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## **The Fragility of Ecological Pedagogy: Elementary Social Studies Standards and Possibilities of New Materialism**

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*The greatest challenge facing the field of environmentalism includes ontological questions over the human subject and its desensitization from landscapes of experience. In this article the authors draw from field experiences in New York City elementary schools (such as observations of teachers, NYS Scope and Sequence Standards for Social Studies, and the Common Core State Standards) to demonstrate how curricular engagements with nature and the environment are persistently caught within humanist traditions that place agency and action as sovereign to humanness. It uses new materialist ontologies to suggest how hybrid relations among humans, non-humans, and matter can be read by way of interactions among assemblages and entanglements that are alive, vibrant, and powerful. While much of environmentalism is bound to political action with nature as passive backdrops, the authors suggest that individual and everyday responses to ecological devastation may better reside in our capacity to act creatively, even horizontally, within political ecologies that disrupt theories of vertical domination and conquest.*

Admit that humans have crawled or secreted themselves into every corner of the environment; admit that the environment is actually inside human bodies and minds, and then proceed politically, technologically, scientifically, in everyday life. (Bennett, 2010, p. 116).

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In most cases, environmental education is driven by the desire to cultivate in young children an ecological consciousness rooted in entanglements with the nonhuman world.<sup>1</sup> While environmentalist research and teaching may be at the center of this conversation, David Gruenewald (2003) argues that the greatest challenge facing the field today are not only those related to practice, but rather ontological questions over the educated human subject and its desensitization from various landscapes of experience. While the notion of “landscape” runs dangerously close to propping up the idea that the human is separate from the nonhuman world with which it is entangled, Gruenewald does provoke important inquiry into the theoretical, political, and ethical relationship between the human and the non-human living and non-living. Such concerns, we believe, are particularly important as 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.

Against common sense anthropocentrism, new materialism—a subset of the posthumanist drift in the fields of philosophy, biology, and the human sciences—attempts to rethink human subjectivity so that it accounts for its relationship with non-human affect and force (Coole & Frost, 2010; Snaza & Weaver, 2014; Snaza, Appelbaum, et al., 2014). In criticizing anthropocentrism, new materialist and posthumanist scholars not only interrogate the cultural assumptions and patterns of behavior that lead to unethical relationships and oppressive states of being, but ontologically shift the human subject so that it is co-emergent and radically entangled with its natural, technological, and spatial milieu. Indeed, following Haraway (2008), we want to use the term “natureculture” to signify how the human is in no way separable from the vital, inanimate, and technological matters with which it is imbricated.

Here, new materialism attempts to make clear how unexamined habits of mind obfuscate our responsiveness to the horrors of environmental devastation and 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. Ethics, in this sense, will not be a Kantian matter of articulating absolute maxims, but an experimental and open practice of trying to act in ways that pursue what Haraway (2008) has called “flourishing” or Dewey (1938/2007) calls “growth.” Teaching in this vein places relationality and imbrication at its core by attuning to the role of non-human forces and rethinking agency beyond the human. This brings to bear alternative notions of ethics, responsibility, (self-)interest, and political ecologies.

By highlighting excerpts from the New York State Scope and Sequence Standards for Elementary Social Studies and the Common Core State Standards (CCSS) for Literacy, in this article we explore their representation of knowledge, and more specifically, the ways in which “nature” is taken up as

a contained object of scientific study and management distinct from humans and their cultures.<sup>2</sup> Our aim here is not to demonize curricular standards and their unthinking anthropocentrism, but rather to open inquiry into the meaning of responsiveness within the value-hierarchized thought and associated logic of domination that is often overlooked in theories of environmental education (Martusewicz, Edmundson, & Lupinacci, 2011). That is, we do not seek to lay out a radically inhuman or posthumanist form of pedagogy (as some of the contributors to Wallin's (2013) perspectives section on posthumanism in *Journal of Curriculum and Pedagogy* do) but to trace the anthropocentrism of these standards in order to find gaps where educators can articulate lines of flight. In our account of environmental standards there are no generalizable interventions, political projects, or classroom practices, but rather careful scrutiny into how these standards reinforce a dichotomy between human and non-human living and non-living matter. We are guided by what William Connolly (2013) calls "the fragility of things" stating:

If you join attention to differing degrees of creativity in the domains of human culture, nonhuman force fields, and culture-nature imbrications to a critical account of the expansion, intensification, and acceleration of neoliberal capitalism, you may be brought face-to-face with the fragility of things today—that is, with growing gaps and dislocations between the demands neoliberalism makes upon several human activities and nonhuman fields and the capacities of both to meet them. (p. 10)

In this article we attempt to sketch this attention in ways that enable teachers to work with and against standards toward a less anthropocentric understanding of ecology.

