
Mattering pedagogy in precarious times of (un)learning

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Abstract

This paper considers how feminist new materialist thinking may offer a resource for re-orienting pedagogy in light of pressing global issues such as climate change and political unrest. The paper applies feminist new materialist thinking to develop a new pedagogical agenda. I argue that pedagogies are always already normative or are engaged in practices that play a role in opening up to various and un-usual ways of relating and being in and to the world. Pedagogy is a worlding practice as it facilitates diverse ways of relating, thinking, sensing, acting, and is thus involved in the shaping of a 'collective intelligence'. In this paper, I argue that one fruitful approach to pedagogy may be to focus on entanglements and affects and on finding ways of facilitating a 'sensing' living/being of such entanglements. The paper concludes by introducing affective geology to suggest possible steps towards a transformation of our ways of knowing, sensing, and relating.

Keywords

Pedagogy, geo-affective, entanglements, affects, Anthropocene

Introduction

Feminist new materialist thinking about pedagogy is proliferating in precarious times, as this paper will demonstrate. There is a clear need for help to (re/un)learn how to live in ways that have a less destructive impact on the world, that is, to (re/un)learn how to relate to the role and responsibility of ‘the human species’ in pressing ecological and geopolitical problems. It is becoming increasingly evident how non-human and more-than-human forces could be regarded as though they are trying to teach humans something, or to put it another way, that there are lessons to be learned - whether or not we are ready to listen and learn. A central question then is *how* to enable (radical other) learning. As pointed out and exemplified by, for example, Tallbar, Bird Rose, Blaser & de la Cadena, some possible ways of engaging in learning involves turning to various non-Western and Indigenous knowledges and philosophies, to help to develop capacities to listen to and co-live with the surroundings. In this engagement, however, *unlearning* arrogance/ignorance is crucial. Mario Blaser and Marisol de la Cadena note in their introduction to *A world of many worlds* (2018) that “now the colonizers are as threatened as the worlds they displaced and destroyed when they took over what they called terra nullius” (2018, p.3). They underline that non-Western communities have long suffered the destructive effects of Western lifestyles and geopolitical actions, and they find a common “unsurprising – if discouraging” (ibid.) trait in the current purported solutions to the ecological crisis, remarking that “it seems almost impossible to imagine a response to the ecological crisis that does not take the world that is responsible for the plausible destruction of the planet as the exclusive starting point in a conversation about the current condition of the planet” (ibid.). Their observations testify to the ongoing production of inequalities and injustices that need to be addressed; indeed, such inequalities and injustices need to be of central concern and care in the search for possible solutions for living less violently/living with less violent effects/living-creating live-ability for all beings. As decolonial theorists such as Mignolo, Walsch and Quijano alongside Hinton, Mahrabi and Barla (and many others) demonstrate, there is much to be done to push back against colonialism and Western-centrism. They underline the urgency of doing so, an

urgency that also applies to pedagogical relations and research. Patrick Degeorges and Serpil Oppermann argue that what is needed is a “deep change in human collective intelligence [...] in order to meet the irreversible, catastrophic and systemic consequences of the Anthropocene” (Degeorges and Oppermann, 2019¹).

This situation is now one in which posthumanist and feminist new materialist pedagogies can make significant changes, onto-politically, and practically. Feminist new materialist theories and intellectual resources may assist us, for example, by reorienting the subject and object of pedagogy; by attending to natureculture agency and matter’s vibrancy; by addressing (anew) the iterative natureculture material-discursive production of inequalities and differences, in/justices and justice-to-come (Barad, 2010, Derrida, 1992), and by reorienting pedagogy’s matters of concern (Latour, 2004) and matters of care (Bellacasa, 2011, 2017)².

Pedagogies

One way of beginning is with a broad definition of pedagogy. Pedagogy is concerned with scientific, theoretical, and practical questions and challenges in relation to upbringing, learning, teaching, *bildung*, education, and the specific means and methods thereof³. It is also concerned with the ongoing questioning, critiquing, and re-theorisation of ‘itself’ (pedagogy), questioning and critiquing the ways in which pedagogies and societies relate or are interwoven, that is, to engaging in and questioning the normative, ethical, and political dimensions of pedagogies, alongside their effects and concerns (Korsgaard, Kristensen & Siggaard Jensen 2017).

