Elizabeth A. Lange, Joy Kcenia Polanco O'Neil, Katie E. Ross

EDUCATING DURING THE GREAT TRANSFORMATION: RELATIONALITY AND TRANSFORMATIVE SUSTAINABILITY EDUCATION

ABSTRACT

During this shifting of historical epochs, the "usual ways of doing things" is catalysing existential questions about the survival of humanity. Yet, it is precisely these points of severe disruption where the creation of something more complex and life-giving can evolve. In this article, we explore how the dominant Separation Paradigm has created the current disruptive socio-natural conditions. Individuals and societies steeped within the Separation Paradigm are unwittingly destructive, because they do not perceive, and thus unintentionally sever, the incomprehensibly relational nature of our universe. We summarise the overarching dynamics of the Separation Paradigm and critique how existent learning processes, including sustainability education, are reproducing the Separation Paradigm. A salve to the diverse manifestations of Separation, we describe multiple sources of the Relationality Paradigm as well as implications for relational ways of knowing and being, through an interweaving of theoretical and personal vignettes. Finally, we sketch the implications of a possible worldview transformation for educators and processes of education, particularly within transformative sustainability education.

Keywords: *Great Transformation, Separation Paradigm, Relationality Paradigm, transformative sustainability education, ecological grief*

IZOBRAŽEVATI MED VELIKO TRANSFORMACIJO: ODNOSNOST IN TRANSFORMATIVNO TRAJNOSTNO IZOBRAŽEVANJE – POVZETEK

Velikanski zgodovinski premiki, ki jih doživljamo v tem času, pod vprašaj postavljajo »običajen način, kako počnemo stvari«, in vodijo do eksistencialnih vprašanj o preživetju človeštva. Prav obdobja velikanskih sprememb pa so tista, v katerih se lahko razvije nekaj kompleksnega in življenjsko pomembnega.

Elizabeth A. Lange, PhD, Honorary and Adjunct Fellow, *Institute for Sustainable Futures, University of Technology Sydney, e24lange@gmail.com*

Joy Kcenia Polanco O'Neil, PhD, Founding Director and Assistant Professor, *Educational Sustainability Doctoral Program, University of Wisconsin, joneil@uwsp.edu*

Katie E. Ross, PhD, Research Director, *Institute for Sustainable Futures, University of Technology Sydney, Katie.Ross@uts.edu.au*

All authors contributed equally.

V članku raziskujemo, kako je dominantna ločevalna paradigma ustvarila trenutne razdiralne okoliščine v naravi in družbi. Posamezniki in družbe so potopljeni v ločevalno paradigmo in posledično destruktivni, saj se ne zavedajo relacijske, odnosne narave našega sveta. Obravnavamo vseobsegajočo dinamiko ločevalne paradigme in pri tem kritično opredelimo, kako obstoječi učni procesi, tudi izobraževanje o trajnosti, to paradigmo vedno znova reproducirajo. Kot možno rešitev predstavimo odnosno paradigmo, pa tudi implikacije odnosnih načinov spoznavanja in bivanja, s prepletanjem teorije in osebnih zgodb. Ob koncu zarišemo možnost za svetovnonazorsko transformacijo na področju izobraževanja, zlasti v okviru transformativnega trajnostnega izobraževanja.

Ključne besede: *velika transformacija, ločevalna paradigma, odnosna paradigma, transformativno trajnostno izobraževanje, ekološko žalovanje*

PROLOGUE

...I sit inside, the acrid smell of smoke still seeping in, able to look out the window directly at the blood red sun hidden behind layers of smoke and ash, my throat sore and my head dully aching... watching our Australian news, I see footage of koalas stutter-stepping over the ground, trying to shake off the fire... the pain... engulfing the fur of their hind legs... I sob. I am wrought with grief over what we have done and continue to do… (Katie)

Why do I feel so much pain? Charles Eisenstein explains my experience of the 2020 Australian bushfires from the perspective of "interbeing", Thich Nhat Hahn's (2017) radically relational interpretation of reality.

> The fundamental precept of the new story is that we are inseparate from the universe, and our being partakes in the being of everyone and everything else. Why should we believe this? 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?' […] Certainly, as a little introspection will reveal, [...] [,] [t]he reason it hurts is because it is literally happening to ourselves. (Eisenstein, 2013, pp. 16–17)

WHAT IS THIS HISTORICAL MOMENT?

In this intensifying climate emergency, all of us have been and will be touched by its raw and painful impact. Young people on the streets demonstrate how this is a high-emotion time in which the full trauma of our human impact on Earth is so visibly unfolding. We are now in the midst of an epochal shift (Lent, 2017). While the shape of the future is emergent, many are calling this process another Great Transformation, equivalent in magnitude to both the Neolithic Agricultural Revolution (10,000 BCE) as well as the Scientific Revolution (from 1540-1680 CE) (Lent, 2017). All of us carrying the techno-industrial values of Western Eurocentric culture are embedded in the dominant Separation

Paradigm. However, it is the Relationality Paradigm that can take us beyond the toxicities and entrenched ways of thinking and being.

We are not arguing for a replacement of the Separation Paradigm as much as a familiarity with, and perhaps embodiment of, the emerging paradigm of Relationality. We are also proposing that the management, mechanistic and technicist approaches to sustainability education need to be stretched toward deeper approaches that transform our very patterns of our thinking/being/doing, called the "transformative turn" in sustainability education (Bornemann et al., 2020). We will discuss our interpretations of the Separation and Relationality Paradigms as well as the diverse ways we came towards Relationality, interweaving personal vignettes as a "process approach" to education.[1] Importantly, embodying Relationality also requires different languaging to address the restrictions of the English language, explained in the footnotes.

ENTERING THE DARK AGE: WHAT SHOULD TRANSFORM?

Urban scholar Jane Jacobs (2004) described a "Dark Age Ahead", conceivably the first phase of this epochal shift, where much of what we understand as "normal" will be in decline. This is already evident in the doubling of natural disasters in the last 20 years (United Nations, 2020) and the precipitous biodiversity decline, with an average global decline of 68% in populations of mammals, birds, amphibians, reptiles, and fish in just 50 years (Almond et al., 2020). We are also witnessing the intensification of climate events, habitat unpredictability, epidemics, environmental refugees as well as conflicts over food and water scarcity (United Nations High Commission on Refugees, 2015). It is further visible in the resurgence of unfinished social movements, as well as the backlash, where social and environmental justice remain unfulfilled. As the vignette below demonstrates, there is much to finish and much to begin.

