experiential and inspirational) learning provides the fodder for critical reflexivity about the matters at hand, about the learning itself, and finally about all of this in the context of one’s individual and collective (epistemic) worldviews (*Figure 8*). Importantly, each of these reflections can be undertaken from many worldview stances, as indicated by the archetypal ‘window pane’ (e.g. *Visual 62*) on each level of critical reflection (*Figure 8*).

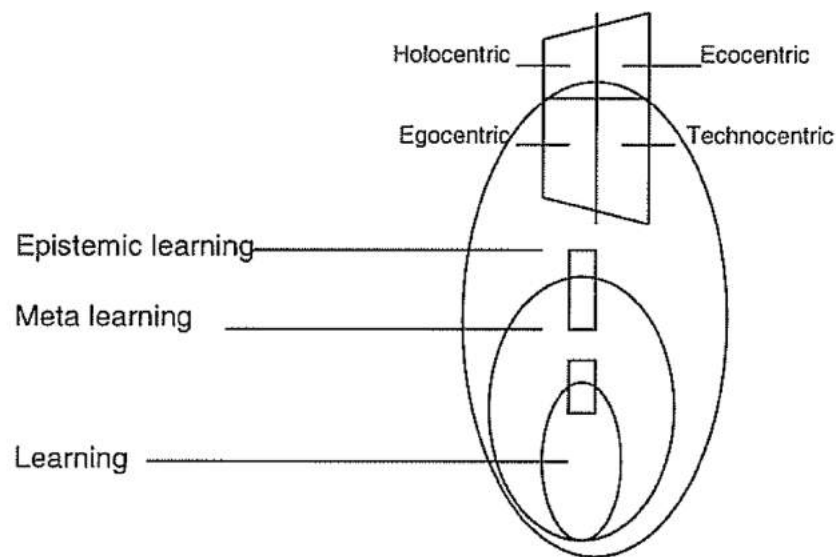


Figure 8. Critical Learning Systems: learning about the matters at hand with consistent critical reflection from various worldview stances along three dimensions (Bawden, 2005b)²⁹⁶

This *ego-centric* route of development (reflexive learning) was complementary to the *eco-centric* route of development (*Visual 62*), which I explain next.

Movements to more advanced inquiries (eco-centric development)

This section describes the *eco-centric development* pathway. Eco-centric development is based on exposure to increasing complex, systemic situations and inquiries. However, for the learners to engage with the increasingly complex paradigmatic assumptions in new waves of systems tools, they need the ability to be aware they have a worldview and how that worldview influences their way of making meaning. As articulated above, this worldview development is obtained through experientially-enabled critical reflection along three dimensions (Salner, 1986).

In other words, there is no point teaching systems tools and theories until learners have moved beyond dualist epistemologies towards more complex epistemological positions. Students with a *techno-centric* worldview archetype will pursue systems methods within

²⁹⁶As this inquiry has demonstrated, many interpretations exist of the 'three-levels of learning' (*Ch. 2.8, To what does transformative learning refer?*, *Ch.14, Process*). The orders of learning and change can be mapped hierarchically to the epochs of the dominant-cultural-paradigm (*e.g. Figure 2*). A more integrative approach is for each epoch of the dominant-cultural-paradigm to be used as a way to engage with each order of learning, e.g. we could learn about content in a variety of philosophies, we could reflect on learning in a variety of philosophies, and we can learn about our worldviews in a variety of philosophies. The implication of this is that learning remains open, and each additional philosophy can have new implications for learning.

an ontology of holism **only when** they realise a *techno-centric* worldview is unhelpful in creating improvements (Bawden, 2004a).

On a foundation of building worldview awareness experientially, facilitators can engage learners in moving towards more advanced inquiries. Over the course of three years, learners in the Bachelor program progressed from puzzle solving, to problem solving, to situation optimising, to situation improvement (*Figure 9*). These increasingly advanced systemic inquiries built towards the development of reconciliation competencies and systemic consciousness, or the profound ‘sense of wholeness’ and ‘sensitivity to interconnectedness’. In each type of inquiry, students are learning experientially and inspirationally while reflecting on three dimensions of learning.

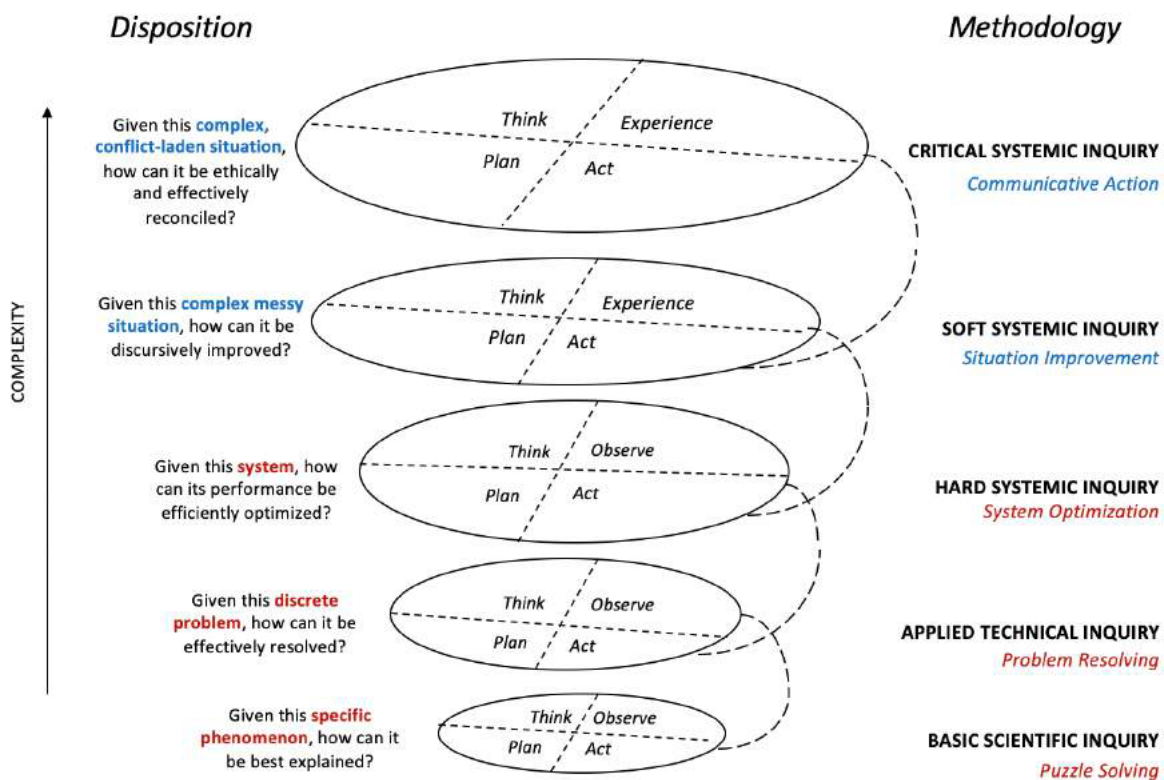


Figure 9. Hawkesbury spiral of increasingly nested systemic inquiry (Bawden, 2020)²⁹⁷

As demonstrated in *Figure 9*, learning at Hawkesbury began using systems approaches in simple ways (arguably within the Western techno-centric worldview archetype) and moved to much more complex, critical inquiries (arguably within the holo-centric worldview archetype). The purpose of moving from simple to much more complex

²⁹⁷ Unpublished diagram provided by Richard Bawden. I have adjusted colours to the themes of this inquiry.

approaches meant that the experiential learning could start with problem-solving approaches that were closer to the likely 'developmental' states and worldviews of the students, and help students build resilience and confidence with increasingly more complex situations and developmental states.

The development of worldview awareness and adaptation demands forms of interaction that are challenging, but not too challenging, i.e. both: sufficiently critical or self-confrontational to challenge prevailing assumptions and beliefs of our meaning-systems (i.e. onto-epi-axiologies) **and** sufficiently supportive to avoid the mutual negation of each other (Salner, 1986).²⁹⁸ Thus, the increasing complexity allowed for a maturation of both the intellectual, moral and emotional development of the learners (Bawden, 2005a).

I next outline the five movements towards increasingly complex situations of inquiry and change in the Hawkesbury Bachelor program.

Experimental methods of reductionist science and reductionist technology

From the first day that learners arrived on site, they were assigned to groups and a facilitator, and given problematic situations in the field to address (Figure 9). According to Richard, the temptation was for the groups to seek the technical issues at the heart of the 'problem' to solve it:

In terms of our spiral, the students 'entered' at what, at first exposure seemed like a simple problem to be solved using simple deductive logic. Within a very short time of involvement in this 'simple' field experience, it became obvious that it was not so simple after all. It demanded further puzzle solving research (in other words a motivation for the students to go find out more of the puzzling scientific issues at the heart of 'problem' as well as needing to figure out why there was so much disagreement between them about what needed to be done to solve the wretched problem. And where these two dimensions were missing or inadequate during this first exposure, the facilitator was there on hand to 'promote such reflective behaviour'.

²⁹⁸ If this balance was not struck, it was possible that learners would remain in conflict without being able to re-establish a relationing from which we can 'bring forth a new world together', Maturana and Varela, 1987, 246 in Bawden 2003.

In other words, learners were engaged in experiential, inspirational, and multiple dimensions of reflexive learning. In these 'problem solving' experiences, learners were challenging each other as a result of different worldviews:

*Because students were constantly in groups, working on real-world projects all the time, they had a constant opportunity to **check out their own views, the views of others, how and why they conflict, and what they're going do about it...** Day one, you're down there, where a kid from the farms says "spray the weeds" and a kid from the city says "Well, that's not a very good idea." They were relatively simple problems but contestable, so there was no simple solution. Every solution was questionable. It's disorienting.*

When the learners were challenged emotionally and conceptually, the role of the facilitator was to "download" (i.e. pause and reflect) with learners on moments when worldview-in-action-and-in-conflict became apparent. Everyone would have a different point of view, because of their diverse ethics training, or religious experiences, etc., and the facilitator would then engage the students in conversation to reflect on: what just happened in that conversation? Why did that happen and how did you feel? And how did that evolve? And what are we/you going to do about it?

Engaging in simple problems first allowed learners to adjust to this new style of learning, e.g. that learning is emergent, non-transmissive, and includes learning-about-learning, and learning about yourself, all in the '**whole**' of one group project:

The experience of discovering differences among themselves even about the exact 'problem' itself, then laid the foundations (a) for understanding the difference between presenting problems and more complex problematiques (b) for appreciating (although not recognising or being conscious of) worldview differences (c) for experiencing the process of experiential learning (making their own sense out of what they were experiencing in the field) and (d) for the imperative for seeking conceptual understanding (e.g. by found out through the library, through different workshops on hand, through special learning packages etc.) of the issues involved (for scientia – scientific understanding in terms of puzzles).

Moving from simple problems (e.g. weeds in the wheat, dairy leakages, sheep with blowflies) to problem-solving, the group projects became larger in boundary. These problems were still fairly dualistic and with positivist onto-epistemological assumptions,

yet the diversity of learners (e.g. from city and from rural areas), still provided moments for epistemic cognition and conscientisation of their worldviews.

Hard systems

The hard systems approach is one that Richard describes as 'ontosystemics', or the perception of systems within a mechanistic paradigm (Bawden, 1991). In this perspective, 'systems' are perceived as existing in the real-world, e.g. ontological things that exist 'out there' (2004), which can be mapped, analysed, predicted, and controlled. Commonly referred to as the first wave of systems thinking (Midgley & Rajagopalan, 2019), this approach is often associated with engineering, where systems approaches are used to optimise, for example, the agro-ecosystem (2002, 2010).

Soft systems

In the second half of the first year, learners were engaged in more complex situations, with even broader boundaries, e.g. 'soft systems', Soft Systems Methodology, or systems thinking of the second wave (Midgley & Rajagopalan, 2019). Instead of the 'systems' being a 'real thing', in a soft systems approach the systemicity refers to the inquiry process into various contexts and the development of the people and group of inquirers (Checkland & Poulter, 2010). Learners develop their 'contextual and relational sensibilities' and become aware of how their 'interpretation' of a system out there is only a map, and that their map is quite different from others (Salner, 1986). Thus, this 'episystemic' approach is a process of collectively and communicatively inquiring into a context-rich situation with a host of people who are all implicated in the situation, to move towards improvement of social-natural relationing via agriculture (Bawden, 2004a; Bawden et al., 1984).

These types of situations were curated, for example, such that learners would spend a semester on a farm. Learners would not only investigate the flows of resources on the farm (hard systems), but also the perspectives from each stakeholder and family member regarding needs and opportunities for improvement, as well as their own perceptions and meanings (soft systems).

Critical systems

Whereas hard systems seek to optimise (simple 'machine-type' situations), and soft systems seek to improve (messy, complicated situations), critical systems seek to improve the reconciliation amongst people and amongst nature and culture. Hence, this next phase of systems, engaged in during the third year of the undergraduate program, broadens the

boundaries and contexts even more to include issues of power, conflict and emancipation in highly complex situations (Bawden, 2002). For example, the power relations within systemic interventions are explicitly considered (Jackson, 2010), the boundaries of the inquiry are a source of reflection and worldview awareness (Ulrich, 1996), and cultivation of emancipation is sought (Ulrich, 1996).

Within this third wave of systems thinking (Midgley & Rajagopalan, 2019), systemic, strategic, participative and critical conversations and discourse are privileged (Bawden, 2003). And it is within these critical conversations that many worldview differences continue to be uncovered, in terms of ontology, epistemology, ethical, moral, aesthetic perspectives and 'enthusiasms' (Bawden & Packham, 1998). These differences are explored across broad groups of participants - learners, faculty, farmers, NGO's, government - to learn about the implications of these differences in terms of potential actions to achieve desirable, ethical outcomes. The activities and outcomes of systemic development aimed to achieve the '*glorious unity of opposites*' (Von Bertalanffy 1968 in Bawden, 1995): that is for improvements and development in agriculture to be:

aesthetically acceptable and technically possible;
ethically defensible and economically viable;
culturally feasible and socially desirable;
spiritually compatible and practically manageable;
ecologically responsible and politically supportive (Fear et al., 2002).

By the end of the three-year program, learners engaged in these increasingly complex systemic approaches (problem, hard, soft, critical) which can also be conceived of and used as a nested holarchy of systemic inquiry. As systemics are seen as vehicles for re-perceiving the world (Bawden, 2002), the purpose of engaging in these increasingly complex levels of systemic inquiry is to facilitate the 'consciousness of, and competency at, systemic pluralism of these methodologies, systems theories, practices, and philosophies as integrated wholes (Bawden & Packham, 1998). Through this process, Richard believes the students learned experientially that:

You can't actually solve a problem, because there is no problem, it's just incredibly complex but you could improve the situation. It begs the questions of what constitutes an improvement, and who decides. It's contextual. Always, it's contextual. And so, our work has been all about that. And the broader your lexicon, the broader the number of worldviews that you can appreciate, then the more sophisticated you will be in terms of making choices about the context in which you're now operating.

In the interview, Richard also described how the students became adept at looking at the world through various worldview archetypes, and knowing which archetypes and methodologies were required in particular situations, as there are times when some archetypes are much more preferable or relevant than others:

The notion of, there were five different ways of looking at experiential learning from science through problem solving through system optimization through soft through critical. And so now you have to be aware of the situation and which particular method you would use under this particular circumstance. Is this where you leap in a to do the scientific bit, or is this where we've got to sit back and look at the context first? So, the students became very good at this.

In other words, in the quest for more responsible, ethical, sustainable actions, a group of inquirers engaging in Critical Learning Systems²⁹⁹ develop the ability to knowingly and productively integrate complementary practices and philosophies, as demanded by the situations' contexts.