¹ No page number, quote from <https://bifrostonline.org/reclaiming-the-entangled-colors-of-life-in-the-face-of-the-anthropocene/>

² While also meeting the concern voiced, for example, by Zakiyyah Jackson (2015) that “appeals to move ‘beyond the human’ may actually reintroduce the Eurocentric transcendentalism this movement purports to disrupt, particularly with regard to the historical and ongoing distributive ordering of race” (2015, p. 215). See also Zembylas, 2018.

³ For a discussion of the concept of *bildung* and steps towards a posthumanist reconceptualization, see Taylor 2016

Of course, historically, different societies and cultural contexts have had different visions as to the concerns of pedagogy. In Nordic states, for instance, leading pedagogical visions have been concerned with promoting (relative) equality, democracy, and the development of active citizenship/civil society, which is in line with these countries' status as social welfare states (Korsgaard, Kristensen & Siggaard Jensen, 2017). In countries practising other forms of government, the pedagogical visions differ correspondingly⁴. Conventionally, the human (cultivating, liberating, emancipating the human) is placed in centre of attention in pedagogy and pedagogical thinking. In this respect, much pedagogy and pedagogical thinking has played and still plays a role in the staging of the human as privileged and 'exceptional' beings in the world (Snaza 2015, Sonu & Snaza 2015, Taylor 2016), as pointed out by feminist new materialist inspired research in sustainability and climate change education (see for example Taylor, 2017; Verlie, 2018; Mannion, 2019; Johns-Putra; 2013). Furthermore, many pedagogical theories set at their heart the development of the (white) child into a (flexible) citizen as their im- or explicit concern (see for example Hultqvist & Dahlberg 2001, Fendler 2000 for such observations and critique). Another concern is the education and normalisation/'integration'/'assimilation' of the Other (for example Gillborn & Ladson-Billings eds. 2004; Gillborn, 2003, 2008; Staunæs, 2004; Kofoed, 2004, Haavind et al, 2015; Phoenix, 2009).

Posthumanist, decolonial and feminist new materialist approaches to pedagogy, teaching, and learning advance an implicit and explicit critique of such concerns. The literature on this is now extensive, for example: *Teaching with Feminist Materialisms*, edited by Hinton & Treusch (2015); *Pedagogical Matters: New Materialisms and Curriculum Studies*, edited by Snaza et al (2016); a special issue of *Gender and Education* titled *Material Feminisms: New Directions for Education*, edited by Taylor & Ilvinson (2013); a special edition of *Gender and Education* titled *Shifting*

⁴ However, one could note that pedagogical ideals and practices undergo changes and standardisations vis-à-vis years of impact of the 'OECD-ification' of education via ranking of the educational standard/quality of countries, cities, and schools through technologies such as PISA, transnational reforms and standardisations of higher education (Brøgger, 2016).

education's philosophical imaginaries: relations, affects, bodies, materialities, edited by Todd, Jones & O'Donnell (2016); and *Socially just pedagogies: Posthumanist, feminist and materialist perspectives in higher education*, edited by Braidotti, Bozalek, Shefer & Zembylas (2018), alongside a themed special issue of *Parallax* on *Posthuman Pedagogies* edited by Bayley and Taylor (2018)⁵. It is important to note that many of the assumptions and objectives found in prominent pedagogical theories have long been questioned by proponents of feminism, postcolonialism, emancipatory pedagogy, norm-critical pedagogy, queer theory and post-structuralism (for example Cooks & Simpson 2007, Davies 2000, Halberstam 2003, hooks 1994, Kumashiro 2002, Lather 1991; 2012, Frosh, Phoenix & Pattman 2001, Lenz Taguchi 2010, Rodriguez & Villaverde 2000, Staunæs 2004, Walsh 2015, MacLure 2003).