I am a Chameleon (Joy)

Figure 1
Being a chameleon

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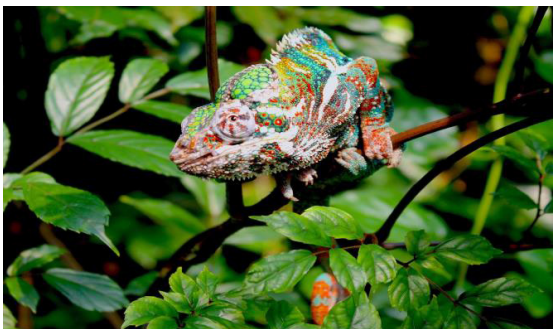
1   Inspired by Whitehead (1933), the process approach to education refers to not presenting "an answer" but showing the pathway. It recognises a continual evolving of ways of knowing and being.

I was riding my bike to the university, where I work in Wisconsin. Only this time, it was after the 2016 Trump election and the campaign promises of "building a wall". As Trump said, "We have some bad hombres and we're going to get them out" (Gurdus, 2016). These statements are a dog whistle to an already volatile situation igniting fear and uncertainty for immigrants. My mother is a Mexican immigrant. My father is an immigrant too, from Poland and Russia. I happen to look more like the Mexican side of my family – thick and curly black hair and dark brown eyes.

A man stuck his head out of his pickup truck window and yelled, "Go home where you belong!" I looked at my material-discursive self with my big hair flowing in the wind, skin colour, and big hooped earrings and said to myself: "Do I look Mexican today?" As I headed to my class, ironically on cultural identities, diversity, equity, and inclusion, I suppressed what happened and taught from outside myself. I grasp on to my whiteness in these situations and carry on as if I belong. I dared not share my experience out of fear I would further exacerbate the lack of belonging I felt. While not plausible, my fear of the deportation of immigrant families resonated. As Burkett and Hayes (2018) found in their research, "Trump's recent policies and rhetoric intensified that awareness into a reality of fear." My parents raised us intentionally not speaking our mother tongue to obscure our minority identity, but you can't take away colour. I tell myself, "I will be OK; I am a chameleon." But what about the mattering[2] of all people of colour? Can I even imagine a world where I do not need to be a chameleon?

Karen Barad (2017) explains a way to respond to my predicament:

> In these troubling times, the urgency to trouble time, to shake it to its core, and to produce collective imaginaries that undo pervasive conceptions is something so tangible, so visceral, that it can be felt in our individual and collective bodies. (p. 57)

Clearly, on this day, I did not do a good job of camouflaging to blend in. One example of what should transform is a worldview that generates a perception and resulting enactment of threat according to mere difference, targeting people as outside of belonging, therefore prey.

Toward Relationality

The Great Transformation can provide opportunities for integrating Relationality more fully into collective paradigms and individual worldviews. What needs to transform is our daily perception[3] and resulting enactment of Western cosmology (beliefs of the universe), ontos/ontology (way of being/beliefs about reality), our axiology (beliefs of what is ethical and valuable) and our epistemology (beliefs of knowledge, knowing and wisdom). A

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2   Mattering is an ethico-onto-epistemological entanglement; meaning comes out of entangled matter (Barad, 2007).

3   Here, perception refers to the entire sensory apparatus of the body (e.g. body as mind), rather than a more reductive interpretation of only a mental process.

shift toward a relational cosmo-onto-axi-epistem-ologies[4] is called for. These profoundly relational worldviews enable a new constellation of performing meaning.[5]

The term relationality is *not* referring to social relationships. In Relationality, the focus is on the entanglement of relations as dynamic processes, not independent objects or subjects. It refers to, for example, a material-discursive intra-action.[6] Relationality, as an emerging (and ancient) paradigm, is central to theorising and practicing transformative sustainability education. Relationality is transformative by definition, in both challenging the dominant Western paradigm and providing life-affirming processes and patterns for a regenerative future.

WHAT IS THE SEPARATION PARADIGM?

Shared paradigms (and individual worldviews) can be characterised by their underlying philosophical beliefs. For example, people steeped in the dominant cultural paradigm (e.g. many raised within Western culture) tend to perceive, and thus believe: the universe as largely empty, with *separate* material entities, unrelated to our daily experiences (cosmological perceptions); reality as that which we can touch, something external to us (ontological and epistemological perceptions); the most important kind of knowledge as that which is rational, objective, universal, certain and *separate from and superior to* embodied, emotional, imaginal, and other transrational ways of knowing (epistemological perceptions); and values as *separable* from knowing and efficiency, for example, as the most important value in decision-making and action (axiological perceptions) (Ross & Mitchell, 2018).

Another important aspect to paradigms is the logic underpinning beliefs (Morin, 2008). For example, how does a culture create definitions of humanity? Is being human about what makes them "*distinct*"? Are humans defined precisely as that which is *separate from* nature, animals, machines, and gods? Or does "*relationing*"[7] makes us human? Are humans an *emergent relationing* between earth, consciousness, and all of nature?

Beyond beliefs about what makes us human, all the beliefs of the dominant paradigm are enabled through an overall perception and logic of separation (Ross, 2020). Further, this facilitates a categorisation process that invariably creates a hierarchy. Not only are human subjects separate from the objects of their study, but conceivably exercise autonomy and control over objects.

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4 Ethico-onto-epistemology, coined by Barad (2007) and in other ways by worldview philosophers (Bateson, 1972) points to the inseparability of ethics, ontology and epistemology. We adapt Barad's notion into cosmo-onto-axi-epistem-ologies, which indicates the mutual causality of these belief systems.

5 Performative meaning is when human and non-human entanglements enter into an ongoing inclusive, interdependent flow of structures that co-emerge into new meaning patterns.

6 Material-discursive intra-action is all matter that is intertwined in an enactment or in dynamic processes that result in a pattern of meaning.

7 We are using the word relationing here as verb language, in action, rather than the static "relationship", to capture the relational way of thinking and perceiving.

Living within societies born of separation 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. Based on separation logic, separation is then enacted; we fashion the world as we perceive it (Ross, 2020, p. 201).

Arguably, this separation "logic-of-perception" (Ross, 2020), at best, confounds people who have other cultural "logics" and, at worst, oppresses, dehumanises and destroys. Critically speaking, this separation logic has "fuelled slavery, imperialism, colonialism, neo-colonialism, environmental pillage, and shocking forms of patriarchy" (Obeng-Odoom, 2016, p. 5), impacting our nonhuman relatives and life-sustaining Earth systems.