Systemic consciousness

The next level of systemics can be described as a state of being, or the fourth wave of systems (2005b). It is the ability to approach the world with a profound *sense of wholeness and sensitivity to the interconnectedness* within us, between us and within which we operate. A systemic consciousness is a perception of our participation as sub-systems embedded within an embedded system, which is also a sub-system, and in which our insights and sensitivities resonate with the unity of nature's workings (Bawden, 2005b). This level of consciousness represents a change from *piecemeal thoughts* to *perceptions of the whole* (Bortoft, 1996 in Bawden, 2005b).³⁰⁰

Over the course of their undergraduate program, the conditions were created for learners to develop an awareness of the vital interconnectedness of life. This perception of interconnectedness develops in regards to others that learners come into relation with (as a collaborative social learning system), and the 'systems' of interest that they engage with, and the environmental, natural, social 'supra-systems' (Bawden, 2002). Thus their

²⁹⁹ i.e. experientially using systemically plural and nested methodologies while engaging in critical systemic reflection, to embrace different worldview and paradigmatic assumptions.

³⁰⁰ Richard provides Johann Goethe's science as an example of this type of consciousness: where Goethe came to see the 'wholeness of the phenomena by consciously experiencing it' (Bortoft, 1996 in Bawden, 2005b).

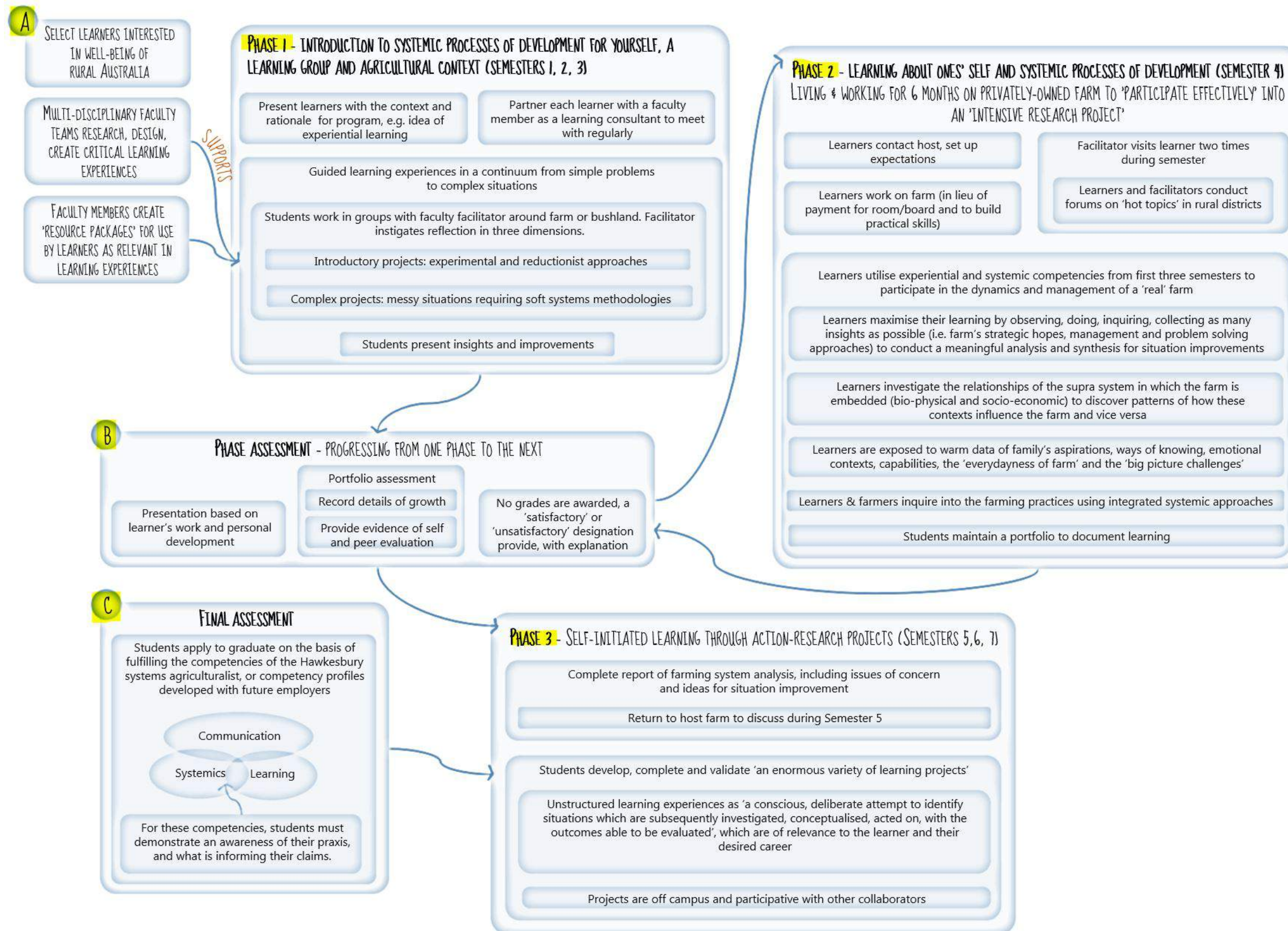
consciousness of the interconnectedness between life, learning, and their own perceptions, worldviews and actions, also strengthens.

In sum, the Hawkesbury program sought to create a space for 'systemic beings to be systemic'. Through experiential immersion and systemic processes of learning, the educators sought:

the development by the students, of competencies appropriate to dealing, as professional agriculturists, with complex systemic messy unstructured issues that might emerge as the future unfolded. The overall context was an essential concern for the unsustainability of the farming systems of the time and how the adoption of systemic worldviews and associated development methodologies could substantially 'improve the situation' (Bawden, 2016b).

Cartography of the Hawkesbury Bachelor of Systems Agriculture

The cartography below provides an overview of main features of the Hawkesbury undergraduate degree including: preparatory work of the facilitators (*box A*); the first year and a half (*Phase One*); the semester a student spent living on a farm (*Phase Two*); their final year and a half of self-initiated learning (*Phase Three*); and the process of assessments during the course and for the course completion. Similar to Heather's multiple year program, the onus was on the students to explain and justify how they had met the learning criteria.



Cartography 4. Interpretation of learning processes for the Systems Agriculture Bachelor

This section attempts to capture the complexity of Hawkesbury's Critical Learning Systems pedagogy. However, Richard might reiterate that this model developed over time, and there never was a 'Hawkesbury model' as such, but rather a group of faculty and learners that kept reflecting on and improving the model as they continued to learn:

People would ask "what is the Hawkesbury process?". Well it's tomorrow's. I don't know what it's going to be tomorrow. At the moment, it's this. Meaning, the process is always changing, focused on learning itself, and adapting new models and theories in new forms of pragmatic situation improvement... My position was really that there never was a single Hawkesbury Approach – as others seemed to claim. That said, we were remarkably consistent from the start about the integration (fusion?) of experiential learning and systemics in the quest of inclusive improvements.

Therefore, this model and process is not 'the way', or even 'a real thing', but rather an interpretation of the territory that the Hawkesbury Agricultural College sought to cover, at a particular moment in time.

And unfortunately, the program did not continue over time. Within five years of Hawkesbury's incorporation into Western Sydney University, the innovations in the undergraduate program were eventually cut. The administration did not share the Hawkesbury vision of the university as an agent of social development nor have any experience with agriculture, experiential, or systems learning. These new administrations were intolerant of experiential pedagogies and financially unwilling to support the costs of 'intensive pedagogies' plus the 'real world' experiences out in rural areas (Bawden, personal communication, November 27, 2017). 'Rigour' and 'fiscal responsibility' rationalised and 'disciplinised' the course, remodelled it to fit the 'chalk and talk' pedagogy (or e-learning even more so), and virtually ended the undergraduate program (Bawden, 2016b).

Hawkesbury is thus a 'cautionary tale' about pressures of conformity (Bawden, 2000a), or what Deleuze calls the power of reterritorialisation into dominant paradigmatic norms. After an 'almost century-long uncritical commitment to the modernisation of agriculture', the Hawkesbury college, evolved into one of deep and multi-faceted systemicity, and then reverted back again to the dominant paradigm (Bawden, 2005c, 2016b).

14.7 Summary and discussion

The purpose of *Ch. 14, Process: models* is to recognise the strengthened collective wisdom that grows from the diversity of each of the facilitator's approaches to designing and curating processes here signified as 'transformative sustainability learning'. Even though the educators share resonant critiques of the dominant-cultural-paradigm (*Ch. 6 and 7*), and intentions to create conditions for learners to experience contexts born from different paradigmatic beliefs and perceptions (*Ch. 11 and 12*), each vignette developed a very unique content and approach based on the context of their own worldview and experiences (*Ch. 10*), and their educational setting (*Ch. 14.1*).

Complementary and provocative models

I celebrate this diversity because the educators' distinct models bring complementary values and benefits. Janet's CityStudio model provides a meta-perspective on how these processes of building relationality and trust between community, learners and the university contribute to cultural shifts within the community. Heather Burns' Model offers a macro perspective on the pragmatic integration of pedagogies (each of which bring powerful onto-epi-axi-etc. stretching capacity) which can be implemented by educators who are in various stages of their own worldview and paradigmatic awareness conscientisation.³⁰¹

Both Joy and Richard offer a historical perspective on how transformative sustainability learning can be considered with respect to the evolution of the dominant-cultural-paradigm, and thus specifically *encourage worldview reflections for the educator* (*Figure 2, Visual 62, Figure 9*). From a more recent evolution of the Western paradigm, i.e. agential realism, Joy prompts us to become conscious of how matter can be brought in as a teacher and trigger for emotional and social learning, for improving both engagement with content and relationality amongst the learners, and relational ways of being together in the world.

The Hawkesbury model follows the evolution of the dominant-cultural-paradigm, as it manifested in systems thinking. Using the paradigmatic progression of systems thinking, facilitators progressively complexified experiential learning (supported by critical reflection in three dimensions) in order to create: the conditions for worldview stretching; and the ability for learners to integrate multiple worldview archetypes and increase their

³⁰¹ Yet recognising that the implementation of these pedagogies will also depend on the facilitator's own worldview and paradigmatic awareness.

onto-epi-axi-etc. humility and agility. The Hawkesbury model reminds us of the developmental significance of processes that help learners learn how to learn in paradigmatically distinct ways.

By bringing each of these models together, we are provoked to develop a more comprehensive conception of what transformative sustainability learning could entail, and are reminded of how one correct model does not exist, and how models should be open to continual evolution. This diversity serves as a reminder for those who seek to design their own transformative learning experiences: there is no formulaic approach, but rather insights to be gained in conversation with those who have gone before and those currently teaching, in order to aid reflection, experimentation, and collaborative learning, in support of one another, in continual processes of creative evolution.³⁰²

Relational learning processes

Despite their incredible diversity, each of the learning experiences created the conditions for healing separation and strengthening relationality across many dimensions. Below, I briefly discuss how the vignettes create the conditions for learners to live more relationally with and within the world.

Relationing with self³⁰³

The learning experiences also heal the mark of separation within *self*. Heather's students create a self-care plans, in which they try to integrate their disparate selves. Joy's students healed in many ways from past disconnects from family, food and trauma (2017a, b). Janet's students also deal with family issues, mental health issues and coming of age concerns, through the course.

³⁰² My purpose here is not to create an even more 'true' representative model of transformative sustainability learning, but to make the case for the value of continually abstracting and knowing one's own model, and being able to view it in a complementary constellation with other models, in efforts to continually evolve one's praxis and learn with historical and current compatriots. So perhaps one particular model, or combinations of several models, might be helpful for a facilitator in their unique context. How much time does one have for a course? Does a certain approach feel more comfortable? Does one have a specific philosophical vision inspired by systems theories, postmodernism, integral theory, or Indigenous and Eastern ways of knowing? What are the onto-epi-axi-etc. assumptions within these philosophies, and how do they translate into learning experiences for facilitators in their place?

³⁰³ I am using the present tense here of relation, to signal a process "a bringing back, restoring", in line the of etymological (Latin) roots of relation.

Relating with others

To build connection with *others*, the courses all curated experiences prompting “authentic relationships” between the learners (Burns, 2016b). The diverse processes for authentic relating include: retreats, collective meditations, circle reflections, ‘being together’ in potluck meals, shared bike rides or walks through the community. Shared inner work is also fostered in frequent group check-ins, sharing of personal memories and stories while eating, and collective time with an inner work guide.

Relating and healing with place

Each course has strong connections to the place within which they are embedded and making improvements. They couple themselves to their environments through working with cities, with land and gardens, and with farmers and community. Particularly for the longer courses, the students spend a significant amount of time, if not most of their time, away from a traditional classroom and out in the ‘place’ of interest.

For most of these courses/programs, the learning is not only by the individual students, but co-learning with other people in and of that place. The divide between learners as students and learners as people implicated in challenging situations of that place began to blur. Students and faculty worked collaboratively and actively: with citizenry to tackle challenges of food security; with local schools, farmers and government to improve access to fresh food to disadvantaged community members; to create more resilient rural development and agricultural development.

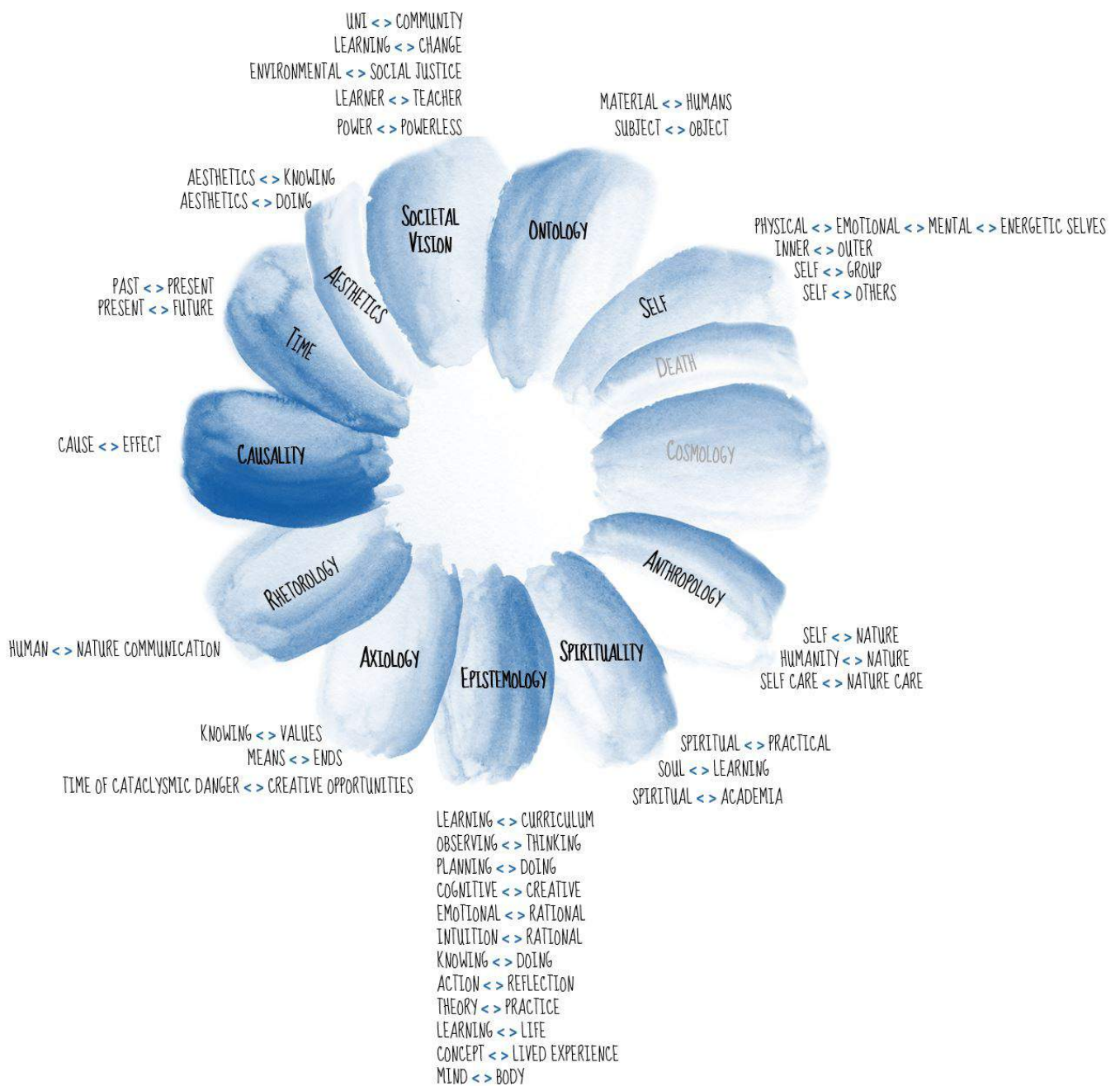
As a continuing commitment, the long-term courses thoroughly embedded themselves in their local community. Distinct but related projects arise over time, which continue to contribute to local improvements. In essence, the vignettes are delivering a scholarly yet practical strategy by which the academy becomes a “vigorous partner in the search for answers to our most pressing social, civic, economic and moral problems” (Bawden, 2004a).³⁰⁴

³⁰⁴ Hawkesbury, which had been running the longest, demonstrates the extent to which this integration can happen: “*Rather than becoming a mere “partner” with others in the community, however, and concentrating solely on the “search for answers to problems,” Hawkesbury faculty and students alike have focused on embedding themselves and their institution as a whole, into a comprehensive network (or dispersed agora, as it were) of those concerned with the “systemic development” in and of rural Australia*” (Bawden, 2004a).