Subject-object divisions are continuously made in education and pedagogy. Students in Western contexts tend to be taught relations of externality, as they are supposed to learn about something that is in the world 'out there' and which is delineated in relation to them while granting agency to the human (for such observations in schools see for example Sonu & Snaza 2015⁶). They are taught to think of time as evenly spaced out linear sequences 'designed' to measure action and being, and to think of space as context, demoted to mere container, and of materiality as something passive, without agency (or with an agency that humans (attempt to) control/master). The language that is used constantly separates and divides and hierarchizes (Juelskjær & Plauborg 2013, 2017).

These separations and hierarchies can be considered part of the global problems that we now face. Sonu and Snaza (2015) suggest, "It is a task of pedagogical research to keep investigating what is it that impedes the possibility of acknowledging our entanglement with nature" (Sonu & Snaza, 2015, p.259). I would add that it is

⁵ The bibliography contains additional resources to those cited in the paper. This is intended to gesture towards the richness of the field, and hopefully inspire further readings.

⁶ "[...] the history of Western educational thought continues to centralize the human as the only sole proprietor of agency, with the teacher as the intervening subject to potentiate this agency and thus transform the world (Sonu & Snaza 2015: 259).

perhaps not 'only' about gesturing towards what are the possibilities of acknowledging (instead of impeding) entanglements, but also the 'sensing' living/being of such entanglements. Perhaps pedagogical research and pedagogy can facilitate ways of 'sensing' living/being of such entanglements? To this end, let us now engage with some contributions to feminist new materialist thinking that may enable us to work (sense, learn, be, act) from within entanglements instead of subject-object binaries.

Mattering pedagogy

Karen Barad's onto-epistemological theorizing can provide inspiration in approaching humans' entanglements with the world. Barad states, "Practices of knowing and being are not isolable; they are mutually implicated [...] we know because we are of the world. We are part of the world in its differential becoming" (Barad 2007: 185). Humans are not an exceptional species with individual status/life, but co-emergent and differentially enacted with natural, spatial, technological and biosocial milieus, as well as with more-than-human others/companions. In this understanding, we come to know/learn as beings of a world in ongoing becoming or 'worlding'; all distinctions are effects of specific entanglements, enacted in specific phenomena (Barad 2007).

When enacting these insights in pedagogy and pedagogical research, the everyday, taken-for-granted teaching-learning ontology, with its distinctions between theory/practice, subject/object, time/space, content/competences, and discourse/matter, is actively disrupted and re-imagined. In learning processes, the qualities of 'content' and 'competences/skills' are understood as coming into being as intra-active forces of materialization; forces that, as mentioned, are not only human. In addition, the ontology of competences (as competences could be said to be a 'target' of pedagogy) shifts from something acquired, individually held, and 'transportable' (Biggs and Tang, 2011; Chapman and O'Neill, 2010) to radically entangled becoming with no fixed beginning or end (Juelskjær, 2017). In turn, this fundamentally changes the pedagogical situation and arrangement. However, this does *not* mean that nothing is acquired, nothing is changed (Plauborg, 2018), but

rather than the definitions in feminist new materialist thinking of *what, who, how, where, and to what effect* in relation to pedagogy and didactics are reoriented.⁷ Taking further inspiration from Barad's theorizing, one could say that these categories or parameters are placed in a state of ontological indeterminacy. Quantum in-determinacy (in Barad's conceptualization) is an ever-present, vibrant ontological in-determinacy of being/nonbeing of all possible beings (and all possible entanglements of a specific phenomenon). Space and time as we know them are put out of joint and we inherit all possible pasts and all possible futures. "Now' is [...] an infinitely rich condensed node in a changing field diffracted across spacetime in its ongoing iterative repatterning" (Barad, 2014, p.169). Consequently, we can never be certain what is being learned, nor when learning something is 'fully' achieved (Juelskjær & Plauborg, 2017).