Unfortunately, this logic of separation masks the radically complex interconnections within which we exist, and as such, fragments the very relationships which resilient life depends on, and even more detrimental, puts them in an antagonistic relationship with one another. As Gregory Bateson prophesied in 1972, "it is doubtful whether a species having both an advanced technology and this strange way of looking at its world can endure" (p. 344).

How does the Separation Paradigm Manifest in Education?

Prior to the Industrial Revolution, any formal education for the British majority was largely vocational or ecclesiastical. For the elites, education was provided by private tutors, private schools, and universities, all designed for the reproduction of the social order. Early industrial production and free market capitalism provided impetus for expanding compulsory schooling. Schooling became the agent for creating the preconditions of modernity – disembedding individuals from ties to family, community, culture, and land – still in operation today. Educational provision fulfilled four functions: skills and logic for efficient productivity and employment in jobs; modernising and bureaucratising social institutions; political socialisation for democratic nationhood; and attitudes and values favouring abstract rules, clock time, objectivity, success, achievement, progress, and scientific and technical authority over traditional and religious authorities (Inkeles & Smith, 1974). As schooling was massified and diversified, humans have been deliberately alienated from themselves – their wholeness, their labour, each other, and their organic relations with the natural world (Ollman, 1971). Social, political, economic, and cultural interventionism have been normalised.

Separation is evident in schooling given divisions by age and subject, curriculum as hierarchical knowledge units, grades as standards of acquisition, and future prospects measured through intelligence and aptitude tests. Schooling has focused on the cognitive while scorning other learning modalities, disciplining away the importance of the body, emotion, intuition, psyche, imagination, and levels of consciousness. Schools function on bureaucratic managerialism and global accountability, required for reproducing the industrial model. This model of schooling and higher education has been exported around

the world, remaking cultures. It is this technicist model of formal education, based on separation, that we must break if we are to have a life-giving future.

Since the Scientific Revolution, Separation has permeated our patterns of knowing and being. Separation, especially the categorisation fetish, is embedded in all our knowledge practices so that we forget that we separated things for the purpose of studying them, not as indicative of reality (Morin, 2008). It is embedded in the constellation of modernist assumptions: reductionism separating the parts; skepticism with opposed ideas to ascertain truth; dualism implicit in dichotomies, oppositions, and binaries; rationalism marginalising other ways of knowing; the scientific method as outside of ethical concerns; and anthropocentrism separating humans as well as human and non-human species.

Figure 2 visually synthesizes this discussion, exploring various "layers of reality" influenced by the separation logic-of-perception. For each of these layers of reality, we can develop our awareness and perception of the ubiquity of "Separation".

Figure 2

Infusion of Separation into layers of reality

Note. Adapted from *Transforming the Ways We Create Change: Experiencing and Cultivating Transformative Sustainability Learning* (p. 217), by K. Ross, 2020, University of Technology Sydney.

With this awareness, we turn to the origin of Relationality and how might it be an antidote to Separation.

WHAT IS RELATIONALITY?

Relationality,[8] an iterative state of being relational, emerged from the primary conclusion of quantum physicists, that we are made entirely of relations, as basic reality is unbroken wholeness in flowing movement (Bohm, 1980). Relationality means we understand reality as related at all scales, from the smallest quantum level to the cosmic level. As humans, we are not monads divided from the world by our skin boundary or our cognition, but rather we are connected through multiple porosities. Ecophilosopher David Abram (1996) beautifully describes the reciprocity between our sensing body and the sensuous Earth. Philosopher de Quincey (2005) expands: "The matter of our bodies (in our cells, molecules, atoms, etc.) is itself sentient, and it 'communicates' with the consciousness of our unified embodied 'self'" (p. 120). So, consciousness is not separate from our bodies but an integral part of each cell which is constantly communicating with the whole, as the very fabric of reality. As de Quincey says, "consciousness goes all the way down" (p. 21).

The English language has substantive limitations in conveying Relationality, primarily as it is a noun language, where subject and object are separated and described hierarchically. Relationality is best expressed through verb languages, such as Indigenous languages. For instance, a Coast Salish village in the Canadian Pacific Northwest is called *Sia-osun* in the SENĆOŦEN language, meaning "the sounds the pebbles make as they are washed up the shore".[9] It is not about the place where this happens, but the intra-active[10] happening itself. So, we are intentionally using verbs, given that relationality is about movement, process, dynamics, performing, and emergences. Specifically, we are using *relationing* as opposed to being "in relationship".

Relationality is not only about embodiedness and process, but embeddedness (Lange, 2017). Adult development is not the growth of individual autonomy. Rather, our relationships constitute us and "*then* our individuality grows out of our relationships—not the other way around" (de Quincey, 2005, p. 12). As Indigenous people say, "we are our relations" (Louis, 2014). Not only do we participate in a fluid world, experienced through our bodies, but we are embedded in human, natural and cosmic relations.

THEORETICAL CONFLUENCES OF RELATIONALITY

The Relationality Revolution is the organic confluence of multiple streams of thought: quantum physics, living systems theory, consciousness theory, process philosophy,

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8   When stepping outside of the paradigm of Separation, and into a perception and embodiment of Relationality, it is common to understand Relationality as interpersonal relations; but this remains within the boundaries of anthropocentric humanism. We expand the notion of relationing further, into a cosmo-ontological approach, understanding the cosmos as inherently connected and all beings and non-beings as always relationing, thus decentring humans.

9   T'Sou-ke Chief Gordon Planes, Interview August 2020. Used with permission.

10   "Intra" as in intra-action, does not hold that agency pre-exists in pre-phenomena; events do not precede, but rather emerge and become distinct within the entanglement of the phenomena.

complexity theory, transdisciplinarity, deep ecology, ecofeminist theory, Indigenous philosophies, Eastern philosophies, and some posthumanisms (Lange, 2017). Each author here has taken different routes into Relationality.

Baradian and Overlapping Living Systems (Joy)

"A fire, a fire! Get prepared to evacuate!" We stood there in disbelief as a stranger implored us to knock on other doors and get people out. We had just moved to the Southern Oregon bioregion for its serene beauty of landscape. Now a billow of smoke was just blocks away. The fire was roaring up the valley taking everything in its path. I tried to be brave, relinquishing the meaning I invested in all my belongings in a storage facility now in the line of fire… "If I could only have that one photo, then the rest could just disappear," I whispered. Little did I process at the time that matter does not just "disappear". According to the law of conservation of energy, energy can neither be created nor destroyed, rather, it can only be transformed or transferred from one form to another. What forms would be transformed by the fires?