Experiences of profound integration, or towards unity

The vignettes also indicate a sense of profound integration, towards a sense of unity, as annotated in the text. Through this profound relationing with their selves, each other, place, and with agential materials (food), slowly the structural conceptions and enactments of separation begin to crumble. Slow, embodied learning is capable of creating a sense of consciousness as radical interconnectedness or nonduality (Selby, 2002; Norton & Smith, 2012). Beyond this, boundaries around university classroom, research, learning, social dialogue, community change, individual inner work, shared inner work all begin to blur. Experiences in which, instead of duality stacked upon duality which dismembers our being and reality, nonduality interwoven with nonduality create spaces for perceiving *symmathesy*, or the collective continuous mutual learning and transforming (Bateson, 2015). In this space of profound integration, these conditions melt the divide between minds and hearts, between academia and spirituality, which have been structurally ensured and rigidified over centuries, as our notions of learning have evolved towards typical norms within the dominant-cultural-paradigm. Instead, sustainability can be re-perceived as a process of *healing the separation* in our own and collective perception<>lives (*Visual 63*).³⁰⁵

³⁰⁵ While this inquiry did not have time to engage with the perspective of the learners, I wonder how the experiences of these vignettes may have felt to the diverse learners. Did anyone notice a radical interconnectedness across meaning-systems, an entwining of self, other, place, nature, spirituality (*Ch. 12, Premise: meaning-systems*), perhaps even of Erich Jantsch's or Gregory Bateson's unity, or beyond-separatist moments (*Ch. 11, Premise: relational perceptions*)?



Visual 63. The relationality patterning throughout the felt experiences of the vignettes³⁰⁶

These authentic relations are beyond the commonly discussed skills sets of sustainability students (e.g. Wiek, Withycombe, & Redman, 2011). Heather³⁰⁷ and Joy’s processes recognise and “re-member” relations *between learners*, with *place* and *memories*, and with *content* (O’Neil, 2017b). Janet and CityStudio nurtures relations between *cities*,

³⁰⁶ As far as I could ascertain, neither death nor cosmology meaning-systems were engaged.

³⁰⁷ See Table 22.

universities, diverse students for shared experimentation and learning towards culture change (*Figure 4*). Hawkesbury's pedagogies strengthened awareness of the vital embeddedness and interconnectedness for those in a collaborative social learning system, the 'systems' of interest, their environmental, natural, social 'supra-systems', and their worldviews-in-action (Bawden, 2002). I suggest these intentions are enabled by the vignette-educators' embodiment of *relational* logics-of-perception (*Ch. 11, Premise*), and represents the profoundly different approaches to learning that can be developed from more complex, beyond-binary, logics-of-perception.

When courses are designed as elongated experiences of profound integration, an opportunity exists for third-order reflection and diffraction. The following chapter discusses how the vignettes engaged with the orders of transformative learning.

Chapter 15:

Engaging with three orders of learning

Orienting this chapter in relation to the other chapters

This thesis explores how we might develop learning experiences differently. The *Premise segment* illustrated the philosophical reflection and diffraction undertaken by preceding-philosophers and educators in order to design learning experiences more conducive to just and ‘sustainable’ ways of being. The previous chapter demonstrated how each educator infused their learning experiences with these new philosophical beliefs. My final question in this thesis is, how are learners engaged in making meaning of these minoritarian³⁰⁸ experiences?

Order and purpose of this chapter

This chapter compares how the courses facilitate three potential orders, or dimensions of learning. To frame this discussion of ‘nested transformative learning’ processes, I use the Hawkesbury model.³⁰⁹ Therefore, I first discuss processes of learning about content,

³⁰⁸ Beyond the dominant-cultural-paradigm.

³⁰⁹ I use this model as it highlights the potential for self-development through providing competencies of learning how to learn, and learning about worldview awareness as third-order reflexivity in line with the definitions of Gregory Bateson, John Mezirow, and Stephen Sterling.

followed by processes of learning-about-learning. Finally, I compare and contrast processes of learning-about-worldview and paradigmatic beliefs.

The purpose of this section is to deepen and complexify our questions about 'transformative sustainability learning' processes by harvesting insights into why and how educators have integrated these three dimensions of learning within an experience.

15.1 First order of learning: Experientially learning-about-content

In comparing the processes for learning-about-content, it is obvious that experiential learning is foundational. Every course/program is facilitated within an iterative, experiential pedagogy in order to strengthen the learners' *praxes* of learning about the 'content'. *Table 24* provides high-level examples of these cyclical, iterative, fluxing processes of 'finding out' and 'acting'.

| Praxis | Finding out | | Acting | |
|------------------------------|---|---|---|--|
| | Observing ³¹⁰ | Reflecting ³¹¹ | Planning ³¹² | Doing ³¹³ |
| environmental cooking | Visiting organic farms; observe cooking skill | Readings; group discussions; | Plan out sourcing of food; prepare cooking area; design 'flavour improvements' | Practice the cooking skills; experiment with flavour improvement |
| cities | Site visits around city | Research, dialoguing | Iterations of designing, planning critiquing | Implementation of design projects |
| community garden improvement | Visits garden | Research, group discussions; learning about pedagogical theory | Designing improvements for the communal garden; designing learning experiences to trial | Implementation of learning experiences, and evaluation |
| rural development | Observing farm processes to identify situational contexts | Investigate various disciplinary, methodological, and philosophical sources | Develop strategies in partnership with team and with learning facilitator | Implement actions for situation improvement |

~ This table integrates the basic learning subsystems of experiential learning theory as theorised by John Dewey, Paulo Freire, David Kolb, John Mezirow, Heather Burns and Richard Bawden.

Table 24. Praxis to strengthen knowledge of sustainability content/theme

This pedagogical approach - of designing courses entirely as holistic experiential learning processes - can be compared with others who also describe their work as 'transformative sustainability learning'. While the call for experiential learning in sustainability learning generally has been oft repeated (Brundiers, Savage, Mannell, Lang, & Wiek, 2014; Burns, 2009, 2011; Burns et al., 2016; Sipos, Battisti, & Grimm, 2008) and integrated experiential learning is the basis of any meaningful learning (Dewey, 1938; Freire, 1974; Sriskandarajah et al., 2010), the majority of the papers reviewed in the literature scan that invoked the terms 'transformative sustainability learning' took place in the classroom. And

³¹⁰ And/or: emoting, feeling, sensing, inspirational

³¹¹ And/or: propositional knowledge gathering, intuiting, abstracting, theorising, dialoguing, analysing, metaphors, dreams

³¹² And/or: designing, appraising, critiquing, synthesising, conceptualising

³¹³ And/or: acting, experimenting

a tour through most universities will show the prevalence of learning as separated from life experience.

15.2 First order of learning: Experientially learning about process

In addition to content, each course had *processes* that facilitators felt were important for students to 'learn' in order to envision and create regenerative communities. Students learned the process by actually doing it: inquiring systemically, dialoguing, designing, collaboratively leading. In other words, the "process is also the content" (Moore, personal communication, December 12, 2017).

These processes were presented experientially, through curating *cycles and intermeshings of praxis* (Table 25). Stated simply, the students learn dialogue by doing it cyclically, with reflection and action. This is also how students engage with the processes of design, systemic inquiry, relating to one another, and leadership for sustainability action. They learn the processes by doing, and experimenting based what they learned about enacting the process. Despite the contrasts in context and content, Table 5 demonstrates another process affinity amongst the courses.

| Process: | Finding out | Acting |
|--|---|---|
| material-discursive-relational being | Sharing memories and stories about families, culture and food, as triggered by material engagement with food | Making plans to improve one's relationship with sourcing and preparing healthy food, or engaging family and friends in more communal eating |
| dialogue, design, leadership, perspective taking | Observing their own and others' roles in dialogue, design, leadership for sustainability Readings and reflections about various strategies, styles and approaches; reflecting and debriefing on role in dialogue | Challenging each other to take on different roles in dialogue, design, leadership Attending, participating, leading dialogues and design processes |
| self-care | Learning about various theories and actions for self-care | Planning, writing, committing to self-care, and practicing it within and outside of the course |
| systemic inquiry | Observing how different inquiry approaches create different boundaries and the implications of these boundaries Introduction to increasingly complex systemic theories and methodologies for inquiring into ethical improvements | Discussing and planning the systemic methodology Applying the systemic methodology |

Table 25. Praxis to strengthen skills in the 'process'

The importance of spiralling in developing praxis

Developing praxis, whether about content or process requires a quality of revisiting, or circularity, or returning and deepening. This quality was shared across each of these learning experiences. Collectively, they demonstrate spirals or patterns repeatedly engaging in the subsystems of learning. For Joy's kitchen-based learning, the practices of how to source, prepare, and enjoy sustainable and nourishing food were strengthened daily through cyclical integrated processes of learning, doing and reflecting (instead of being abstract discussions). In Janet's course, the students would engage with theories and perspectives on how to design, dialogue and lead, in weekly cycles enabling increased nuance, practice and reflection on the collaborative enactment of these processes. Heather's students repeatedly engage with leadership and educational philosophies, but always interwoven with a 'case-in-point' experiential learning process. And finally, Richard's students were engaged in increasingly complex situations-for-improvement, and then led towards increasingly complex systems philosophies, theories and methods to engage with these complex spaces.

This spiralling was enacted on different time scales (daily, weekly, monthly, yearly). For Joy's course this involved a daily spiral through the learning subsystems, re-enacted daily. For Janet's semester long course, the week had a similar organisation, which was repeated during the 12 weeks of the course. Heather's course has spiralling of abstraction and application for each class during the master's program. And the Hawkesbury course spiralled through the levels of systemic inquiry over three years. In essence, these learning experiences are not taught in linear pathways, from 'subject topic A, planned in Week 1 to subject topic M planned in the last week of the course'. Rather these courses share a similar effect of strengthening and enriching praxis of both the content and process, through a revisiting and re-patterning of experiential learning sub-systems.

Why does this shared quality of the spiralling and enriching of praxis matter? This quality is the embodiment of one of John Dewey's principles for experiential education: the principle of long-term continuity of experience (1938, p. 36). This notion of spiralling has also been picked up by other scholars used by the vignette-educators: e.g. David Kolb's notion of the learning spiral (2015, p. 61), Fritjof Capra's ecological design principles (O'Neil, 2017a; Burns, 2009), and Jerome Bruner's curriculum spiral (Bawden, personal communication, June 25, 2020).³¹⁴ The spiralling principle signposts the importance of building upon, and integrating future learning based on past experiences of praxis.

Of profound relevance in this inquiry, the spiralling of praxis is a step towards transcending many dualist structures in learning systems. Many of the sustainability courses today remain within the abstract/reflection space, or at most within the abstraction/planning/action, but with no time available for observations, learning and reflections from the experimentation. Indeed, this is a common critique of sustainable learning courses today (Brundiens et al., 2014). By designing processes that activate and spiral through all experiential learning sub-systems (*Figure 7*), learners have a better opportunity to deepen and enliven their embodied knowing of the content, as well as their embodied knowing of processes, as opposed to learning based on abstract discussion of concepts only. In this space, concepts are not separate to experience: we exist within and have very real experiences of racism, sexism, classism, anthropocentrism, and we cannot separate the concepts from the experiences as they have shaped us. 'Wholeness' and 'relationality' are not 'objectively observed out there', but are experienced as an

³¹⁴ Jerome Bruner was an early inspiration for Richard: in particular Richard's foundation lecture at Hawkesbury just after his appointment was about "On Systems and Spirals" with Bruner as the focus of the insights on spirals.

immanence of being. Moreover, experiential learning offers a profound ability to heal separatist wounds (*Visual 63*).

Secondly, this quality of spiralling has, from my limited non-Indigenous understanding, resonance with Indigenous ways of learning and being which are often described as based on relational and radically interconnected logics-of-perception. Leroy Little Bear is a Blackfoot professor emeritus on Indigenous ways of learning. One of Leroy Little Bear's critiques of Western learning is that the dominant paradigm conceives of 'learning' only as a one-way street, 'we've been there and done that, now move along' (Little Bear, 2016). Within Indigenous ways of learning, the stories and lessons are incredibly complex tapestries. The first time you hear the story, you might gather 'ecological' knowledge of relationships. The next time, you might gather insight into the rules and norms of how to behave in certain areas and contexts. During the next engagement, you might reflect on the values implicit in the story and when and how you enact those values. Subsequent engagements might unveil metaphysical insights into the nature of reality. While I am not arguing that the four learning experiences are synonymous with Indigenous ways of knowing, I am suggesting that notions of spiralling, revisiting, complexifying is very different to the common linear approach to learning.

15.3 Second order of learning: Praxis of learning-about-learning

If learning about content and process is the first order of learning, we can also explore how the vignettes engage in second-order learning, as defined by the Hawkesbury model. In other words, how did the vignette educators engage learners in processes of learning-about-learning?

To quickly recap, in the Hawkesbury interpretation of transformative sustainability learning, the second dimension of learning provides the connective tissue and synapses between learning about themes and processes and learning about one's own worldview. In other words, learning about the process of learning can provide a basis for transformations in worldview (Sriskandarajah et al., 2010). In this process of learning-about-learning, we can reflect on if and 'how' we have learned, and the implications of our particular learning process. Ideally, we also develop strategies to improve our learning process based on these reflections and depending on the context of the situation (Bateson, 2000; Dewey, 1938; Salner, 1986).

Several methods were used to encourage learning-about-learning including a) open-ended reflections, b) propositional explanations, and even c) a developing of praxis for learning-about-learning.

Open-ended reflections

Most vignettes encourage regular open-ended reflections on the courses' specific learning, the students' role in the process, and how to improve the process. As one student said, *"From the beginning, I was always asked to reflect on my learning as it happened. As one facilitator said, "Everything is kind of a reflection-on-action learning circle".* A benefit of creating the space for open-ended reflections is that it allows for the emergence of the unique meaning-making processes of each learner. To support learners, the facilitator can develop their own awareness of learning-about-learning, in order to recognise when this process is present in the reflections, for example if the learner compares the implications of different styles of learning or inquiry. The facilitator can then mentor and support learners to strengthen their skills for learning-about-learning.

Propositional explanations

Several courses began with a propositional explanation of *why* the course was going to engage in a particular learning approach. The facilitators spoke to me about the need to be upfront and forthright about these different ways of learning with the students at the beginning of the course, to explain why this type of learning matters.