When foregrounding ontological (quantum) indeterminacy in relation to pedagogical matters (see also for example de Freitas & Sinclair, 2018), rather than a conventional understanding of the acquisition of skills and competences, there is an argument for focusing instead on a fundamentally different ability: a *capability* (not a competence) to levitate, to postpone resolution (Staunæs & Brøgger, 2019), to remain open to what may be/come. This capability of levitating also entails opening up for sensing/being as *response-ability*; that is, of rendering each other (each possible other) capable of response (Haraway, 2016; Despret, 2016). It entails a sensibility or sensation of being part of specific entanglements, of 'lacking' individual existence, while responding *specifically* as part of that phenomenon. In other words, it is not a (psychotic) openness to everything at all times. Responding and enabling response with human, as well as non- and more-than-human bodies, demands affective

⁷ 'Didactics' is understood in different ways in different traditions. Within *this* context it concerns the goal and the bilding aspect of schooling and, more practically, the how, what and why of the practical planning, carrying out and evaluation of teaching and learning (Plauborg 2011). Didactics therefore concerns a certain professionalization of the teacher's work. Didactical questions are generated for use in "[...] reflective planning processes and analyses of ongoing teaching: what is being taught and learnt, how is this effected, and why – with what purpose – is this carried out" (Osbeck, Ingerman & Claesson 2018: 12).

attunement and a concern for un-othering ‘the other’ in pedagogy. I will return to these points a little later.

That there are affective components to relating and becoming, or that becoming involves intensities and forces of affecting and affected more-than-human and human bodies, is taken into account by many scholars - often inspired by Deleuze’s work on affect - and is furthermore theorized in relation to pedagogy (see for example Bergsted 2017b, de Freitas & Sinclair 2014, Lenz Taguchi 2010, Ringrose & Renold, 2016). For example, Hickey-Moody argues, “the materiality of affect, as a meta-subjective exchange, can be considered a posthuman pedagogy” (2009, p.273). Compared to a conventional understanding of pedagogy (as outlined above), there is a substantial shift in the focus of ‘who’ is teaching ‘whom’ ‘what’ and ‘how’. Hickey-Moody draws on Deleuze’s concept of *affectus*, defined as “an increase or decrease of the power of acting, for the body and the mind alike’ [...] *Affectus* is the materiality of change: ‘the passage from one state to another’ (Deleuze, p.49), which occurs in relation to ‘affecting bodies” (2009, p.273). Hickey-Moody further explains *affectus* to be a

rhythmic trace of the world incorporated into a body-becoming, an expression of an encounter between a corporeal form and forces that are not necessarily ‘human’. Literature, sound, and dance are creative media that prompt affective responses and generate *affectus*. Through creating subjective change (or a modulation) in the form of *affectus*, such media are posthuman pedagogies: meta-subjective material forces of change. [...] The enmeshment of individual, ‘human’ subjective traits with a non-human medium (word–sound–movement) is *affectus*, and it is this enmeshment that is a kind of pedagogy: a rhythmic trace of sensation incorporated into the body-becoming. (Hickey-Moody 2009, p.274).

Enmeshments, assemblages and phenomena are all concepts for ‘sites’ of entangling relations that produce what comes to matter. In the above passage from Hickey-Moody, enmeshments are the coming-into-being of something in particular;

a (sensation/sensorial) difference is produced. Attention to how these differences are produced, and to what effect, is important.

To what effect?

Learning is phenomenal (Lenz Taguchi, 2010); it is always enacted in specific arrangements that effect specific entanglements. A fundamental insight of quantum in-determinacy (as explained previously) is that the world is in an ongoing process of iterative becoming, and at some stage, there is no way of settling or knowing what is or will be, as in-determinacy keeps all possible effects and causes open and active. With in-determinacy, there is always much more (and much less) present than that which we are focused on 'fixing' or achieving. As we participate in the determination of something, the world and we are enabled, we are worlded, in a specific way. Following this line of thinking, there will be consequences for how to engage in practices within formal education of measuring learning, measuring skills and in assessing which learning environments to consider as 'better' than others. O'Donnell uses this in-determinacy productively to consider the terms for 'identifying' and facilitating effective educational atmospheres:

What makes an atmosphere effective in education is not susceptible to being captured by a generic model; however, we can be certain that where we find a deadening homogeneity, education will be ineffective. Education requires a heterogeneous milieu, but what will create this heterogeneity cannot be prescribed in advance. The atmosphere of education supports (or destroys) the capacity to receive the unpredictable and to invite surprise, allowing us as teachers and students to undergo the event of a pedagogical encounter. Cultivating the disposition to welcome and take care of the singularity of the other helps to conserve such an atmosphere. As educational practitioners, part of our role is to prepare this invisible terrain in order to facilitate the possibility of an event or an encounter that will lead to transformation. (O'Donnell, 2013, p.281)

This attention to atmospheres also implies attention to the arrangements, the sites (both physical and virtual) of activities, as “[p]edagogies of places negotiate flows and create spaces where matter, desire, human and more-than-human come together to modulate the self in relation to the world” (Duhn, 2012, p.104). In other words, pedagogy may become environmental (Massumi, 2009), involving the orchestration and negotiation of place, affects, activities and relations. Pursuing these ideas, I will conclude this paper with a brief outline of how to ‘eventalize’ and ‘sensorialize’ teaching and learning (and the planning, carrying out and evaluation of teaching), with inspiration from affective geology.

Un-othering otherness – entangled differentiations

‘Who’ is teaching ‘whom’ ‘what’ and ‘how’ becomes de-naturalized in feminist new materialist pedagogy. What constitutes a ‘who’ when attempting to break free from human exceptionalism? Who is in need of listening, learning, doing? And what are the relations of obligations? Who gets to judge? One way of troubling human exceptionalism is to conduct research on non-human learners (Despret, 2016; Haraway, 2008). Simon Ceder analyses the presence of a dog that accompanies students in learning situations: “The literacy dog is viewed as a natureculture phenomenon that decenters the idea of what it means to be an educational subject/relata. The decentering process contributes to rethinking the body’s release of oxytocin and other bodily functions as intra-relational materiality” (Ceder, 2015, p.150). What might be the (learning) capabilities enacted in the student-dog intra-actions? (see also for example Nxumalo & Pacini-Ketchabaw, 2017). Ceder’s example both highlights humans’ co-presence with companion species (Haraway 2008) and negotiates and rethinks the materiality of the body and its borders: Where does one body end and the other begin, and how is what enacted in relations of learning? Feminist new materialist reworkings of the concept of the body have had, and continue to have, a profound productive impact on rethinking pedagogy (de Freitas & Sinclair 2014, de Freitas 2018, Taguchi 2009 and many others). Related to questions of the body is *that and how* bodies are marked and come to matter.

Mattering involves differentiations as well as processes of delegitimization. Continuously, with every intra-action, education may be considered as “crucial material assemblages for racializing, engendering, and identifying human subjects” (Snaza et al 2016: xix); in other words, as processes of differentiating and hierarchizing. This is ‘old bad news’ in critical social thinking, and feminist new materialist thinking regarding pedagogy may address such issues by joining forces with and drawing inspiration from other approaches, such as critical race scholars and decolonial thinking (see, for instance, *Socially just pedagogies: Posthumanist, feminist and materialist perspectives in higher education* (2018) edited by Braidotti, Bozalek, Shefer, and Zembylas).

A pedagogy of entanglements involves the understanding that relations to others – be it other humans, non- or more-than-humans – are not relations of externality:

Entanglements are relations of obligation—being bound to the other—enfolded traces of othering. Othering, the constitution of an “Other,” entails an indebtedness to the “Other,” who is irreducibly and materially bound to, threaded through, the “self”—a diffraction/dispersion of identity. “Otherness” is an entangled relation of difference (*différance*). Ethicality entails noncoincidence with oneself. (Barad, 2012, p.217)