Figure 3
The start of the smoking plume against the blue sky

Next day, smoke consumed the sky in a yellow brown hue. An environmental scientist, I am familiar with the air quality index (AQI), but this apparatus of measurement never extended to my knowing and being with air quality. In an AQI well over 500 or "toxic," this quantitative measurement alone did not make meaning. I, rather my senses, spoke to me. As the smell of smoke intensified, it seeped through every nook and cranny of our doors and windows. I quickly grabbed our packing tape and began taping us in. This put living with COVID-19 into a whole new level of lock down. As the Western USA was burning, we were also in the height of political and racial turmoil. With the Black Lives Matter movement, the phrase "I can't breathe" was yet another kind of felt experience. Each day, I felt the breath knocked out of me as I looked out of our window only to hear and see nothingness. Birds that were there one day ago now vanished from tree and sky. No chirping, no people, it was barren and bleak with a mere few feet of visibility. I was comforted by the phone voices of my mother figures, as if Mother Earth speaking through their voices would protect me. Holed up in our hotel room for 9 days straight, breathing to sustain our life was our main focus and the meaning that I diffracted from these entangled apparati.

The news reporter stated that the only way to stay safe from the smoke was to wear an N-95 mask, another reason for these masks. A new shipment arrived in town and our first venture outside was to purchase some – upgrading from homemade masks. With new-found invincibility, we built up the courage to investigate our storage unit in the valley.

In this spacetimemattering of driving past miles of charred Earth as far as the eye could see on both sides of the highway, and with military personnel directing traffic – I actually felt scared.

Figure 4
Entanglement of intra-actions with smoke-filled sky

We found our storage unit, with its cream walls and red roof trim... untouched. Yet all around was the death of a transformed landscape. We proceeded to open up our unit. A thick layer of ash was disrupted and floated all around us. Over these entire two weeks, and now in this moment, all we could think about was leaving – as if climate change would not follow us.

Figure 5
Storage unit wall against fire-charred earth

My husband cupped the tiny particles floating all-around and said, "Do you see what is falling? We are in a crematorium snow globe!" It was then we realised these are the falling flakes of life and death. Every speck of ash was either someone's home, a tree, or an animal. The visceral pain and grief felt the life and death in that moment, enacted on us. It is then we realized – we cannot run and we cannot hide. Wherever we go, we will live and breathe climate change and social unrest. We must meet social, cultural, and natural co-existing agentic forces halfway (Barad, 2007) and we must be part of the healing processes.

If we are to deeply experience this material discursive "doing-in-action," one can see we do not hold agency over the fire and resulting smoke, affecting breathing to remain alive. Barad (2007) challenges us to experience a worldview of intra-action, not interaction, as a way for "the mutual constitution of entangled agencies" in which, "...all bodies, not merely 'human' bodies, come to matter through the world's iterative intra-activity – its performativity" (Barad, 2007, p. 152). O'Neil (2018) proposes we engage in a "performative transformative learning" process to experience how matter has power and agentic force, which allows us to process the crisis of climate change and its true devastation. This is a diffractive way of making meaning[11] – to verify or validate this meaning of the actual phenomenon (climate change) through intra-acting, as dynamic reconfigurings of the world iteratively remaking (Barad, 2007, p. 23).

I *diffract* our entangled experience as Ecological Grief. Viscerally feeling the pain from the performative intra-actions with nature and culture via the process of breathing or lack thereof, is to *feel* grief. To heal is to immerse oneself in the natural world, and act upon its offerings. Ten days post-fire, we drove up to Mount Ashland – above and out of the critical burn area. We found air to breath, nature to literally dance in, and a *feeling* of hope. I am in a performative process of ecological grieving and healing, as part of my transformative sustainability education.

Figure 6
Grieving-dancing-healing process

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11   Barad uses quantum physics to explain diffraction, a physical view/optics to make a new pattern of meaning from an entanglement of an iterative reconfiguring of human and non-human phenomena as opposed to the humanistic and geometrical optics/view of reflecting on phenomena.

The Relational Perception Enabling Many Philosophies (Katie)

Similar to Baradian perceptions, Indigenous cosmologies, and process philosophies, other relevant philosophers can help us recognise, embody, and enact a relational perception. I briefly illuminate a few, from the story of my PhD inquiry.

Passionate about the natural world, I design meaningful learning experiences which nourish an appreciation of nature. While designing and delivering sustainability education courses was energising, something was not right. Through my doctoral inquiry, I hoped to understand why education didn't seem to achieve the necessary changes for our collective trajectory.

My inquiry began with a deep dive into philosophy. My intuition was that if I stepped into the worldviews of certain philosophers, I could compare practices of sustainability education with what these scholars envisioned. Towards this end, I engaged with *transdisciplinarity* (Basarab Nicolescu), *general complexity* (Edgar Morin), *experiential education* (John Dewey, David Kolb), and *systems theories* (Erich Jantsch, Charles West Churchman, Fritjof Capra, Gregory Bateson, Joanna Macy). Their new ways of thinking and being were seeking a transformative shift towards a logic of Relationality that could infuse perceptions and beliefs held by sustainability theorists and practitioners. In their immense diversity, I distilled a strong unifying thread, that of critiquing the dominant Separation Paradigm.

One of the earliest philosophers, John Dewey, perceived how the separatism logic was an error of perception, which deeply frustrated him. In fact, when he first engaged with Georg Hegel's work, another early process philosopher (Seibt, 2017), Dewey responded with sheer relief when the "divisions and separations" that were culturally indoctrinated into him were liberated by Hegel's process philosophy. Relational perceptions subsequently infused Dewey's education theories, such as the necessity of encouraging a relationing between work and play, theory and fact, observation and imagination, body and soul in learning experiences.

Systems theories are broad and diverse, but collectively they encourage similar onto-epistemological shifts. Systemic perception requires taking a much broader, wholistic view, rather than a single (e.g. disciplinary, cultural, value) perspective. When one takes a wholistic perspective, we look at how "entities" (parts, ideas, materials, ourselves, etc.) change through our relationships, how the nature of our relationships also change, and how from these dynamics, emergent (unpredictable and irreducible) phenomena occur (Bawden, 2004). In other words, systemic philosophies require a shift in perception from linearity towards mutual causality, from a reduced view to a unifying view across multiple scales, levels and perspectives; and from control to observation and ethical experimentation. More than most, systems philosopher Erich Jantsch (1981) includes a cosmological and spiritual exploration of systemic theories. He describes relational wholeness as a profoundly nondual relationship between the dynamics of the universe and the dynamics of the human mind, as we are all part of the same whole, resonant with David Bohm (1980).