Of course, a blending of open-ended reflection and propositional explanation is possible. Heather often integrates her explanation of why the students are learning a certain way within a reflective group discussion. For example, when she invests time at the beginning of her class in a process for grounding and collective meditation, she asks the students to reflect on why she has done this. Within this conversation, she explains her own perspective on how this process influences the learning experience, which her students can then also critique and build upon. Thus, her students learn about the implications of these processes for learning during and after experiencing these pedagogies.

Developing a praxis for learning-about-learning

Several examples of building a praxis for learning-about-learning were embedded in the vignettes (*Table 26*).

| | Finding out | Acting |
|-----------|---|---|
| Example 1 | Facilitators shares epistemological reasons for the approach of this style of learning | Students apply these new kinds of learning processes in the learning experiences that they design. |
| Example 2 | Awareness and reflection on the different sets of insights that arise from different systemic methods | Apply these insights about different methods of learning and inquiring based on the situations they are in. |

Table 26. Praxial development for learning-about-learning

Is there a perception that learning-about-learning is only relevant for educators?

Interestingly, two vignette-facilitators mentioned that learning-about-learning is relevant in their classes precisely because the learners are current or future teachers-in-training. This view can be contrasted with Hawkesbury's view that learning-about-learning is a key process of self-development for all learners. When probed about the engagement of the students in learning about the learning process, one facilitator responded:

Something I've learned, I'd say especially in the last few years, is that it is really helpful for me to talk about these kinds of things, like what the purpose [of this approach to learning] is, because then they get it more, they are more ready to engage, by having a discussion about why we do that, or what some of the benefits might be. I mean, I work with educators, so they're all picking up things that they might use, so everything is modelling, and you know, sort of showing how, what the possibilities might be.

Similarly, another facilitator brings in the learning-about-learning processes into her classes, with her graduate level teachers-in-training, but not in undergraduate courses. To illustrate this, I provide a lengthy excerpt from the discussion with the facilitator comparing how graduate and undergraduates are engaged in learning-about-learning. The quote is a response to a question of mine regarding whether the educator explains the theory behind her learning process design to her graduate students and if so, how and why?:

My case is a little unusual because they're studying sustainability education, so they're needing to know why they're being asked to do some of these things because it helps them reinforce what they're learning. So, I think that's a different situation that you can't say for all courses, like if you are teaching a physics class or something, "Okay, I'm not going to lecture today, what

we're going to do is", so.....Is [teaching from a new paradigm] a shift of just doing it and then that becomes the norm? Do you experiment with your pedagogy and then the students think that's just the way it is supposed to be, verses having to say, "Okay, usually I would lecture today, but today we're going to..." you know? I'm thinking back to the undergraduate class... I experimented quite a bit...but I didn't explain all of that to them.

If learning-about-learning is a valuable competency for student self-development, a focus on learning-about-learning could involve meaning-making processes with the students exploring question such as:

- If we learn experientially (or through any other pedagogy), what kind of learning/insight/knowledge/wisdom do we uncover? How does learning this way help us to make different kinds of connections with the matter-at-hand (content or process)?
- How are these types of learning related to and/or distinct from other types of learning and what are the implications are for this type of learning, and when would they be appropriate, and in what relation to other ways of learning?

The potential perception of learning-about-learning as mainly for educators poses an interesting question of: *how can transformative sustainability learning leverage and celebrate the importance of learning-about-learning for students and facilitators together?*

15.4 Third-order: Praxis of learning about worldviews and paradigms

This section illustrates processes, as manifested in the vignettes, to develop competencies for learning the influence of paradigmatic and worldview premises, as well as the ability to integrate and employ various paradigmatic approaches.

In two vignettes, the intentions for developing worldview and paradigmatic awareness were explicitly discussed with the learners. Transformative learning is at the heart of Heather's 'Burns Model of Sustainability Pedagogy'. Her intention is to create awareness of the paradigms influencing our beliefs and expand them (*Figure 5*). Similarly, the highest 'order' of learning of Hawkesbury's model of systemic learning is worldview awareness and transformation (2016, 2018). (*Figure 8*).

The other two vignettes have qualitatively different interpretations of 'transformation'.

The 'O'Neil model of nested learning' includes a 'third' level of transformative learning, but in this model, the transformation happens in a space of unconscious experience (O'Neil, 2018). The transformation is conceived of as happening when in the learners embody a relational way of being and learning (a phenomenological transformation perhaps), as encouraged by materiality, emotion, and sociality (*Figure 3*). For Semester in Dialogue, the overall intention of the course is to contribute to cultural shifts and Janet recognises that the students leave the course changed in many ways, but she avoids the term transformative learning for ethical reasons (*Figure 4*).

In this section, I first discuss the two vignettes for which worldview awareness or change was not explicitly conceptualised with the students; and secondly the two vignettes in which the influence of worldviews and paradigms was brought into the conscious engagement with the learners.

Third-order learning as unconscious

Joy conceives of the environmental cooking class as an *experience of the agential realist theory*, e.g. an intra-action of daily practices of cooking, of feeling and connecting with students and teachers as influenced by the power of food to evoke memories and emotions, of exploring systemic impacts of food systems, of relating to our local landscapes and food sources, all in one inseparable experience. At the premises level, these experiences are a collective experience of being and healing together (similar to the intentions of Janet and Heather's courses).

For some, particularly in the rational cognitive branch of transformative learning, it is the 'critical reflection within the brain' that creates the conditions for new ways of being/knowing to emerge. However, Joy argues that to transform beyond the dominant paradigm, we need an *ontological* (experienced, lived) shift towards relationality (2018), in addition to an *epistemological* shift (towards integrated knowing and doing, integrated emotion and cognition, etc.). I suggest the posthumanist interpretation of the concept of '*ontology*' enables this perception of third-order, transformative learning as unconscious (as discussed in *Ch. 14, and footnote 262*).

If Joy's third-order "performative transformative" learning was also to be complemented with a more conscious critical reflection on the experience of the theory, this might include questions such as:

- How did an experience of agential-realism change the way we interacted together and what we came to know? What major paradigmatic beliefs did it disrupt and how did I feel about these disruptions, at first and over time? And why?
- What does an experience of this philosophy mean then for the question of how then shall we live and learn?

Importantly, Joy's interpretation raises the questions of appropriate bounds of the educator. By not exploring the philosophical premises, are learners better able to make their own meaning of the experience over time, as relevant to them? Does not having the processes of conscious reflection and dialogue allow the students to 'diffract' into these new premises in their own time, when they are ready (which may be outside the arbitrary timelines of a week-long university course)? If the context of the learning is a place of emotional healing in ways that the educator cannot predict, how does a philosophical discussion diminish or complement this healing?

This approach to learning also has ethical considerations. Not all students are 'ready' to be aware that they have a worldview. This recognition can invoke quite a philosophical and existential crisis (Moore, 2005). Creating the conditions for, but not actively engaging in, third-order reflection might allow learners to move at their own pace. Learners are practicing a paradigmatic shift, without rationally exploring why this matters, relieving them of any potential existential floors crumbling beneath them. The learners, if they are ready, might engage with third-order reflections on their own during the course or with the educator, while for others, the experience might be one that they diffract into at later stages in life. Perhaps this approach is similar to the spiritual ways of learning, where the 'aha' has to come entirely from within.

This approach could represent a more humble, non-linear form of teaching, where the facilitator does not assume to know what the learners need. Each learner has an infinity of life experiences, and that there is no way that the facilitator could possibly predict what is emergent for each learner from this complexity. Perhaps this form of learning is a radical release of control, and a focus on what matters, which is being together in radical appreciation, honesty, and relationship.

In the following interpretation of third-order learning in Semester in Dialogue, Janet also articulates hesitations about claiming to be transformative.

Strategic, humble and ethical reasons for not 'claiming transformative'

Janet holds a complex perspective on the idea of transformative learning. On one hand, she deeply appreciates her own transformative learning experience and believes that all good learning is transformative. She also recognises that her course creates the conditions for highly transformational experiences and believes that for most of the students, the course is remarkably transformative. Yet, on the other hand, she also believes it is not the role of the educator to lead students consciously through a process called 'transformation', or know when that moment happens for learners. She believes that claiming a course to be transformative can be ethically questionable and instead seeks to design 'good education'. She critiques the myth that she or the university knows what is best for the students. Instead, she starts from the premise that *'everyone is already enough, and anything that this class might bring is a bonus'*.

Janet's aversion to the term and intention of transformative learning was in part inspired by one of her mentors. Her mentor, a professor of education, strongly critiqued the assumption embedded within 'transformative learning', e.g. that one person has the right to create a set of conditions in which they intentionally seek to change others. The interview excerpt below describes the influence of her mentor.

By the end of my PhD I had a very amazing woman who did philosophy of education. And she really challenged me on trying to transform others, like "Stop with this Janet, you need to stop, work on yourself. Stop opening up classrooms called transformative." So, I actually don't use that terminology anymore. And now I create a space in which that can occur, but I do not push it, and I actually have lots of boundaries around it.

Katie: And is that for ethical reasons?

Janet: Because who the hell am I to think that I know what somebody needs? In the course, there's things like you can increase your confidence, you can increase your awareness, you can increase your self-awareness, you can have better connections, better relationships with people, but it is not to transform. No. But everybody says, "Oh my god I'm so transformed". ...But, I think that a really important piece is to not push anybody in any direction. They know when you're pushing. I don't know if you're a teacher but, I think that good education is transformative. But it's not for me to know when that moment is there... Like they're better writers, they have self-confidence, they can speak from their heart without notes like ...They know who they want to

become, they're processing like mental health issues, and family issues...Golden.... I think that the reason that people take the course, is because their friends say "Oh my god, you've got to go", "It's the best course I've ever taken", you know, "It'll change your life". That kind of rhetoric is part of it.

Several of Janet's papers further explore the deeply ethical questions surrounding transformative learning: *"Is it ethical for an educator to decide which of a learner's beliefs should be questioned or problematised? Is it ethical for an educator to present one's own perspective which may influence? Is it ethical for an educator to facilitate transformative learning when the consequence may be dangerous or hopeless actions?"* (Moore, 2005).

Janet's stance is resonant with Nora Bateson's perspective. Nora is uncomfortable with the talk of "raising" other people's "consciousness", or changing other people's "mindset", and feels "spooked by the inherent idea that it's anybody else's job to control, manipulate or otherwise manage the way others think" and asks if this is a mindset that needs changing?³¹⁵

Instead of taking a stance to change people's mindsets, consciousness, or worldviews, Janet designs and facilitates the experience based on what she thinks is good education (experiential, transdisciplinary, where process is content), and provides opportunities all throughout the semester, for the students to make their own meaning of it. The students and facilitators are "constantly in a reflection-on-action learning circle", reflecting on what has happened, what it means, and what to do about it.

More generally, if paradigmatic assumptions, as they pattern across society, were to be questioned as part of a course, this might involve discussion questions such as:

- Where have opinions and reactions really differed, and why? What philosophical or paradigmatic beliefs are these related to, and what do we do about these different opinions/reactions?
- Where do these norms come from? How are they embedded culturally in different ways? What are the implications of these norms? How do I see these norms manifesting within my own perceptions and behaviours?
- Do I agree with these norms, or how would I like to experiment with changing my

³¹⁵ nora bateson (@NoraBateson) 29/7/19, 9:47 pm, twitter

perception? Or if my perception is changing through this experience, what is the value or differences of this changed perception?

Discussions like these do happen, where Janet and the facilitators help to make assumptions more conscious, but it is not with a specific end in mind:

In dialogue, I can encourage students to challenge their own perspectives and assumptions but I do not know where the class as a collective group will arrive at by the end of a dialogue, or a semester for that matter. I have learned to remain open to the possibilities of emergence, while quietly guiding and supporting the group towards positive outcomes (Gunnlaugson & Moore, 2009).

Instead of explicitly engaging with these conversations and reflections through the language of 'worldview and paradigmatic beliefs', the course focuses on developing characteristics of life-long learners, *such as curiosity, non-judgment, and optimism:*

*Now that we're really project focused, it's really about how do we work together with people we don't agree with. And that practicality of **non-judgment**... And of listening, and of finding, being, learning how to collaborate... I think this is probably more important than understanding these [worldview] boxes that we think people might fit in. The more you do that, the more we start to see difference, right? And so, by the second class, I don't even remember which department's they're from. Because it doesn't matter, right? That whole "oh I'm a geographer, oh I'm, a women's studies student", I say "no, you're, you're so many other things", right? And, and we're all facing this - in whatever dialogue we're having - we're judging... And we have to become curious. I think, some of the culture of CityStudio is **optimism** and **curiosity**. And that's what we're teaching,... And I think they'll be better off in the world, if you can create curious people, then it doesn't matter. Then, we all get somewhere, because every conversation gets us somewhere.*

Janet makes a very important point about building the characteristics of life-long learners: non-judgement, curiosity, optimism. In essence, this is embodying relation logics: being open to learning through every conversation. These characteristics are often missing from the discussions on 'sustainability competencies', when sustainability is rooted in disciplinary discourses as opposed to perceiving these issues as a 'human problem'.

Even though the Semester in Dialogue course does not 'name and deconstruct' worldviews

analytically³¹⁶, the course specifically, and dialogue as a pedagogy more generally, can support the conscientisation of one's own worldview and the deeply embedded norms of society in many ways (Gunnlaugson & Moore, 2009; VanWynsberghe & Moore, 2008), e.g. in the readings invoked, the guest speakers, the diversity of students, etc. The structure of Semester in Dialogue is resonant with the ideas and premises of the third wave of systems thinking: critical dialogue, which is a particular type of inquiry the Hawkesbury program used to stretch students beyond scientific-technical worldviews. In the Semester in Dialogue (and this 3rd wave of systems thinking), conscientisation can happen through participatory conversations and critical discourse involving perspectives across the thematic area and including notions of power, boundaries, and relationships. The characteristics and practices of curiosity and non-judgement in these dialogues can aid worldview conscientisation (Bohm, 1996).³¹⁷ Additionally, the self-awareness gained through written reflections about their role in dialogue can lead to transformation in one's "*self-view and worldview*" (Gunnlaugson & Moore, 2009).³¹⁸

This vignette offers important insights and reflective questions for facilitators to engage with in their own context. Presumably, the techno-science paradigm has deeply influenced all students raised within it, and yet, the students bring their own wealth of wisdom and complex (and unknowable-to-the-facilitator) worldviews. How can we practice holding this paradox of wishing to know when to challenge learners' assumptions (and model processes of third-order reflections) and also not knowing what learners need in this regard? How can educators remain humble and respectful of everything that all students bring?

³¹⁶ One of the challenges with traditional forms of interviewing research is the assumption that there is a shared agreement on meaning of the words that we are using. I tried to overcome this in my engagement of the broader literature to help see the terminology from the facilitators' perspective, before our discussions, but even then, we certainly have different conceptions and definitions of even the most basic words used in this inquiry. In regards to Janet's aversion of discussion of worldviews, Janet appears to perceive worldview as a box in which people can be constrained or labelled. This can certainly be the case if worldview is associated with a disciplinary degree or with, for example, quizzes which label you as one of four common types. For the purposes of this inquiry, I could have done a better job of explaining my interpretation of worldview, and instead asked if the types of unconscious beliefs and perceptions, influencing our patterns of thought, behaviour, actions are 'made conscious' in the course.

³¹⁷ For example, the practice of curiosity can lead to reflexive questions such as why do they, and I, think, act, respond in certain ways? This conscientisation is also aided by the practice of non-judgement, recognising that our immediate judgement might cloud our perception, interpretation and response to what others are saying, and why they are saying it.

³¹⁸ As Janet wrote in 2009, "Each week they write reflections about the course and they are often highly critical of their own role in dialogue. I have found this kind of reflection leads them to a greater self-awareness, changes in behaviour and in some instances, transformation" (Gunnlaugson & Moore, 2009).

Third-order learning as a conscious inquiry

Heather and Richard share the belief that learners benefit from a conscious, intellectual engagement with the limiting aspects of paradigms and worldviews. They value this competency as a form of self-development. That is, by making third-order learning a conscious part of the experience, students are better able to consciously enact paradigmatically different ways of being that are better suited to their intentions for the task at hand. Learning-about-worldviews and paradigms provides greater freedom from indoctrination.