Attending to matters of differentiation is not optional but is how mattering takes place; something that we are all differentially enabled through and response-able in relation to. Furthermore, entanglements are not relations of Euclidian proximity; we are bound to others that we have not yet even begun to sense, that we are indebted to and are co-becoming with. A brief glance at sustainability education in different areas such as the Global South (Mendoza-Zuany, 2019, Masoga & Shokane 2019) and Scandinavia (Olsen, 2018) could testify that while we are all in this crisis/this situation of urgency often referred to as the Anthropocene, we are differently enacted, conditioned, concerned and un/privileged, sensing effects and taking action in different ways (Blaser & de la Cadena 2018, Nelson et al 2018, TallBear 2015, 2017, Nxumalo & Cedillo 2017). This calls for a shift in attunement to the ongoing production of ‘the distant others’. A pedagogy may start grappling with how to

experiment with ways of enabling sensing and caring, where “caring means becoming subject to the unsettling obligation of curiosity, which requires knowing more at the end of the day than at the beginning” (Haraway, 2008, p.36). As such, the questions of how to come to know, and what constitutes the matter/s of knowledge, are crucial.

Tuning the sensorium

The most compelling contribution of the new materialisms is not conceptual or analytic, strictly speaking, but sensory. The attempt to attend to the force of liveliness of matter will entail not just a reawakening or redirection of critical attention, but a reorganizing of the senses, departing from the limitations of the Aristotelian model. (Dana Luciano in interview, Roudeau 2015, p.7)

In this last part of the paper, I turn to Dana Luciano’s reflections on affective geology, pointing towards a pedagogy (and pedagogical research) engaged in facilitating ways of ‘sensing’ living/being of nature/culture, human/more-than-human, self/other entanglements.

There is a complex process of (re/un)learning involved in turning sensing rooted in divisions, hierarchies and otherings into sensing stemming from entanglements, enmeshments and assemblages: a faculty of sensing-being and sensing-acting, a becoming-being of the world/worlding, which has no natural, *a priori* delimitations. This involves a profound redistribution of relations of sensing. The term ‘sensorium’ comes from the Latin *sensus*: the faculty of perceiving (Jones 2006, Juelskjær 2016). It is a term denoting the totality of those parts of the brain that receive, process and interpret sensory stimuli. The sensorium is the supposed seat of sensation, the place to which impressions from the external world are conveyed and perceived. The sensorium also refers to the entire sensory apparatus of the body (Jones 2006, Juelskjær 2016). With a posthuman framing, however, the faculty of perceiving - the borders of where the body begins and ends, what’s inside and outside, what sensing

'is' - is not given once and for all. Existence, sensing and learning are not individual affairs. And sensing is not a 'here-and-now' phenomenon - contained in one moment in time, located in one place. Instead, sensing opens up multiple specific spatio-temporalities (Juelskjær 2016)⁸.

Atmospheric pedagogy

Foregrounding the sensorium in relation to pedagogy also means that pedagogy and teaching practices are strategically aestheticized, or, as Michels and Beyes (2016) argue, become atmospheric. An atmosphere, argues Stewart, is not an inert context, but a force field in which people find themselves (Stewart, 2011, p.452). Atmospheric encounters, then, are a framing of the quality of the aesthetic eventalization of teaching and learning (see also O'Donnell 2013). Turning something into an 'event' (Foucault 2000) opens up for speculation and innovation: "In eventalization the invitation is the point. Not as a superficial gesture, but as a committed offer, at the same time transparent and closing around itself, because only under these conditions will eventalization remain worthy of eventalizations yet to come" (Born, Frankel, and Thygesen 2006, p.212). Events are diffracted with other events reconfiguring specific entanglements of meaning-matter, skills and capabilities.