Similarly, transdisciplinarity is founded on relational logic and perception. The intention of Basarab Nicolescu's (2002) transdisciplinarity is to transcend the separation myth which

manifests "destruction" across the world. Rather, Nicolescu perceives reality through the *"logic of the included middle"*. The logic of the included middle is an integrative, relationing process which allows a unifying of "opposites", but also preserves their distinction. Inspired by his work in quantum physics, Nicolescu (2002) explains how in macro reality, waves and particles are different, but in quantum reality, their contradictions are integrated in the behaviour of quanta. Using the logic of the included middle, we can perceive not only how opposites are distinct, but as well, what is the relationing that unites them? Might we treat each other differently if we engaged in these questions as we meet the "Other" on the street?

General complexity theory also seeks to move beyond the Separation Paradigm. As Edgar Morin (2005) observes: "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" (p. 21). Edgar Morin strives to nourish more complex, relational perceptions in the broader world. Instead of perceiving experiences reductively, as "good" or "bad", we can begin to perceive what is in relation and in how many ways. For example, in dominant society, we tend to perceive life and death as opposites (see Figure 7), where the idea of death is avoided at all costs. However, Morin provides a more complex perception of the relationality between life and death, where too much life can cause death, and how death actually provides the materials for life. It is in the relationing of life and death that the processes of regenerating and rejuvenating emerge (see Figure 7). Perhaps, if our dominant culture were not so scared of death, but observed life and death in a more relational perception, might we not strive to fill our lives with materials of immortality instead?

Figure 7
Comparisons of a Separation view of life or death; and a Relationing view of life and death
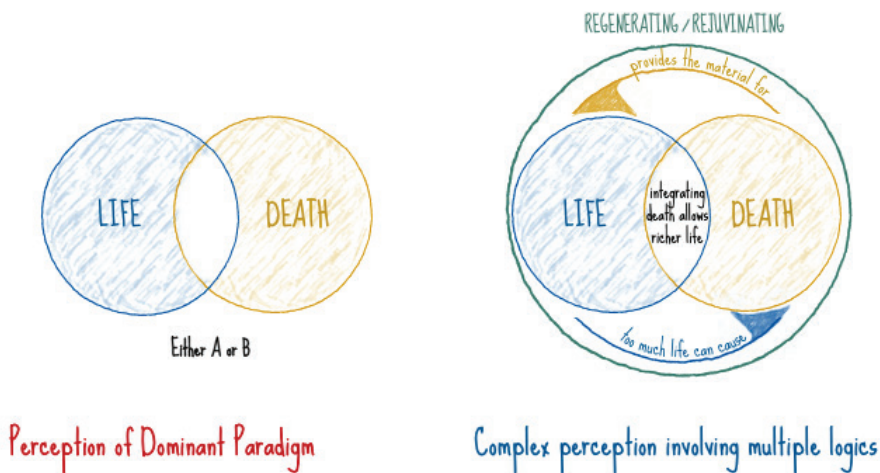
Note. In line with Boolean symbology, the white in the middle of the two overlapping circles on the left diagram indicates a void, or relationship of separation and divide between concepts (e.g. either A or B; there is no middle grey as in the diagram on the right). Sourced from *Transforming the Ways We Create Change: Experiencing and Cultivating Transformative Sustainability Learning* (p. 243), by K. Ross, 2020, University of Technology Sydney.

The significant point in comparing these theorists – and a profound experience for me – was discovering how each in their own way critiqued the Separation Paradigm. Each philosopher agreed with Gregory Bateson (1972, p. 344) that a society with this perception and resulting technology has questionable chances of survival.

It was also profound to realise how relational logics and perceptions enabled the very existence of their philosophies. Yet, a comparison of these philosophies demonstrates the nuanced interpretations and gradations of what relational onto-epi-axiologies could entail. Each on their own are partial, but it is by engaging with many diverse perspectives on Relationality that we are enabled to strengthen our own *ontos* towards a Relational Paradigm.

These experiences opened up a place of conscious awareness of where Separation was manifesting in thoughts and actions within me and around me. How is "the ocean meeting me" (exerting agency) rather than "me swimming in the ocean"; or how are we "meeting each other" in our porosity? When am I immediately judging things as stagnant determination (i.e. good or bad), rather than observing for processes? By changing our perceptions in the minutia of our lives, we are able to create space for relational perceptions to infuse more of our lives.

Indigenous and Process Philosophies (Elizabeth)

Canada is engaged in a truth and reconciliation process between Indigenous and settler people, requiring painful truthtelling. As a settler descendant, my Eastern European grandparents came to Canada escaping constant war and seeking religious and economic freedom, particularly land ownership (Lange, 2017). They believed the colonial mythology that Canada was "empty". Crushed, I found one family land title clearly showing the land had been taken from a Cree reserve that never materialised, through duplicitous political means. As truthtelling, I have responsibility for acknowledging my people's arrival was part of land theft, cultural genocide, and systemic impoverishment. In relational accountability, I actively support the Indigenising and decolonising of Canadian education, enacting respect for Indigenous worldviews, ancestral land relations, and Indigenous languages carrying traditional knowledge within unique cosmologies.

The word *Indigenous* in Latin means "born of the land" or "springs from the land". Indigenous people understand the "Land as living and emergent" (Styres, 2019, pp. 24–25). Informed by the Land, they are a "self-in-relationship" to Land.[12] Marie Battiste (2002) explains:

> Indigenous knowledge thus embodies a web of relationship within a specific ecological context; contains linguistic categories, rules and relationships unique to each knowledge system; has localized content and meaning; has established

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12   Land is deliberately capitalised as it is a living being.

> customs with respect to acquiring and sharing of knowledge [...]; and implies responsibilities for possessing various kinds of knowledge. (p. 14)

Indigenous knowledge systems are profoundly relational. The first Cree word I was taught by my Cree teacher and colleague Claudine Louis, was *Wahkohtowin*, which means "all my relations" (Louis, 2014). As a verb language, this means "the act of being in relation", not just with past or present humans, but also with trees–*the standing ones*, birds–*the winged ones*, insects–*the crawling ones*, fish–*the finned ones*, animals–*the four leggeds,* the medicine, food and other plants, the elements– *the Thunderbeings, Four Winds...* and the planet's *Grandfather Sun, Grandmother Moon* and *Mother Earth*. This relationing is constantly forming one's identity and belonging.