Both Richard and Heather began the process of worldview conscientisation, development, and experimentation early within the course. Their courses allow for learners to make an improved action or situation improvement based worldview conscientisation and expansion.

Third-order learning with paradigms as content within experiential learning

Heather's students begin their two-year program by engaging in third-order learning. This first course of the Leadership for Sustainability Education program begins by "breaking down paradigms" via cycling through 'experiences of leading' and reflecting on these experiences from a worldview/paradigmatic perspective (personal communication, November 17, 2017).

As a cohort in the first term, the learners are brought into relationship with the concept of leadership (content), and the process of leading (enacting leadership in a collaborative project). And at the same time, the learners are given the conceptual and intellectual tools to help them 'see' how their worldview beliefs influence their enactments of leadership, and how these beliefs may have been (in)formed from scientific, *techno-centric* contexts.

Importantly, the third-order learning is facilitated through experiential learning in which the students enact a project together, attempting to both act in the situation from these new paradigms, and also reflect on which paradigmatic beliefs their actions embody. Through introducing students to various leadership paradigms, the students have diverse paradigmatic lenses through which to observe when they are reacting, emoting, thinking, acting in ways that are influenced by an 'individualist paradigm' of leadership. They also have more relational paradigmatic visions to help guide new responses. The worldview conscientisation of the learners is aided by emotional, reflective, artistic, dialogic engagement with other paradigms of leadership, such as quantum, systemic, traditional

ecological knowledge, ecospiritual and relational leadership paradigms (Burns, 2016a).³¹⁹

I have annotated the quote below to highlight the potential for Heather's processes to integrate the three orders of learning. In this reflection on her own work, Heather demonstrates how the content, learning-about-learning, and learning-about-worldviews are three dimensions for reflecting on any learning experience:

*Another important aspect of implementing effective experiential strategies for the development of leadership for sustainability is the **framing of course content**. ...Instead of seeing content as solely concepts or theories from books to be handed down to students, I want students to understand content as a living co-created process, in which theory and practice helped to engender and personalize new understanding [**first <> second-order learning**]. I also want them to understand that the design of the course itself reflects a living systems perspective of the world [**second <>third-order learning**]. Through this research project, I realized that this is a huge shift in students' epistemology. Therefore, I have learned to be more explicit with students about how the course models a shift in the learning process itself and a change in what is considered "content" [**second-order learning**]. I now articulate my understanding of content to include the work of: building relationships and creating a shared process, finding a deeper understanding of self, and understanding oneself as part of a living emerging system [**third-order learning**]. Learning content in this way is actually difficult and rigorous, as it requires learning from a whole-self perspective, rather than focusing solely on intellectual learning... This kind of experience sends a message to students that learning is not limited to an intellectual, rational experience [**second-order learning**] (Burns, 2016a).*

Similar to the Leadership for Sustainability Education program, the following Hawkesbury vignette provides complementary processes for engaging learners in three orders of learning.

³¹⁹ This approach of 'breaking down paradigms' can be compared with the Leadership questions discussed on Janet's Dialogue course in 2007: *What is leadership? Do we all have the potential to be leaders? Can we cultivate leadership? What is the role of activism and dialogue in leadership?* (Moore, VanWynsberghe, & Barbolet, 2007). They are inductively reflective and philosophical, but I am not certain if they engage with an intentional philosophical critique and vision.

Third-order learning as a nested dimension of experiential learning

The Hawkesbury Bachelor program built worldview and paradigmatic awareness experientially. Hawkesbury did not introduce the concepts of worldview and paradigm propositionally, but created the conditions for this type of questioning to emerge:

*The work of Salner (1986) would prove to be very important ...Her observations implied that teaching students theoretical systems propositions, and demonstrating and encouraging the use of systems methodologies and practices, did not necessarily result in them really learning to grasp the essence of “being systemic”—of being able to approach any sort of issue from a truly “lived systems perspective.” The real clue to systemic competencies, she suggested, came with “**experiential shocks**” that would lead, in turn, to epistemic transformation from a “dualist/objectivist” position to one of “contextual relativism.” Akin to the notion of paradigmatic revolutions in science as promoted by Kuhn (1962), students learn to pursue systems perspectives most effectively when they become experientially aware that their conventional ways of dealing with issues in the world, and the epistemic assumptions that frame them, prove inadequate to tasks focused on “**situation improving**.” The pedagogical key therefore is to provide opportunities for students...to find themselves in such problematic circumstances, while also facilitating their access to systems theories, philosophies, and practical methodologies, which they might find helpful in their new situations. To be systemic, learners...need to be able to engage with epistemic “levels” (**third level**) of knowing and learning, so that they can challenge and, when appropriate, change (develop) the paradigmatic assumptions from which they are operating” (Bawden, 2004a).*

Thus, Hawkesbury increased worldview-awareness of the students by engaging them in group experiential projects. Inevitably, in these projects, different worldviews would come into conflict. The facilitator would be ready to prompt a critical reflection amongst the group about the worldview differences, why they exist, and what they could do about it. The facilitators drew on the project- and experience-based learning to facilitate an awareness of and progression towards more relational ways of being:

One of the teaching tasks of the systems program is to assist students to examine their level 3 [worldview] processes and to help them move through Perry’s epistemic stages from dualism, to multiplicity, to contextual

relativism" (Salner, 1986, p231) – through experiential challenge!" (Bawden, 2003).

To facilitate these competencies, Hawkesbury facilitators engaged students in increasingly challenging situations, to which increasingly complex paradigmatic approaches would be necessary. The assumption implicit in the Hawkesbury program was that most students entered the undergraduate course perceiving primarily within a techno-centric³²⁰ paradigm. Thus, the project-based learning began with techno-centrally-framed 'problems'. The students quickly learned that previous reductive approaches were unhelpful, and sought increasingly complex systems approaches. The facilitators subsequently guided the learners through hard systems, soft systems, and critical systems philosophies and methodological approaches to inquiry (14.6). Through this increasing complexity, learners could experientially comprehend how certain processes of inquiry (or situation improvement) lead to different sorts of insights and changes. Students also learned that these various paradigmatic approaches can be integrated based on: a) the scope of the question, b) the worldview and paradigmatic assumptions of the learners, c) as well as the skill set of the inquirer.

In sum, through this interdependent dance of critical reflexivity and systems methodologies, learners arguably moved from being able to see the world primarily through the lens of a techno-centric worldview to a holo-centric worldview³²¹, and then subsequently, could view each situation through multiple worldview archetypes (techno-, ego-, eco-, and holo-centric worldviews), and understand the implications of each (Bawden 2005, 2010, 2016).³²²

Some students embodied this reflexive competency for the three orders of learning so thoroughly that during their larger final year projects, they were able to model this with research partners outside the school, creating even greater reach of this notion of third-order learning and reflection (Bawden, personal communication, November 29, 2017).

Over the 25 years of the Hawkesbury experiences, educators innovated with many ways in which an awareness of our deeper worldview beliefs can be made conscious, including:

³²⁰ Ontologically reductionist, epistemologically objectivist.

³²¹ Ontologically relational, epistemologically contextually relevant.

³²² Yet this 'model' was also held lightly, allowing for 'emergence' within and between each systemic level.

- re-living, recalling, reflecting on prolonged disorienting experiences;
- spending time in cultures or different political groups with seemingly different values and attempting to explore, understand, and reconcile the differences;
- grappling with ethical dilemmas and contentious issues and exploring what your (and others) positionality says about your own deep beliefs, or what you hold to be right and wrong;
- read literature on worldviews and question where you stand (Bawden, 2018b).

The common factor across all of these examples is that the development of worldview awareness is a combination of experience, emotion, conscious questioning and attempting to make-meaning, and integrating these insights into action.

15.5 Disorienting experiences

One of the most well-known features of the original transformative learning theory is that of a disorienting dilemma (Mezirow, 2012). A disorienting dilemma refers to a moment in time, when one encounters situations, or new contexts, distinctly different to one's deeply, unconscious belief system and it can evoke strong reactions.³²³ This disorientation can signal or be interpreted as an opportunity for learners to become aware of previously hidden worldview beliefs.³²⁴ It is imperative to reiterate that all of these types of transformative experiences can be deeply disorienting, or an emotional space of liminality (Malkki & Green, 2014). I briefly interpret the existence of emotions and disorientations in the courses, and reiterate the ethical imperative to be aware of and ready for this as a

³²³ The concept of disorienting experiences is perhaps the most well-known and theorised concept of transformative learning, and also often generates passionate debate: *does the experience always have to be negative to lead to a profound shift? Can transformative learning be incremental? Is it really necessary to be disorientated if you are stretching beyond your existing worldview?* My purpose here is not to use these vignettes to contribute to this depth of theorising. My main point is bring these theoretical questions into the space of 'transformative sustainability learning'. For example, none of the 'shallower papers' of transformative sustainability learning spoke of their courses being deeply disorienting. One potential explanation of this might be that their courses remained safely within the confines of existing dominant paradigmatic assumption. Conversely, some of the educators whom I interviewed and who were designing paradigmatic-stretching courses (but without their own reflection/awareness as to why their course was potentially worldview stretching), were surprised by how confronting and disorienting the course was for students. Thus, within this section, I use the vignettes to describe these disorientations as potential evidence that worldview beliefs are being challenged (*recognising the disorientations could also arise for a variety of other reasons as well*).

³²⁴ Neurobiology also acknowledges this phenomenon (Kaplan et al., 2016). Neurobiology explains how we are pre-programmed to interpret the world according to our own worldview, and when dissonance with our worldview appears, we often react emotionally to this difference.

facilitator, or “an accompanist at the edge” (Malkki & Green, 2014).

Each of these learning experiences created emotional disorientations. The patterns of disorientations felt by learners in the courses could be an indication that the vignettes created experiences, born of minoritarian beliefs, that challenged the learners’ worldviews. The facilitators in these vignettes demonstrate their own third-order learning, e.g. “conscious choice of paradigm” for designing and facilitating a learning process “in full recognition of the existence of alternatives” (Sterling, 2003, p. 130). Because these minoritarian premises infuse the design, each course offers new contexts and lived-experience of learning.

For example, the paradigmatic beliefs underlying the courses enable a conception of learning as praxis (*Process 15.1*), where meaning is contextual and emergent, with no ‘right answer’. Students coming from a largely traditionally ‘modern’ education system tend to struggle deeply with this epistemological change (West, 2004). A transition away from the *ultimate separation between right and wrong*, requires new ways of being. Learners must accommodate situations of unfamiliarity and uncertainty.

The entire dominant-cultural-paradigm is infused with the notions of certainty: reality does not change, objects are stable; humans can control them; everything is predictable; chaos only exists in our ignorance; reality is what we can see, touch, smell, hold, observe. In contrast to these deeply infused beliefs, transformative sustainability learning experiences create the space for students to step out from the proverbial dry land of the known into the whirlpool of emergence. And in supportive situations, learners can develop comfort with these new ways of being. One of Heather’s students reflected, as a result of the process, “I’m learning to be open to constant change, allowing there to be constant change, and it’s okay” (Burns, 2016a). Students learn to see chaos and disorder as productive elements (Burns, 2016a), similar to Prigogine’s insights (*Visual 40*).

Many other shared characteristics of the vignettes offer third-order stretching (see all of the illustrative threshold concepts in *Ch. 12, meaning-systems*). Learners were invited to take ownership of their own learning. *Doing* is a significant part of learning. Learning took place outside of the university, was experiential and a-disciplinary; the experiences don’t fit neatly into pre-existing boxes of meaning. The learners were engaged in beyond-rational ways of knowing (emotional, inspiration, inner work), and were encouraged to invite their whole selves into the learning. Time in the learning was devoted to just being in place together in authentic relationships (as a group in the community, on the farm). Learning was also a collective act, and was about fostering a co-heart. In these courses, any

internally ordered way of making meaning in alignment with the dominant-cultural-paradigm cannot compute what is happening within these new situations.

As Richard explains, the learners' previous ways of being and interpreting reality are proving inadequate in these courses, and it is very disturbing. To illustrate, during Richard's tenure the college administration staff remarked that the agricultural systems students were by far the most frequent visitors to the student counselling service. In discussing the importance of, and need to, access our worldviews experientially, Richard reiterated how disturbing this experience could be for the students:

"If you put students [in challenging situations] and you observe them over three and a half years in terms of the way they are responding to stuff, and -- one of the interesting comments was what the registrar said to me one day, he said, "You know that most of the students who go to the student counsellors are from your degree course?" I said "Isn't that good?" He said "What do you mean isn't that good?" I said "Well, they need to go somewhere and it's no good coming to us because we don't know what to do with them!" You know, we didn't... they went down there in droves. Well, of course they did. This is incredibly disturbing stuff".

The other courses evoked similar emotional responses. Similarly, throughout several of Heather's publications which reflect on the first term of the master's program, student quotes demonstrate the challenging nature of the course and their reflections that the 'resistance to change was intense and emotional' (Burns, 2016a). Janet's course is similar. She commented that *"there's a lot happening, I mean the students are kind of like on for a ride too, right? And at some points they hate it"*. The disorienting experiences of these learners within the vignette suggest that an expansion into more complex ways of being and perceiving was at some points difficult even if ultimately rewarding.

Paradoxically, even though there is a focus on generative relationship-building in transformative sustainability learning, the stretching beyond one's worldview can still be a place of discomfort.³²⁵ Thus, support for the students was provided in each of the courses, through invitations for daily written feedback, weekly meetings with a mentor, directing students towards counselling. A safe, empathetic and supportive psychosocial

³²⁵ That said, Joy's course was emotional, but in perhaps a different sense. The descriptions of emotions were invoked more in a sense of healing the separatist divide in learning (rational separated from emotional), and to improve the learning with the content.

learning environment is essential (Bawden, personal communication, November 27, 2017). Something that was invoked by the facilitators was their willingness to just 'be' with the students in the liminal experiences (Malkki & Green, 2014). As Janet said, if you make the time to ask the students how they are doing, the learners will take the space to explore what is yet to emerge in words from the liminal moments, and it is not uncommon for at least one student to be directed towards counselling during the semester.

Importantly, the facilitators also require support for many reasons. The learning process is always evolving, and it can feel like a roller coaster for the educators as well. Emotionally-charged learning can lead to heated situations in the classroom, which can also be emotionally hard on the educators. The educators report that at times they have to justify the value of their non-traditional courses to administrators, upset students, angry parents or critical professional sectors. Ironically, as the courses become recognised as a stand-out, what is then asked of the facilitators begins to feel even more Herculean. Alternatively, the courses can be discontinued if they do not align with dominant values (as in the case with Hawkesbury). These courses can be very challenging for orthodox systems, and educators within the minoritarian stream will feel the push-back from majoritarian people, processes and structures. Crucial to the support of the facilitators was their group of committed, passionate, supportive colleagues.

15.6 Summary, discussion and extension

In sum, experiential learning was essential for each of these vignettes. By beginning with the experiential, we can ask questions about what we notice (Beeman & Blenkinsop, 2019). These 'questions of noticing' allow learning in three orders: learning about content, learning-about-learning, and learning about beliefs influencing us. As such, various forms of praxes were enabled through a spiralling engagement with content, process, learning-about-learning and worldview/paradigmatic beliefs. However, learning within experiences born from different paradigmatic beliefs can also be disorienting, and require support for both learners and facilitators.

Ethics of the experiences

What was interesting and unexpected were the different interpretations of the ethics of transformative learning. One perspective is that it is unethical to assume that educators know which students' beliefs should be critiqued. And yet another perspective is that the educators have a moral responsibility to help the learners gain the freedom to be aware of

their own and of culturally-shared deep beliefs.³²⁶ Below I demonstrate how these perspectives can be held in productive play together.