Pedagogies of place, affective geology, assemblage pedagogy, slow pedagogy are just some of the terms for approaches currently exploring new ground and thereby offering inspiration regarding how to enable a different sensorium by facilitating events. Walking labs, art-based practices, listening to deep-time and stone walks are

⁸ One could also draw inspiration from Manning's theorizing of the senses: "If we understand sensing as more than a motor response, we are in a position to explore the unknowability of sense. In other words, sensing need not express a sensation we have already experienced. To sense may also be to know differently, in excess of my current appreciation of 'my' body. It is in this regard that sensing can be considered a prosthetic to the biological body. To sense may be to create a new body. If new bodies are what is at stake, new politics will have to be created. A democracy-to-come cannot know in advance what or where or who the body is. Democracy as a sensing politics is a movement toward making sense(s), towards new orientations of experience". (Manning 2016: 131)

all examples of what could be termed a 'geo-affective turn', which is also a turn towards new ways of sensing, being of and with the world:

Against the alleged sensory deadening of an anthropocentric and linguistically-focused criticism, the geological or geo-affective turn might help to launch an effort to learn to think less of ourselves as we learn to sense more of the world. (Luciano in interview, Roudeau, 2015, p.7)

An example of this is the project and performance series *Sound of Mull*, developed by Ann Rawlings (Rawlings, 2019) as part of her dissertation work as artistic practice-as-research into how to perform geochronology in the Anthropocene. Rawlings worked at different sites along North Atlantic foreshores where collective performances offered direct or imagined engagement with the multiple temporalities and more-than-human co-constituents. Based on these performances, Rawlings published an art book, which also contains concrete and very evocative strategies for how to sense/listen to deep time. Luciano states that “[s]ensing in geological time places different pressures on how one thinks about what can be felt in the body” (Luciano in interview, Roudeau, 2015, p.2): Could deep-time pedagogy be one way (of many) of tuning into a more-than-human sensorium and articulating transmaterial and transcorporeal entanglements?

Similarly engaged with temporality and with human and more-than-human bodies is Neimanis and Loewen Walker's (2014) work on “weathering” and “weather writing”, a transcorporeal take concerning climatic intra-actions and concerning how human and non-/more-than-human intra-actions are weathering the world. The concept of weathering acknowledges human impact on climate, but insists that this should not efface the material agency of non-human participants. Weathering argues against the idea of humans as omnipotent masters of the weather or climate (Neimanis 2015, p.141), developing specific notions of temporality to work through the aporia of the inbuilt (and deadlocked) temporalities in the concept of climate change: “This project reminds us that we are not masters of the climate, nor are we just spatially ‘in’ it. As weather-bodies, we are thick with climatic intra-actions; we are makers of climate-time. Together we are weathering the world” (2014, p.558). Neimanis and Loewen

Walker suggest ‘thick time’ as a “a transcorporeal stretching between present, future, and past—in order to reimagine our bodies as archives of climate and as making future climates possible” (Neimanis and Loewen Walker, 2014, p.558).

Exit: adding resources to the field

I find that the above mentioned examples of geo-affective research practices resonate with facilitating the previously mentioned capability of levitating: a capability of postponing resolution, rendering each other (each possible other) capable of response, entailing a sensation of being part of specific (spacetime) entanglements, a sensibility or sensation of ‘lacking’ individual existence, while responding *specifically* as part of an enacted phenomenon. Affective geology is a “turning of the necessarily speculative work of geology into a form of aesthetic and sensory experience” (Luciano in Roudeau, 2015, p.2). We may think of the research examples here presented as examples that may be used to develop a geo-affective, atmospheric pedagogy that involves response-ability and engagements that are sensitive to differentiations. Such a pedagogy must focus on what a posthumanist sensorium might look like and how to achieve such a sensibility: an ethics of response-ability for all entanglements. Projects such as these may be fruitful for speculative moves of eventualizing (the planning, carrying out and evaluation of) teaching and learning from within a response-able pedagogy that aims to “lay the human subject on a horizontal vulnerability (as opposed to a vertical relation of hierarchy) in order to build a mutual constitution from which an ethics of naturecultural entanglement may grow” (Sonu & Snaza 2015: 259), and may initiate the transformation of ways of knowing, sensing and relating.

In moving forward with feminist new materialist analyses of pedagogy, I think it would be fruitful to think about natureculture pedagogies of the sensorium and to begin to develop frameworks through which these pedagogies may be researched. Policy agendas that facilitate such research would also be welcomed, with a view to reversing climate change and building sustainable educational futures.

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