Indigenous people know who you are by the land constituting your cells. In this context, I *am* water flowing from the Columbia Icefields in the Rocky Mountains now running in my veins. I *am* oxygen of the boreal forest inflating my lungs. I *am* minerals of the #1 soils suffusing the vegetables of my mother's and grandmothers' gardens. The wind whispering in aspen leaves vibrates my cells, as I *am* this aspen parkland ecoregion. It is my desire to be walking in a good way here.

Indigenous people go a step beyond principles of embodiedness and embeddedness, to kinship. Humans and the natural world are kin. *Wahkohtowin* is part of Indigenous law, including the ethics of respect, balance, harmony, and cyclicity with the natural world (Steinhauer-Hill, 2008). When orca whales spyhopped in front of his home before a large climate conference, Coast Salish Chief Planes says they were reminding him that, in current conditions, he is responsible for their flourishing or permanent demise.

For Indigenous people, knowledge is not an individual entity, an acquisition, or something owned. Knowing brings a responsibility for communal benefit. Further, the Indigenous understanding of intelligence is far broader and more inclusive.

> We cannot talk about being an intelligent person without knowledge of and access to all the levels of our intelligence capacity – i.e., the intelligence of the body, the mind, the heart, and spirit. The intelligence of the mind, for instance, does not operate to its fullest creative, discriminating, and encompassing potential without its active partnership with the intelligence of the heart. (Dumont, 2005, in Steinhauer-Hill, 2008, p. 43)

Thus, knowing is accompanied by the development of wisdom, balancing mind and heart (Steinhauer-Hill, 2008).

Indigenous cosmo-onto-axi-epistem-ologies are carried by the language, as syllables carry certain vibrations which echo the land and waters. "We don't speak in lines. We speak in circular motion thinking [...] our sound system is a neural pathway to our memory […] [that] we inherited throughout cellular memory. Indigenous people learn through listening" (Elder Kinunwa, 1998, in Steinhauer-Hill, 2008, p. 19).

As a descendant of ancestral prairie people on several continents, my work is to help transform patterns of thought, being, and doing toward relationality in this place. It is deep listening that lives "in intimate, sacred, and storied relationship with [land, acknowledging] the ways one is implicated in the networks and relations of power that comprise the tangled colonial history of the lands one is upon" (Styres, 2019, p. 55). Losses in the ethnosphere are just as critical as ecosphere losses (Davis, 2009). This is *not* about appropriating Indigenous knowledge, but providing space for expression, while reclaiming one's own traditions for remaking relationality. Indigenous traditions inspire, convey the spirit of place present here, and give a sense of what this might have looked like in *our* original homes.

Western philosophy is called a substance philosophy whereas Indigenous philosophy is a process philosophy. The view of time and space as ever-changing, ever-emerging, exists in the texts of Ancient Greeks such as Heraclitus, Taoism, and Buddhism, finding more recent expression in Alfred North Whitehead. Process philosophy understands a "continually becoming" universe, as flowing reality. Thus, our self is an ongoing, ever-renewing creation, emerging out of the underlying unity and returning to this "eternal ocean of Being" (Mesle, 2008, p. x). "Relatedness and process [...] go all the way down to the roots of reality [...] the entire universe bursting into existence in each moment" (p. x). We too are ongoing processes of becoming (Mesle, 2008, pp. 7–8). Indigenous and process philosophies can have a substantial impact on education as we know it.

DISTINCTIONS AMIDST THE CONFLUENCES

Exploring these various pathways towards Relationality reveals nuances amongst and between them. Perhaps more than others, Indigenous philosophies engage with cosmo-ontological ideas of the universe as alive, creative, in which humans are intimately embedded. They convey a sense of self *as* relations to land and nature, and the relational power of the unseen vibrational and spirit worlds.

Baradian relationality focuses on the agentic power of materials, thereby lessening the perceived distinction and superiority of humanity's power. Barad (2007) articulates a relational view of reality in which various agentic forces come together (human, material, nature) to mutually change each other, and it is in this mutual "coming-together-apart" that meaning emerges.

Regarding Dewey, Nicolescu, Jantsch, and Morin – each heralded as moving dominant philosophy beyond Separation, each focusing on a slightly different Relational perception, whether paradox, emergence, mutual causality and influence, or transformative connections (Ross, 2020, p. 252). In some forms of relationing, the distinctions are both preserved and lost, while in other forms, only the entangled identity is recognised. In some forms of relationing, the coming-together-apart happens instantaneously, and in some forms the transformation happens over time. Regardless of the nuance, each of these ways of relationing adds complementary forms to the Relationality perception.

The role of philosophy is to ask the question, "how then shall we live?" Their shared answer regards ethical accountability; a moral obligation to look after and enhance all of that which constitutes us and which we constitute. Each demonstrates how Relationality is a life-giving understanding of existence that can replace the dominance of the Newtonian understanding of existence predicated on separation.

There has also been a dominant bias towards epistemology. So, we have highlighted the opportunity for broader cosmo-onto-axi-epistem-ological stretches and transformations. Each of these transformational "stretchings" in individual worldview or collective paradigmatic belief systems can be conceived of as a type of threshold concept for transformative sustainability learning.[13] Figure 8 demonstrates how the beliefs of the dominant Separation Paradigm tend to not only view cosmology, ontology, epistemology, and axiology as separate, but the beliefs within these meaning-systems are based on separation logic (highlighted in the four squares). Figure 8 demonstrates that we perceive these meaning systems as inextricably influencing each other, and the beliefs themselves are a logic of Relationality (centre of diagram).