All experiences have a paradigmatic context

I think both perspectives can agree that all education is value-laden and all teaching practices are based on a belief of what is necessary (e.g. a belief that emerges from paradigm). In every learning experience, a paradigmatic context is influencing the learning, regardless of whether the facilitator is aware of it or not (Montuori, 2005). There is always a context of context (Bateson, 2000).

In the main, the dominant-cultural-paradigm isn't ethical

Another area of agreement, as explored throughout this inquiry, is that the dominant-cultural-paradigm on its own is significantly problematic. Aspects of the dominant-cultural-paradigm have successfully objectified other humans and nature and as a result have created a sixth mass extinction and grave social injustices. The beliefs and assumptions of the dominant paradigm are also deeply and unconsciously perpetuated in learning systems, about which students currently have little chance to learn at a third-order. If educators have the knowledge that everyone has their own worldview, and that, for many people across the globe, their worldview has been deeply influenced by this techno-scientific paradigm, is it not the greatest opportunity to try to address this; to demonstrate how our own worldviews influence all that we do? (Bawden, personal communication, December 10, 2019).³²⁷

Who are educators to say which paradigm learners should be steeped in?

If the current paradigm isn't leading to a safe and just global community, and other beliefs are needed to inform learning designs, which paradigms should be invoked? Another aspect that I have tried to demonstrate in this inquiry is that there are many potential

³²⁶ That is, this was a theme that some educators at Hawkesbury would visit from time to time. The position that they came to was that given "*the destructive impacts that modern techno-centric approaches to, and practices within agricultural and rural development, it is ethically indefensible to not seek to explore the significance of worldview/paradigms. And the only way sensibly to do that, in our experience echoing Perry/Salner/Freire/Dewey and even Mezirow, is to explicitly and consciously explore worldviews experientially*" (personal communication, June 28, 2020).

³²⁷ "I believe, as far as agriculture is concerned, there is a moral as well as practical imperative for things to be changed very dramatically – and it will be tomorrow's graduates who will have to figure out the epistemic challenges that they will need to embrace in order to be able to confront the emergent phenomena." (Bawden, personal communication, May 10, 2019).

paradigms in which transformative sustainability learning could be taught. For example, transformative sustainability learning could be fostered within the premises of agential-realism, living systems, critical systems, integral theory and philosophies, humanist, Indigenous and Eastern wisdom, new ecological paradigm, ecofeminism, relation philosophy, relational feminism, process philosophy, a pragmatic blending of philosophies inclusive of the techno-scientific paradigm, etc. And I agree: who are we as educators to say which paradigm learners should be steeped in through the design of learning experiences and contexts? We all have our own 'favourites', and there is an infinite variety. So, regardless of the selected philosophical premises of any learning experience, we as facilitators can design learning experiences that create conditions for learners to 'gain freedom' from any type of paradigmatic 'bondage' (Bateson, 2000).

Avoiding indoctrination

Transformative learning theorists generally are very careful to say that transformative learning cannot be forced, nor can an outcome be planned, otherwise this is coercion and perhaps indoctrination (Cranton, 2016). Rather, transformative learning can be described as an 'activating event' in which subsequent reflections are used to explore assumptions (Cranton, 2002).

'Transformative sustainability learning' seems to have a very specific intention to explore a paradigmatic *shift towards perceiving deep relationality and interdependency*. Gregory Bateson invokes this shift through descriptions of cosmic interconnectedness, Richard Bawden as wholeness, Joy O'Neil as intra-action, Heather Burns as interbeing. In transformative sustainability learning, the articulated philosophical premises inform these 'activating-events', or experiential learning courses. However, what might be considered an 'agenda', can actually be something open to critique during and after the 'activating event'. The intentions of the courses are not to brainwash; the learners are invited to critique and can leave at any time.

My articulation in *Ch. 12, Premise: meaning-systems* of threshold concepts and meaning-systems to support the development of transformative learning could be interpreted as an exercise in making the indoctrination more explicit. This is not the intention. Rather the critique (*Ch. 6, Premise: meaning-systems*) and the vision (*Ch. 12*) can be used as prompts for beginning one's own inquiry into third-order learning, and how an educator creates an activating event within these premises is then opened for critical discussion with learners.

Recognising paradigms and worldviews in action

Thus, if: paradigmatic stances always exist; the dominant-cultural-paradigm isn't conducive on its own to safe and just living; there are many qualitatively different but relevant paradigms; and yet it is vital that transformative sustainability learning avoids indoctrination - why not integrate skills and processes which bring learners' consciousness to the implications of the onto-epi-axi-etc. beliefs hidden in the learning, and the influence of one's own worldview in the learning? Learning can create the opportunity for freedom of perceiving and thought (recognising that this is also a paradigm):

That is to keep oneself unattached in the arena of paradigms, to stay flexible, to realize that NO paradigm is "true," that every one, including the one that sweetly shapes your own worldview, is a tremendously limited understanding of an immense and amazing universe that is far beyond human comprehension. It is to "get" at a gut level the paradigm that there are paradigms, and to see that that itself is a paradigm, and to regard that whole realization as devastatingly funny. It is to let go into Not Knowing, into what the Buddhists call enlightenment. (Meadows, 1999).

Perhaps similarly, transformative sustainability learning (born of minoritarian paradigms) can create opportunities for recognising the nature and significance and development of different worldviews, and to "explore existentially the implication of holding different ones under different circumstances" (Bawden, personal communication, November 29, 2017). This is not about forcing or guiding any learner into any worldview.

The middle way

In sum, transformative sustainably learning holds these important tensions:

The students are all 'enough' when they enter the classroom, we must recognise and celebrate the uniqueness of the learners, and we have no idea what each learner's worldview is, nor any idea what is best for them,

and

as an educator, we can experientially create the conditions for recognising the influence of the dominant-cultural-paradigm and offer insight into how one can become critically aware of the influence of philosophical premises, their own worldview and why that matters.

The diverse vignettes all demonstrate how this must be enabled experientially, yet each

offered unique and distinct way of engaging with third-order learning, relevant to their own context.

Generative questions

There are many more questions to discuss in this space, which I offer here as prompts for future dialogue:

- What are the different ethical implications of conceiving of transformative learning as ‘developing competencies for worldview<>paradigmatic awareness’ as compared with ‘transformation towards a particular worldview’?
- How are various processes of third-order learning linked to context? Heather’s course began with a third-order critique of the dominant-cultural-paradigm and other philosophical views of the world, but the learners selected this ‘sustainability’ master’s program. Are more forthright third-order processes appropriate when learners have selected a learning experience with the expectation of a worldview shift? Does a greater amount of time with learners (e.g. several years) enable a slower, more conscious engagement with third-order learning?
- What are the ethics of teaching a course without an awareness of what paradigm you are operating in and why?
- What are the ethics of teaching a course in a certain paradigm, with a planned awareness of what you are doing and why, without telling the learners? Is this a replacement of existing premises or is it more ethical, in that there is no way for a facilitator to know when the learner is ready to engage in a worldview shift?
- How can engaging in a conscious discussion of ‘third-order-learning’ avoid turning it into an objectified, rational concept, rather than a lived, grokked experience?

I now attempt to summarise and synthesise these types of questions and preceding insights of this inquiry into a final chapter.

Synthesis

Chapter 16:

Synthesis

16.1 Summary

Each chapter in this inquiry arose from a profound insight I wanted to illustrate and contribute as a synthesis of the premises and processes of transformative sustainability learning. I briefly summarise these insights and contributions below.

Dynamics of reality

Beginning with the largely unrecognised Club of Rome story, I introduced this inquiry as fundamentally about changing the way we create change. I do this primarily through a pilgrimage of three dynamics of reality. In particular, I have explored, integrated and applied the work of post qualitative, futurist and systems scholars to develop a unique 'dynamics of reality' method, which can be used to inquire into the premises of any situation, including and beyond the space of transformative sustainability learning.

Within this analytical framing of 'dynamics of reality', I interweave perspectives on scholars representing philosophies relevant to transformative sustainability learning: John Dewey (experiential education), Paulo Freire (critical pedagogy), Basarab Nicolescu (transdisciplinarity), Edgar Morin (complexity) and Erich Jantsch (systems). I demonstrate the resonance between these philosophers and four transformative learning educators (from Australia, Canada and the United States). These educators lead programs varying in length from a week to three years. The courses included the Environmental Cooking;

Semester in Dialogue; Leadership for Sustainability Education master's program; and the Hawkesbury Agricultural College Bachelor. Their relational pedagogies were informed by post humanist, living systems, systemic, critical and experiential theories.

Striving for alignment between content and process

In the *Scholarly Process segment*, I demonstrated my intention for alignment between the content of the inquiry and my own process. In other words, the philosophers and educators were clearly articulating the need to be paradigmatically and worldview aware, so I attempted to reflect on my own processes as researcher to embody a more complex, non-separatist inquiry.

I illustrated how the philosophical intentions of post qualitative research resonates with my inquiry into the premises and processes of transformative sustainability learning (*Ch. 3, Philosophical orientation*). I drew on the post qualitative philosophy to justify the characteristics of this inquiry (such as immersion in philosophy; allowing space for an emergent non-method; presenting the work in creative, analytical, hand-drawn visuals; exploring these 'planes of immanence'). I also demonstrated the alignment between Post philosophies, my structure of inquiry into dynamics of reality (*Ch. 4, Analytical framing*), and my integration of philosophers, literature, and vignette-educators' perspectives (*Ch. 5, Perspectives*).

I offer this thesis as a rare example of a transitional inquiry, between the bounds of qualitative and post qualitative.

Premises involve a critique of the dominant paradigm

The first major contribution of my inquiry is to demonstrate that each of the philosophers preceding, and educators under-taking, transformative sustainability learning who paused to reflect on the long arc of history asserted that the dominant-cultural-paradigm, and its views of reality, brings deleterious effects which *seriously impede humanity's ability to be sustainable, let alone resilient and regenerative*.

The philosophers and educators have undertaken a serious and profound investigation into worldview and paradigmatic awareness. They observed how the often-invisible beliefs of the dominant-cultural-paradigm influence their own consciousness as well as the systems, processes, institutions and actions we take for granted. This criticality of the dominant-cultural-paradigm, born from in-depth inquiry, forms part of the premises of transformative sustainability learning. In a comprehensive exploration of the dominant-

cultural-paradigmatic beliefs, I found resonance amongst and synthesised three perspectives relevant to transformative sustainability learning across many meaning-systems (*Ch. 6, Premise: **meaning-systems***).

I offer this comprehensive articulation of paradigmatic and worldview meaning-systems to demonstrate the breadth of beliefs that can be brought to awareness experientially and become the subject of third-order (worldview and paradigmatic) reflections in learners. I also offer this large canvassing to provoke the continual search for other 'meaning-systems' that could helpfully be a focus for our third-order reflections.

Premises involve a critique of the dominant separatist logic

From the hermeneutical reading of the historical philosophical lineages contributing to transformative sustainability pedagogies, I demonstrated the uniting feature of their work as the deep critique of separation as the primary logic-of-perception (*Ch. 7, Premise: **myth of separation***). These preceding-philosophers recognised how an Aristotelian worldview completely misses a more complex, interdependent, relational view of reality; and, how this partial and truncated perception has contributed to devastating impacts on our relationship to each other and nature.

In the philosophers' desire to overcome this perception and enactment of separation, each created relational processes of inquiry, learning and change (*Ch. 8, Premise: **philosophers' logic***). However, some pedagogies emerging from their philosophies continue to be taught within 'shallower' ways (*see Ch. 1.12*). Not many university courses teaching 'systems thinking', for example, create the conditions for embodying and experiencing the philosophical provocations of Erich Jantsch (*Ch. 8, Premise: **philosophers' logic***). Despite the philosophers' meaningful third-order diffractions beyond the dominant-cultural-paradigm, all of these philosophies can still be reterritorialised within reductionist, mechanistic, separatist ways of being, perceiving and making-meaning.

This reterritorialisation likely is not intentional. Similar to the initial story of the Club of Rome, if one engages with ideas cultivated from different worldview premises, one's own worldview 'filter' may prevent one from seeing or engaging with the diffractive, transformative potential and intention of new ideas.

Hence the resonance between the philosophers and the educators profiled in vignettes in this inquiry (vignette-educators) in terms of their critique of the logic-of-separation was of singular importance: the vignette-educators had educated themselves to become aware of the paradigmatic logics-of-perception that we are often blind to, and as such had the

impetus to engage with and design pedagogies with the espoused philosophical premises.

Thus my second major contribution of this inquiry, is the synthesis of three perspectives (philosophers, vignette-educators, current literature) to demonstrate a critique of the myth of separation as a premise of transformative sustainability learning (*Ch. 7*).

In particular, I trace, the ways that the separatist logic-of-perception infuses every meaning-system in the dominant-cultural-paradigm, emphasising the ubiquity and power of separatist logic. I offer this previously unarticulated synthesis to other educators who are seeking to develop their own awareness of the influence of this logic-of-perception.

Premise involves a vision of relational perceptions

My third major contribution is to reveal the resonance amongst the philosophers and educators in developing more relational, integrative logics-of-perception. In the committed attempt to move beyond reductionist and separatist ways of perceiving, each philosopher and vignette-educator incorporated their own discourses and concepts to describe these perceptions: wholism, complexity, included middle, unity (holism), dialectic, emergence, interbeing, intra-active, transformation, evolution. While distinct, and at times contradictory, I suggest at their core, each is unified in its beyond-separatist perceptions. Each of these 'relationings' enriches, vivifies, and nuances what could otherwise be perceived as distinct, separate, competitive, binary and disjunctive.

To amplify the clarion call coming from diverse disciplines about how to overcome the *Myth of Separation*³²⁸, I demonstrated resonance amongst three sets of perspectives in their visions for more relational logics-of-perception, which forms part of the premises of transformative sustainability learning, including preceding-philosophers, vignette-educators and current transformative sustainability literature (*Ch. 8, Premise: [philosophers' logic](#); Ch. 11, Premise: [relational perceptions](#)*).

I offer what I believe to be previously un-synthesised thinking of philosophers and educators to develop a new, playful symbolic visualisation prompting more relational, complex perceptions. This discussion heightens the importance and deepens the understanding of 'separateness' within the field of transformative sustainability learning.

³²⁸ Capitalised only here to emphasise the influence of this myth.

Our opportunity is to build awareness of which logic-of-perception we are invoking in our everyday moments, to build our consciousness towards a more expanded and expand-able tapestry of meaning-making. The intention for this work is to enable others to search for other perceptions of 'relating' to integrate into this unity in diversity.

Premise involves a vision of relational meaning-systems

A major insight of this inquiry is that the preceding-philosophers and vignette-educators undertook a committed and on-going investigation into fundamentally different worldview beliefs based on more relational logics-of-perception. Their curiosity led them to finding, developing, applying and adapting many more relational meaning-systems infused and informed by systemic, complex, integrated, paradoxical perceptions (*Ch. 12, Premise: [meaning-systems](#)*).

I demonstrated how the dominant-cultural-paradigm views each meaning-system as largely distinct in its own entity, in comparison to blurred boundaries of meaning-systems in a relational perception. When describing one meaning-system in a relational perspective, many of the other meaning-systems were explicitly invoked as well.

My fourth major contribution is the enriched, expanded and synthesised notion of more systemic, holistic and integrative worldviews by explicating often unrecognised meaning-systems. I offer this expanded heuristic of relational meaning-systems for promoting critical worldview reflection; that is a heuristic for scholarly practitioners to reflect on which perceptions and beliefs they are invoking, either explicit or implicitly, in their learning experiences, and why that might matter.

Looking beyond signifiers

Importantly, this inquiry is reminder to look beyond signifiers. Even though these philosophical critiques and visions are arguably premises of transformative sustainability learning (*Premise chapters 6-13*), some writer-authors who invoke the terms 'transformative learning' and 'sustainability' in their work do not discuss their own philosophical premises, nor describe their attempts to help others become aware of their worldview. Some who do write about philosophical premises may not continue to explore these concepts in an embodied, holistic way, beyond an academic exercise. Conversely, many educators who don't call their work transformative sustainability learning do write about these third-order stretches, shifts, complexifications, and are attempting to embed them into their praxis and ways of being. Hence, this is a reminder to hold the signifier

‘transformative sustainability learning’ lightly. This signifier should embrace a porousness and inclusivity of all educators who are curious about how their own worldview and shared paradigmatic beliefs influence learning processes, and how to help learners become third-order aware and agile.