Figure 8

Educational stretching towards Relationality

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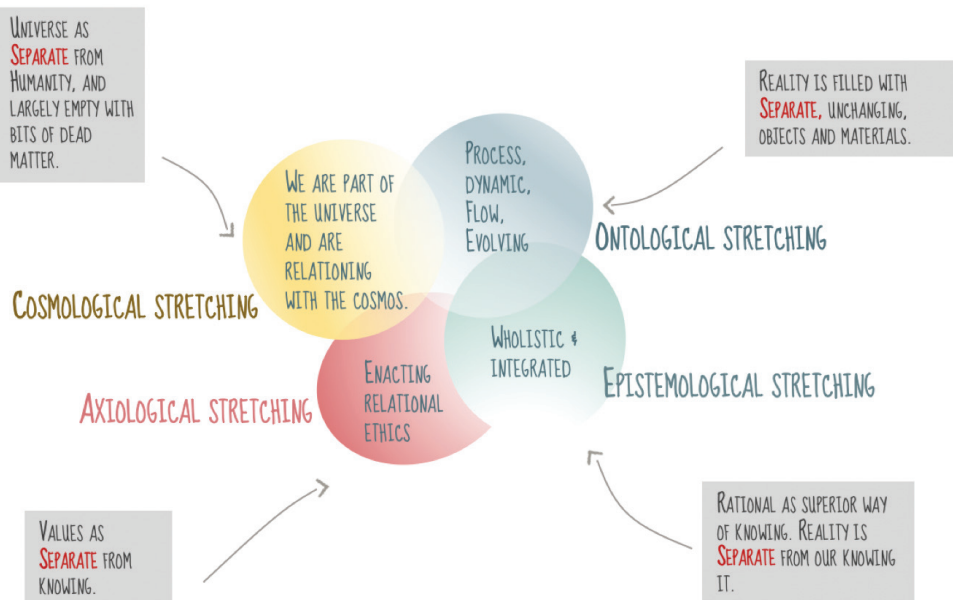
13 "Threshold concepts" is a term coined by Jan Meyer and colleagues to describe concepts that, once understood, changed the way a person saw the world (Meyer & Land, 2003). The notion of threshold concepts in transformative sustainability education as a means of worldview stretching have been further proposed in the work of Jade Sandri (2013), M. J. Barrett and colleagues (Barrett et al., 2016), Katie Ross (2020), and Philip Loring (2020).

PEDAGOGICAL STRETCHING

As educators, we are responsible for co-creating the context of learning. We are inviting educators to bring in a Relational cosmo-onto-axi-epistem-ology as a means of creating a relational context and relational learning processes to foster transformative sustainability education (see Figure 9).

Figure 9
Educating towards Relationality
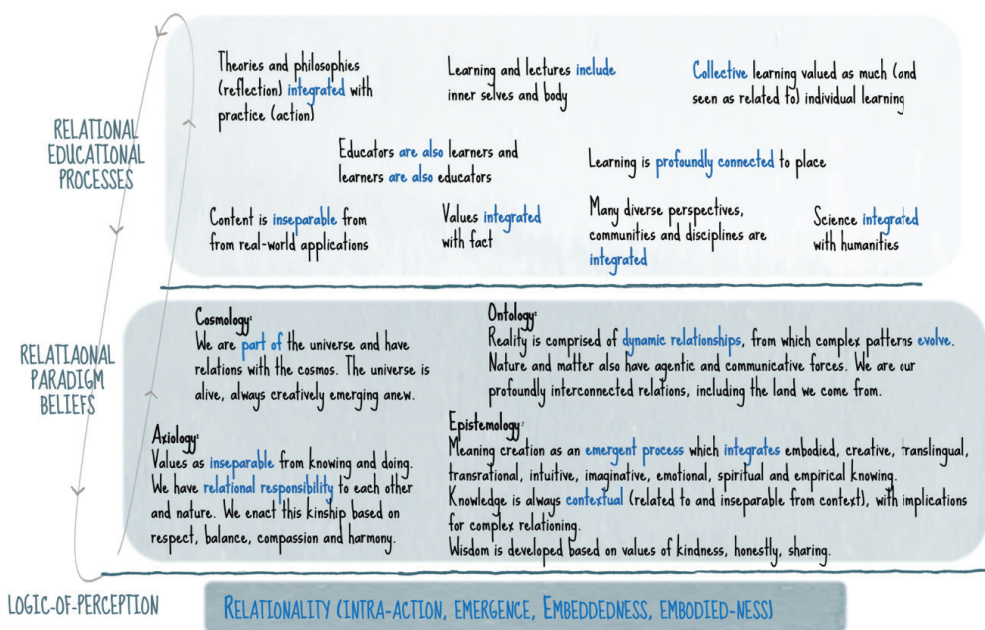
Note. Adapted from *Transforming the Ways We Create Change: Experiencing and Cultivating Transformative Sustainability Learning* (p. 315), by K. Ross, 2020, University of Technology Sydney.

Below we present Relationality principles as they best relate to various paradigmatic beliefs (cosmology, ontology, axiology, epistemology). We recognise these beliefs are inextricably linked, but we have presented the principles in categories as we are bound to a linear method of writing. We use the word "as" in the descriptions because they are about the embeddedness and embodiedness inside a living process, creating the conditions for experiencing relational change processes. Together these enacted principles are not only transformative content but create a much more profoundly relational ontos, or way of being in learning together.

Educating towards Cosmological Stretching

Educating as Life. The intelligibility of Life is all around us. Relational learning can establish the pre-conditions for a life-giving epoch by engaging "Life in all its manifestations:

not only human life, but also the life of the plants and animals, the Earth, and the wider universe" (Xie & McDaniel, 2015, p. 25). One of the central principles, creativity, marks the doings of all living beings and the constant creation of the universe. It recognizes the cyclical relation of life to death as the fertile ground for another cycle of life.

Educating as energy flow. The substrate of the universe is a flowing field of energy, through which information and communication move. Acknowledging and feeling the energy fields around all beings and tapping into the field through other states of consciousness and modalities such as intuition, empathy, felt experience, and resonance, expands knowing and constitutes wisdom.

Educating as consciousness going all the way down. All matter possesses some form of consciousness where "reason alone cannot penetrate the mystery" (de Quincey, 2005, p. 25). Learning, then, is intra-acting with the intelligibility of the world, which goes beyond the contents of our minds toward felt participation and presencing in a constantly creative universe.

Educating as spirituality. Spirituality is a way of being, beyond just the material or containment within religion. It is a direct experience leading to a mystical insight or deep ecological awareness – ultimately part of spiritual awareness. Finding new, and reclaiming old expressions of spirituality, that regard the world and universe as living, can shift our way of being and knowing in profound ways.

Educating towards Ontos/Ontological Stretching

Educating as relationing, dynamic process, non-linear movement, and emergence. Relations *are* the conditions for education (Ceder, 2015), from which education begins, where we and our learning are always in the making. "Education, then, is not a goal, space, place, technique, or kind of relation between people. Rather education is located within happenings and activities" (Lange, in press for 2021). Educators enter with intention, but flow within the *natureculture* relations available and ever-changing emergent opportunities in a co-reciprocal process, until we cannot *not* perceive and be through a relational lens. These ways of being, then, become infused into the fibres of our learning collective, as intra-actional beings and educational processes.