The intention in interweaving and describing this resonance across philosophers and educators is to encourage more practitioners of transformative sustainability learning, and educators generally, to engage with an expanded awareness of the power and influence of our subconscious worldview beliefs and perceptions that manifest in the world around us. In other words, if we pick up the terminology arising from different paradigmatic beliefs without a holistic, felt understanding of their paradigmatic significance, we might be still operating within the myth of separation and other dominant Newtonian-Cartesian perceptions, and creating a world which mirrors separatist beliefs.

Threshold concepts help recognise third-order shifts

The fifth contribution of this inquiry is the articulation of these stretches in meaning-systems, patterning across the literature and in experiences in the vignettes, in the form of potential threshold concepts (*Ch. 12, Premise: [meaning-systems](#)*). These illustrative threshold concepts indicate the types of third-order perceptions, awareness, or consciousness that might be manifested experientially in transformative sustainability, environmental, integral, eco-feminist and regenerative learning.

The volume of potential threshold concepts is not meant to overwhelm educators. Rather, I offer illustrative threshold concepts to support those who are curious about relational beliefs that could inform a learning context. I offer these threshold concepts to be used as inspiration for educators to imagine and create the conditions for ‘activating’ these threshold concepts in experience. Once ‘experienced’, the educators and learners can engage in a process of reflection on what perceptions and new threshold concepts their experiences of learning might be enabling, and why that might matter.

Necessity and value of one’s own transformings

The sixth major contribution is the synthesis of previously un-profiled transformative learning moments of the philosophers and the vignette-educators. Crucial to this story of enabling a perception and enaction of expanded worldviews is one’s own transformings.

While each philosopher and educator reflected on diverse experiences and contexts (*Premise chapter 9, 10*), interesting similarities existed between philosophers’ and

educators' *activating-events*. Transformative events for most philosophers and vignette-educators included an intentional praxial development: i.e. deep and expansive engagement with philosophical reading, as triggered by one's own personal questions born from experience, intuitions, curiosity and passions, applied into context for further learning and reflection. Similarities also existed across philosophers and educators in other activating-events, including exposure to other levels of reality (in quantum physics, or via meditation and psychedelics), to relational cultures (i.e. Indigenous, South American, and Eastern), or by reconnecting with earlier relational beliefs from childhood.

The four vignette-educators in this inquiry described their own transformative learning as essential to who they are and how they design learning experiences. Through their own transformative learning moments, the vignette-educators are curating learning experiences which are qualitatively different from learning within the dominant-cultural-paradigm.

I offer these previously uncurated similarities and differences between philosophers' and educators' third-order reflections in order to recognise diverse sources of 'disorienting dilemmas' that can bring awareness to the power of the separatist myth within the dominant-cultural-paradigm.

As these stories demonstrated, transformation is not a single event, but rather a continuous process of learning, and realising. This process takes continuous and concerted effort to not only be able to grasp other worldviews and paradigms, but also to grasp that there is no one 'paradigm'. Instead of a place to get to, each moment can be conceived of as an opportunity for experimentation with perception. Each moment holds the possibility of transformation. Sustainability can be re-perceived of as a process of *healing the separation* in our own and collective lives.

Complementarity of models and learning processes

The seventh contribution of this inquiry is to demonstrate the remarkable diversity (and complementarity) of the models and processes of transformative sustainability learning, despite the aspects of unity in their premises. Similar to the preceding-philosophers, the vignette-educators could be conceived of as exhibiting unity in critique (*Premise segment*), and distinction in proposed action (*Process segment*). Engaging with these diverse vignettes strengthens the achievement of the shared intent, by expanding beyond the dominant-cultural-paradigm in a multitude of ways.

This diversity also serves as a reminder for those who seek to design their own

transformative learning experiences: insights are to be gained in conversation with those who have gone before and those currently teaching, in order to aid one's own reflection, experimentation, and collaborative adaptation, in support of each other. One formulaic approach, and one correct model does not exist, and our models and processes must continue to evolve.

Building relationality, healing separatist wounds

The eighth contribution is to demonstrate that despite the very diverse models and learning processes, each vignette could be seen as overcoming the wounds of separation in various, and related ways (*Ch. 14, Process: models*). Semester in Dialogue bridges divides between university and city, learning and community improvement in an on-going and committed relationship. Similarly, the Hawkesbury Agricultural College restructured to become an integration of learning, research, operations and local community. Their entire curriculum was based on the notion of systemic inquiry, learning, and becoming. Each of the multiple pedagogies within of the Burns Model of Sustainability Education transcends separatist tendencies. The O'Neil Model reminds us of the profound intra-action between materials, sense, emotions, memories, and learning. Each of the course experiences re-members relations with self, others, nature, and place.

I offer this synthesis as a prompt for educators to consider how their courses can develop processes that build relationality in these profound ways.

Learning must be rooted in experience

Experiential learning is a primary pedagogy of transformative sustainability learning, and each course/program was profoundly experiential (*Ch. 15, Process: three-orders*).

Expanding on this, another contribution of this inquiry is to demonstrate that each course developed a spiralling process for strengthening, deepening, and enriching praxis in relation to the content and the processes of the course, reminiscent of John Dewey, David Kolb, Jerome Bruner, and Erich Jantsch's spirals of continual learning.

I offer this interpretation as a provocation for educators to consider how, instead of developing a linear plan, courses can be designed to allow a recursive strengthening and enriching of content, skills, and processes of the course, *through experience*.

Learning within three orders

Experientially learning about matters at hand (first-order learning) allows for two other

highly interdependent dimensions of learning to be encouraged: learning about learning (second-order), and learning about meaning-systems influencing the learning (third-order). Thus, an additional contribution of this inquiry is to probe and articulate the various processes to develop learners' praxis for second-order (learning-about-learning) and third-order (learning-about-premises) learning; and to question the prevalence of an assumption that learning-about-learning is primarily for educating the educators.

Transformative sustainability learning can offer lived experiences of relational, complex, integrative, holistic paradigms as an activating-event for third-order learning. In other words, regardless of which logics-of-perception or paradigms are used in creating the context of a learning experience (systemic, agential realist, living systems, integral, process, eco-feminist, etc.), these premises can be included as a part of the learning, in order that learners become worldview aware and paradigmatically agile and integrative, depending on the context or the matters at hand, and hence able to engage in third-order learning.

Transformative learning is inseparable from questions of ethics

The vignettes also reminded us that learning experiences which are curated from beliefs different to the dominant paradigm can be deeply disorienting for students whose own personal worldview unconsciously aligns with the dominant-cultural-paradigm. The educators should be prepared (as much as possible) for potential disorientations and have support available for learners and for themselves. This question of ethics must always be approachable in dialogue between educators and learners.

It is well known that transformative learning is deeply intertwined with questions of ethics. Yet, an unexpected tension was the deeply passionate, and at first glance, oppositional views on the ethics of transformative learning. One perspective is that ethically the educator has no right to 'transform' learners, and while another ethical perspective is that, if the educator is aware of the deleterious effects of the dominant paradigm, it is unconscionable for educators to not to invite learners into processes for enabling worldview awareness. Looking for the dialectic, my perspective is the need to engage with the paradox of:

Students are all 'enough', we must recognise and celebrate their uniqueness; we have no idea about each learner's worldview, nor what is best for them,

and

in a learning experience, we can collectively practice third-order learning in order to create the conditions for freedom of paradigmatic recognition and choice.

In other words, while we might be able to see paradigmatic patterns manifesting across society, *it is not possible for facilitators to be able to grasp or comprehend the complex worldview history and patterning of each student*. Thus, it is not for educators to transform students or pursue each individual's 'worldview transformation'. Rather, educators can design learning experiences and processes in which learners can become more aware of their own third-order transformation as it is happening, and become conscious of why this third-order learning might matter.

Third-order awareness, reflection, and diffraction can work towards freedom from any type of paradigmatic bondage, and learners can develop skills in selecting the most appropriate paradigmatic or worldview beliefs<>actions for each situation. Without this type of worldview awareness and paradigmatic agility, in essence, could everything potentially be indoctrination? Or in which types of learning contexts is an 'experience of a theory', without a consciously elicited third-order reflection, a more respectful approach to the unfathomable uniqueness of each learner? This dialogue should continue.

16.2 Future inquiries

Many questions arise out of this inquiry for continued dialogue amongst educators, which I briefly explain and look forward to developing a collaborative praxis around.

Supporting educators

As an educator, leading these types of conversations and processes that tap into the third-order reflections of an experience presumably requires, or at least is benefited by having gone through one's own transformative learning experiences (*Ch. 10, Premise: educators' transformative learning*). Educators must be willing to become aware of and complexify our own worldviews, if we are to be able to engage with these philosophically different inquiry/action/learning methods in their deep and meaningful forms. To transform the world, we must also continue to transform ourselves.

This raises many questions for supporting educators in these endeavours:

- How do we as educators go through the challenging process of third-order change ourselves? How might we support each other to develop our own ability for third-

order reflection and diffraction? Who is facilitating shared spaces of collective reading, experiences and reflection for educator development, and how?

- What types of collective action learning for transformation could work well for educators interested in this space, for example networks such as the ARTists Academy?³²⁹
- How can interested educators be supported in ethically designing and curating a third-order learning experience? What kinds of experiences might be of interest and most helpful for teachers? How could collectives be set up within universities, similar to the Hawkesbury group, which enabled the change of an entire program?
- Philosophy embedded with practice is a form of resistance, resilience and transformation, and what is needed is a strengthened integration at multiple levels. Is there a need for a Relational Constellation movement³³⁰ to expand the ‘unity in diversity’ in the many relational onto-epistemologies informing transformative sustainability learning (e.g. Indigenous, process, general complexity, systemic, regenerative, strong transdisciplinarity, emergentism, integral, new materialist, posthumanism, formal, Buddhist, Daoist, deep ecology, feminist theory philosophies)?
- As we saw with the Hawkesbury program, going beyond orthodox university systems may mean that the program itself is limited, particularly with resource and monetary provision, or even in terms of the continued duration of the program. What process, structures, support systems can work with university administrators *en masse* to set aside resources for these types of courses and programs? And/or develop relationships with institutes that are distinct to the university but have more room to innovate (i.e. Schumacher and University of Plymouth)?

Recognising diverse third-order learning processes

The vignettes demonstrated a variety of ways to engage with third-order learning. Across the vignettes, we saw facilitators always critically reflecting with learners in an

³²⁹ See: actionresearchplus.com/the-artists-academy/

³³⁰ Similar to the Integration and Implementation Sciences, which seeks to create ‘unity in diversity’ amongst the numerous trans-discipline research approaches.

experiential process to help them recognise their worldviews-in-action; experiencing contexts born of different philosophical premises and reflecting on them; learning about new relational paradigms and attempting to apply them in practice, while reflecting on their experience. As this level of learning is profound in terms of gaining freedom from paradigmatic bondage, what other diverse processes exist for engaging in third-order learning, born of different contexts?³³¹

Recognising relationality in meaning-systems not commonly engaged in within universities

Throughout the *Premise segment*, I raise the question of the potentially profound implications of exploring relational logics within only a few meaning-systems, as compared to a greater variety of meaning-systems. A relational way of knowing only in an intellectual sense is a very different experience to holistically perceiving relationally in all of one's meaning-systems.

I suggest, via my investigation of many meaning-systems, that the greater variety and diversity of meaning-systems in which we are capable of perceiving relationally – self, cosmos, anthropology, ontology, epistemology, axiology, etc. – the more profound the transformation in consciousness could be. I suggest that a fundamental shift involves the ability to perceive relationally in all of these aspects.

From my interpretation, each vignette provided the opportunity to reflect on many 'meaning-systems', but I did not find a vignette that explicitly created the conditions for engaging all of the meaning-systems identified in the literature review, which raises the questions of:

³³¹ For example, one such way emerged during the process of my inquiry. At first the papers that I read, which were steeped in quite a different set of philosophical beliefs from my own, had little meaning to me. However, as my worldview awareness increased during this process, the second, third, or fourth readings of these papers raised remarkably different questions. This might be another potential way for learners to note their own third-order changes during a course by comparing and contrasting their interpretations of a piece during and after experiential engagement with a different process born of a relational paradigm. During and after experience, the learner could come back to the piece, and re-read, check in on emotions, note what is new and different, what was one's points of interest or questions this time. After quite a new experience, has the meaning or depth of meaning changed?

- What learning experiences creates conditions for third-order learning across many diverse meaning-systems? What learning experiences enable us to discover /identify other, unrecognised meaning-systems in which we unconsciously operate?
- If we design learning experiences in which the contexts contain relational views of self, cosmology, time, space, causality, rhetorology, death, aesthetics, spirituality, axiology, societal vision, and anthropology, how will epistemological stretches become not only more obvious, but also necessary and rich?
- A profound way to engage with process, relationality, holism would be to learn from and with cultures in which knowing, reality, values, and all meaning-systems are inseparable. For example, are university courses teaching learners in local verb-based languages? Learning and applying a relational, verb-based language would provide a profoundly different way of accessing relational perceptions across many meaning-systems. Of course, these partnerships must be done ethically, and through the invitation and control of cultural leaders. The courses would also require pragmatic efforts towards the initiatives of well-being and resilience of Indigenous cultures and peoples, and decolonisation of the minds, the land, the systems for planetary well-being (L. Williams, 2018).
- Cosmology is apparent in many Indigenous worldviews (L. Williams, 2018), yet often missing in university courses. How can this meaning-system, and it's many diverse interpretations (*Ch. 12.6*) be interwoven into pragmatic courses? How could the mystical and pragmatic intra-act and intra-relate in a learning experience? What are the relationships between intuition, beauty, divine, creativity, spirituality, and wholeness, that can be curated experientially in a pragmatic transformative sustainability learning experience? In what ways and contexts is it appropriate to develop experiences of 'spirituality' within a learning experience?

Transcending the myth of separation

The myth of separation is invisible and ubiquitous, saturating every meaning-system (*Premise chapters 6, 7*). This inability to transcend the manifestation of separation explains in part why earlier sustainability pedagogies have not been as broadly impactful as hoped.

For those steeped in the dominant-cultural-paradigm, relational logics offer the potential to open doors of perception beyond the typical realm of dominant consciousness, and

helps us transcend our deepest myths. The challenge, perhaps, is to make nondual perceptions a conscious, embodied point of awareness and experience. Several experiences were mentioned in the transformative sustainability learning literature and vignettes (*Ch. 11, Premise: relational perceptions, Ch. 14, Process: models*), but beyond these:

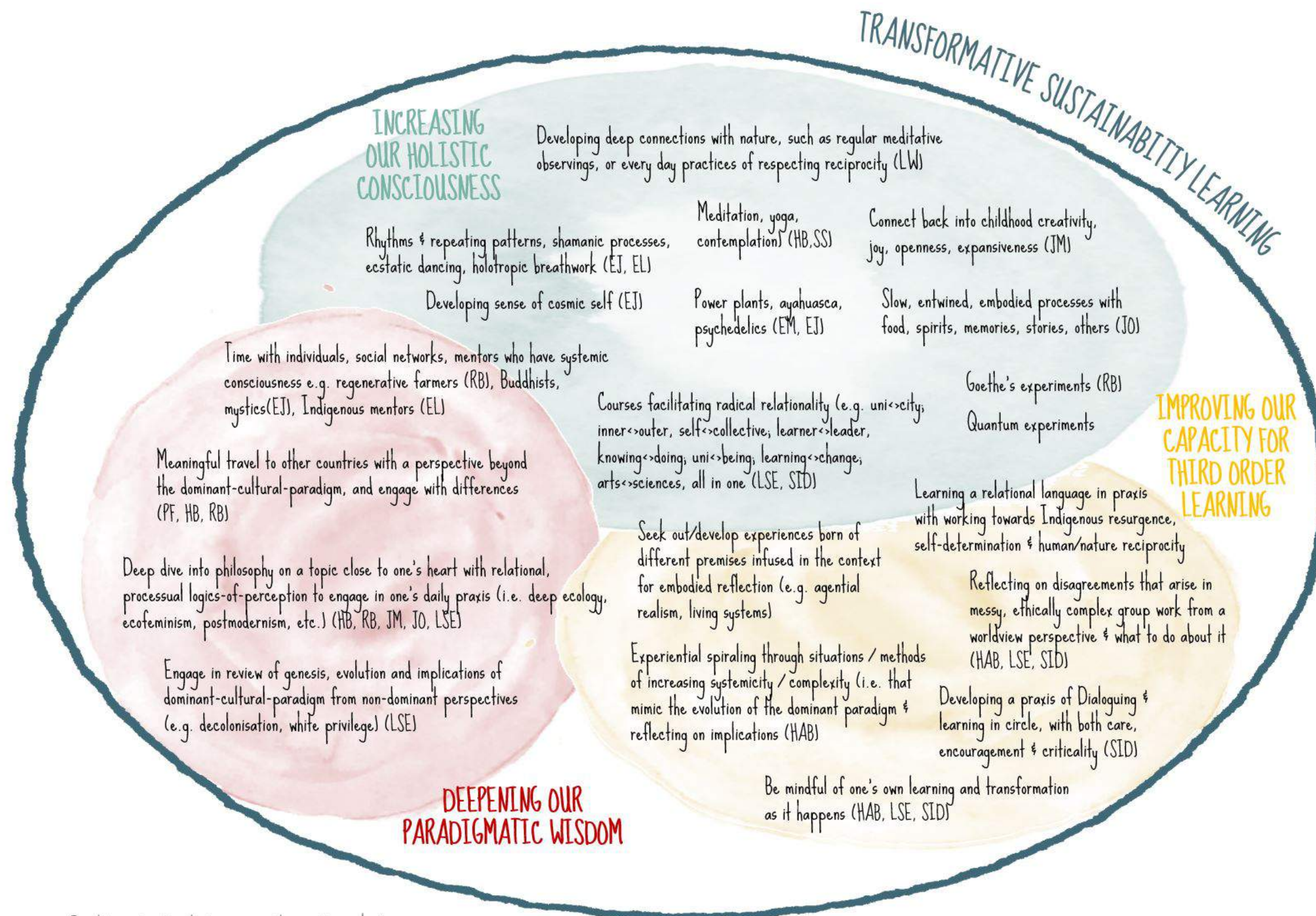
- Is it for educators to create these ‘peak experiences’ (Selby, 2002) in which learners embody a profound sense of unity, i.e. that we are all diverse facets of an underlying oneness (Jantsch, 1976a, b)?
- If so, what are the pedagogical practices or opportunities for peak experiences within a university setting, or beyond, to provide the conditions to experience and stretch consciousness towards a profoundly different, embodied sense of relationality or unity?
- What quantum experiments or meditations for lay society, similar to Goethe’s experiments for lay society (Bortoft, 1996), could provide embodied experiences of unity within a learning experience?
- How could these experiences be **psychosocially safe, inclusive, optional**, and **appropriate** for the university contexts? How could these experiences also be reflected on through the three orders (dimensions) of learning, as well as be interwoven with the (pragmatic, everyday) matters of concern of the course? How would these conditions for peak experiences provide a profoundly different place for noticing worldviews and paradigms in action?
- How do these processes relate to ethics? What happens when the self and ego dissolves? The beauty and magic and reverence for the cosmos might become profoundly apparent, but so might then the pain of the world. Is this also the space of profound feeling, and are we prepared for this as educators? How might this be an (unconscious) incentive for staying within the space of minimalist nonduality?

Beginning with the preceding questions, insights and provocations of the inquiry may feel daunting. They do for me. But I take solace in the words of David Selby:

Beginning will be difficult but this is a kind, not all or nothing, philosophy. We can feel good about small beginnings - for what we are doing is difficult and countercultural - knowing that the ripples will go where they will and remembering that what happens somewhere is in a strange way, happening everywhere (Selby, 2002).

Coda

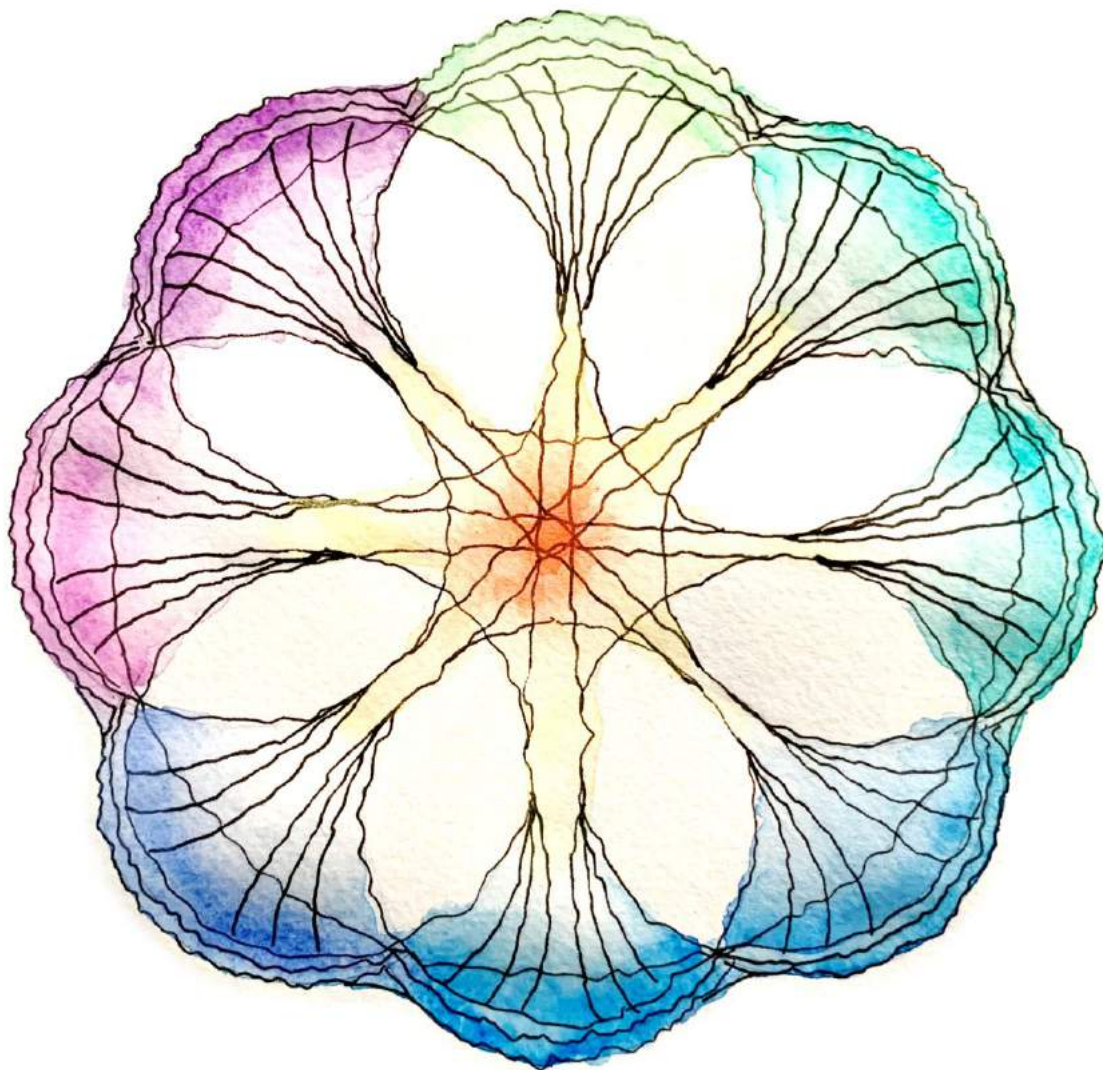
Beneficial in this endeavour of transformative sustainability learning is a critical understanding of the *evolution and implications of the dominant-cultural-paradigm*; experiences for *third-order learning*; and notions of *consciousness expansion*. Below I present a synthesis of interpretations of these concepts from within this inquiry. My intention is not to define transformative sustainability learning, but to offer this synthesis of those who have come before and my insights arising during this pilgrimage, in order to inspire and encourage mindful consideration of these holarchical spheres, towards more generative ways of becoming.



Insights mentioned in the discussions with or written work of:
 Educators experiences (Elizabeth Lange, Heather Burns, Janet Moore, Joy O'Neil, Lewis Williams, Martha Chaves, Richard Bawden, Stephen Sterling)
 Philosophers experiences (Edgar Morin, Erich Jantsch, Basarab Nicolescu, Paulo Freire)
 Learning designs (Agential-realist food pedagogy, Hawkesbury Agricultural Bachelor, Leadership in Sustainability Education, Semester in Dialogue)

Visual 64. Carrier bag synthesis of conditions from which transformative sustainability learning can emerge

In essence, this inquiry is about developing awareness of our individual worldviews and shared paradigms so we can collectively create the conditions for more sustainable and regenerative selves and societies. This inquiry has attempted to get to the depth of things in order to become clearer on how to change the breadth of things.



Appendices

Appendix 1. Outcomes of this inquiry

The following contributions demonstrate my attempts to share and engage communities of relevance in the questions of this inquiry. These contributions include written, spoken, dialogic, and workshop processes.

Ross, K. 2019. "Stretching our Interpretations of 'Being' Towards Relationality." In Jansen et al. (eds.), *We are In.tuition: A Creative Residency: Dojo/Retreat/Open Value Network and a Fieldbook*. Creative Commons Attribution-Noncommercial 4.0 International License, pp. 12 – 19. This chapter explains a process I created for learners to experience and then reflect on contexts based on a logic of separatism/competition, and relationality.

Ross, K. 2019. "Transformative learning for resilient futures." Transformations Conference 2019: Learning from Transformative Action and Thinking, Santiago, Chile. Oct 15 – 19, 2019. This presentation explains how I interwove the insights of this inquiry into the 'contexts' of undergraduate, graduate and on-learning experiences during my PhD.

Ross, K. 2019. "Transformative sustainability learning: why and how?" Presented at Learning Together in Living Systems ('symmathesy'): A new way of thinking about problems, peace and plenty. Murdoch University, Perth Australia, Feb 13 – 16, 2019. At this conference, I presented a synopsis of my thesis, and then lead a group dialogue around this topic.

Ross, K. 2018. 'Leveraging transformation with a polyarchy of learning edges'. Extended abstract and presentation for the International Transformative Learning Conference 2018: Transformation in Action: The Power of Community. Teachers College, Columbia University in the City of New York, Nov 7-10, 2018.

Ross, K. and Mitchell, C. 2018. "Transforming Transdisciplinarity: An Expansion of Strong Transdisciplinarity and Its Centrality in Enabling Effective Collaboration". In D. Fam et al. (eds.), *Transdisciplinary Theory, Practice and Education*. Springer International Publishing, AG, part of Springer Nature 2018.

Ross, K. and Mitchell, C. 2018. "Transforming transdisciplinarity: Interweaving the philosophical with the pragmatic to move beyond either/or thinking". Published on Implementation and Integration Insights, 13 November, 2018. i2insights.org.

Ross, K. and Mitchell, C. 2017. 'Proposed learning outcomes spaces of deep learning for sustainability'. Presented at the Fifth International Conference for Sustainable Development. Columbia University, NY. 18-19 September 2017.

Appendix 2. Philosophical orientations of integrated layered-methods

Most layered methods demonstrate a shift beyond hierarchical conceptualisations, based on their critique of the dominant paradigm. They describe these layers holarchically, as integrative and dynamic (Table 27). When viewed as nested systems, practitioners extend, connect and integrate these metaphorical layers (Sterling, 2003). Inquirers move within and betwixt, perceiving and conceiving their interconnections and mutual-constituting of ‘layers’ (a perception I attempt to enable in my visuals of these dynamics of reality in the *Premise segment*).

I present the detail of these layered-methods for several reasons. Firstly, I synthesise these three layered-methods as my analytical frame for this inquiry (Erich Jantsch, Sohail Inayatullah, and Stephen Sterling, *Ch. 4, Analytical framing*). Secondly, this detail demonstrates the resonance between my analytical frame and the content of my inquiry. Both the content – transformative sustainability learning – and the layered-methods inquire into layers of reality as a means of changing reality. Finally, the detail demonstrates the difference between holarchical and hierarchical conceptions of these methods. If I am researching about worldview-awareness, I must also demonstrate my own attempts to be worldview aware.³³² Hence, I synthesise three methods arising from a holarchical perception, that is a perception beyond the dominant hierarchical conception that I also attempt to enable in my inquiry.³³³

| Comparison of: | Jantsch’s transdisciplinary learning | Inayatullah’s Casual layered analysis | Sterling’s transformative sustainability learning |
|-------------------------------|---|--|--|
| Premises informing the method | How dominant beliefs lead to dysfunction in university systems, e.g.: <i>- separatist, hierarchical, mechanistic, rigid, static, structured ontology</i> <i>- positivist epistemology, divorced from axiology and divided into disciplines</i> <i>- anthropological belief in the ability to control and engineer change</i> <i>- societal vision of economic growth</i> <i>- short-term linear logic and action</i> | Instead of integrating forms of knowledge, knowing and episteme, <i>the usual approach to scholarship is to only critique the differences between philosophies</i> , e.g. empiricists, poststructuralists, interpretive, applied, eco-feminists, critical theory, etc. | To achieve meaningful change, we need to focus on all dimensions of a paradigm (its beliefs and how it expresses itself). Particularly in the case of sustainability learning, the root of the ‘world problematique’ lies in a crisis of perception, or how we see the world <i>as separate, dualistic, mechanistic</i> . |

³³² Further to this point, we must remember, this table primarily maps Western methods for meaning-making, not the true or only way to understanding reality.

³³³ Again, not to dismiss the hierarchical conception, but rather offer an invitation to build an awareness of the worldview assumptions built into the methods we use, and thus an awareness of the implications of these assumptions; and curiosity to explore how methods we use can be improved via integrating with methods embodying complementary worldview beliefs.

| Comparison of: | Jantsch's transdisciplinary learning | Inayatullah's Casual layered analysis | Sterling's transformative sustainability learning |
|--|--|---|---|
| Philosophical purpose | How can humanity and life survive? | Real transformation at all layers of reality towards betterment. | Transform learning and education systems towards whole systems thinking, and to understand the partial validity of each philosophy/worldview. |
| Pragmatic purpose | An <i>integral unity</i> of innovation, education, research, service in universities which 'become alive' in the sense that the system constantly changes in its pursuit of its goals, e.g. society's <i>continuous self-renewal</i> . | Loosening the spaces of reality by going deeper into the reality in order to reveal deeper truths and thus space for more transformations to occur. | This layering can help us better understand the dominant paradigm and help us explore what is, what could be and how do we take charge of the evolution of our consciousness (deep reflection and intentional change) towards a whole systems consciousness (i.e. integral, systemic, integrative, connective, ecological). |
| Scholarly influences for adopting the layered interpretation | <ul style="list-style-type: none"> • Mezarovic's Theory of Hierarchy • Piaget's Levels of Knowing • Systems theories | <ul style="list-style-type: none"> • Sakar's levels of mind • Slaughter's typologies of future studies • Galtung's deep codes of action • Indian philosophical thought on layered reality | <ul style="list-style-type: none"> • Argyrus and Schon's loops • Banathy's hierarchy of learning • Bateson's orders • Bawden's dimensions • Skolimowski's levels of knowing |
| Paradigmatic orientation | Holarchy | Holarchy | Holarchy |

Table 27. Summary of philosophical and contextual dimensions of each 'layers of reality' method

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