Educating as material agency. Education can specifically "invite in" materials, such as food, water, or the natural world, as educators, as agential and communicative beings, influencing the learning experience, as part of a living learning emergent system (O'Neil, 2015). Students engage in a "performance" with material, self and others (human and nonhuman) intertwined in an ontological way of *(be)coming* and *(re)membering* (O'Neil, 2015, 2018). (Re) and (Be) signify "livingness" as opposed to the present tense of "being," as if transformative learning is static and final. Instead, consciousness becomes doings-in-action, feeling emotions (viscerally) while intra-acting in a material-discursive learning process. We do not just change our knowledge, but we change our being in the world – education *as* sustainability (O'Neil, 2018).

Educating as self-in-community. The self is not singular, as "people dwell in mutually enhancing relations" (McDaniel, 2015, p. 243). There is an intra-connectedness between universe, planet, natural environment, human community, and personal world. The self emerges from participation and locatedness in community. "Knowledge of a place – where you are and where you come from – is intertwined with knowledge of who you are. Landscape, in other words, shapes mindscape" (Orr, 1992, p. 130). In education practice, participating in community might mean embedding the learning in relations with community members, local places, and contextually relevant questions. It might involve exploring natural and cultural places around the community, learning and feeling connectedness to them.

Educating towards Axiological Stretching

Educating as radical relatedness and kinship. Radical relatedness builds compassion and empathy – two principles for a just society – where suffering of the other is part of oneself. Even though we may never completely understand, the existence of the other touches us and we touch them, "gift[ing] us with both the ability to respond and the longing for justice-to-come" (Barad, 2012, p. 217). If we open ourselves up to our deep relatedness and kinship, then we feel the pain of the world, the dark side of loss and grief, which is compost for the new. We are being called to a different way of being human and an expansion of justice. While the dominant ways of being erode, we honour compassion and empathy as central to how we must live in harmony with one another and the natural world.

Educating as diversity, inclusion, and collaboration. Diversity is formed through embodying as oneself all the socio-ecological connections, all the diversity in thinking, knowing, cultures and languages, races and ethnicities, ways of being abled, gender expressions, sexual identities, and socio-economic status. Honouring this plurality brings equity, inclusion, strength and creativity to the ecosphere, ethnosphere and learning sphere, leading to regeneration and reconciliation within and among communities. Strengthening our relations, creating transcultural kinship, and reshaping structures while building trust within these networks, we form new ways of working and making change through the challenges and conflicts.

Educating towards Epistemological Stretching

Educating as transdisciplinarity. When we entangle disciplines, as the authors have done here to demonstrate Relationality, new meanings are made, and creativity is ignited. Ideas are not inert or commodities but highly relational and evermoving. This means weaving a tapestry of disciplines into question-asking and knowledge-exploring, affording opportunities for creating wise, wholistic, sustainable ways of living.

Educating as emergent curriculum. Curriculum is from the Latin word *currere*, which is a verb meaning "a process of seeking in conversation" and of transformation, not pre-packaged information (Xie & McDaniel, pp. 28–29). Thus, curriculum is emergent within continuous exploring among educators, learners, texts and the natural world. Emergent

curriculum allows student and educator to build connections, encourage wildest dreams, create enticing propositions, and foster transformative outcomes.

Educating as pattern-seeking. The natural world has infinitely repeating complex patterns, such as Fibonacci spiral patterns, a fractal. These patterns repeat at different scales in the universe, from seashells, to florals, to galaxies. In the same way, what we practice at small levels influences the patterns of the whole, across space and time. Not only is this a different social change process of connecting micro changes with macro changes (Lange, 2018), but exploring these repeating patterns stretches existing learning foci from static universal laws, reductionism and materialism to contextual and evolving patterns, as a weaving of a tapestry of knowledge.

Educating as multiple modalities of meaning. Knowledge is not an acquisition process, and meaning is not right or wrong. It is about the *journey* of truth seeking and enacting deeper meaning. Transrational learning (beyond right and wrong, truth and falsity) can be integrated via storytelling; kitchen-based learning (O'Neil, 2015); yoga, meditative, or contemplative practices; and innovative service projects. Performative entanglements within these intra-actions diffract new meanings.

Educating the whole, embodied person. Neuroscientists (e.g. Immordino-Yang & Damasio, 2007) provide empirical brain research illustrating that *felt experience* is *antecedent* to other stages of learning. When we begin to operate as nondualist mind and body synergy in which we bring full meaning to our consciousness and our full consciousness into our being (O'Neil, 2015, p. 106). These are the most intimate of relations such as the gaze of one another's eyes or to touch and be touched (Barad, 2012). This intra-action could be in the form of bodily movement, intero and exteroceptive sensing, and listening. The more the embodied knowledge systems are engaged, the deeper the connection and meaning made.

Educating as Sustainability. Stephen Sterling (2001) describes three orders of change. The first "order of change," education *about* sustainability, is described as "doing more of the same" – transmitting knowledge onto students. Education *for* sustainability, the second "order of change," focuses on a teaching method or tool to achieve sustainability. Education *as* sustainability, the third order change, is an epistemic shift of the whole person and the whole institution as transformative processes. O'Neil (2015) expands from Sterling's epistemic proposal toward an ontologically relational process of *(be)coming* sustainability, to include emotional, ecological, and material relations in transformative learning *as* sustainability (O'Neil, 2018). As exemplified in a Living Learning System (O'Neil, 2017), it is not what an individual student is doing or learning, it is the students in relational being with others doing and learning as a felt performative dynamic – all at once. It incorporates nonlinear learning processes out of which the self-organising knowing of learners emerges.

CONCLUSION: WHAT TRANSFORMS?

We have described only a few of the Relational philosophies in the Relationality constellation – each one unique but complementary in some way. We assert that transformative

sustainability education has the potential to assist the Great Transformation by cosmo-onto axi-epistem-ological stretching beyond a Separation logic toward a Relationality logic. If we were to live transformative sustainability education as an embodied relational process, it would become more about relational accountability, which is the ethical core of what needs to transform. When we start deepening our understanding of how to take care of each other and the natural world, perhaps we will stretch into the education we need. We do not always need language to explain it; it is about deepening the feeling of existence and our relational accountability within it. Relational accountability is a new language of being—a language of immanence. It is possible to teach in a way that slows down the process, enjoys the seasons and rhythms of learning, and lives compassionately within cultures of deep respect.

Acknowledgements

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