Since new materialist posthumanism, includes the production of different kinds of ecologies and meanings of humanness (Bennett, 2010; Rotas, 2014), the pragmatic question then becomes not what may be done to address this attack on nature, but what is it that impedes the possibility of acknowledging our entanglement with nature? Our position does not pose any universalizing principles or assured interventions, but we offer new materialist modes of reading, interpretation, and critical thought that teachers and consequently their young students may use in classroom spaces.

## BACKGROUND

Our focus on elementary school is two-fold: first, from Debbie's work as an instructor of social studies for a new generation of preservice elementary teachers working toward initial certification, and secondly, from our shared curiosity as to the kinds of conditions that are made possible when we teach in a posthumanist mode with young subjects who are less preoccupied by

the pressures of labor capitalism and perhaps more inclined to recognize human life as in commune with the non-human.<sup>3</sup> We attend to the project of teaching and teacher education as inseparably a process of *objectification* and *subjectification* (Butler, 1997), one that legitimizes particular kinds of representational knowledge about the self and the non-human world (Smith, 2011), as well as to the particular ways of “coming into being” that humans experience through their responsiveness to new beginnings and opportunities. Although humanist education treats the human as a being separated from “nature” by a rupture, we must begin to imagine forms of pedagogical encounter that do not prop up the “error” of human exceptionalism (Pettman, 2011).

It is in the elementary school classroom, as one site where the teaching and learning subject is formed, that direct attention can be given to the ways in which particular kinds of relationships with naturecultures are made possible. In much of educational discourse, the human being is defined as a knowable nature or essence that can be cultivated or brought forward through an educational project grounded in rational empiricism. This pre-eminence reifies a hierarchical structure that affirms the centrality of man by emphasizing the value and agency of human beings and the incapacitation of all other non-human actants (Snaza & Weaver, 2014). This tradition of humanism in education posits a norm against which all others are measured and it is this value that engenders all other values. As it pertains to the child, such aims are greatly accentuated. Common Core, the example provided in this article, works under the assumption that the child must think, act, and become that which has been determined to be adult-like. In contrast, Gert Biesta (2014) asks us to consider education not as a series of endpoints, but rather as sites of beginnings, a “coming into the world” rather than a process of socialization into an predetermined definition. Perhaps this requires the reverse of what has always been familiar in education: for the adult to return to a child-like openness with the materiality around us.<sup>4</sup>

Drawing upon Hannah Arendt, Biesta (2014) presents us with an alternative understanding of responsibility that is not issued from our will, judgment, or an imperative to be responsible for something, but rather is a responsiveness to ever new situations as we are exposed to them. We believe it is this idea of responsibility, one that arrives as a call to a condition that allows for new materialism to emerge in the project of teaching ecologies. Jane Bennett (2010) uses a new materialist approach to examine how a political response to public problems would change if we were to take the vitality of non-human bodies seriously. Would our consumption, waste, and negligence to environmental matters change if we accepted material things as exercising a radical force of their own, with trajectories, propensities, and the agentic capacity to produce effects and alter the course of events? While it is in part the human subject who is articulating this theory, she argues that the image of matter as instrumental, passive, and emptied feeds into our

fantasies about conquest and domination, thus enforcing a kind of power that calls for our attentiveness.

In forwarding a new materialist ontology, she reconceives ordinary man-made things—a broken bottle, an empty playground, a twisted bicycle, the ridges of sand—as having what Bruno Latour calls *thing-power*, a force with a strange aliveness irrespective of human provocation. While human receptivity to the non-human animal may be more readily acceptable, Bennett (2010) locates life in interactions amongst “agentic assemblages” of matter (p. 111). Bennett (2010) argues that these interactions function as a way to infuse power everywhere as well as to point out our precariousness in the face of material devastation. This is not to personify objects with human characteristics, but rather to “horizontalize the relations between human, biota, and abiota. It draws human attention sideways, away from an ontologically ranked Great Chain of Being and toward a greater appreciation of the complex entanglements of humans and nonhumans” (p. 112). As the distinction between human and non-human begins to collapse, self-interest begins to rely on more inclusive understandings of the self that acknowledge the body as hybrid and partly comprised of matter. As the self in self-interest becomes recast, agency then transforms from saving the human through saving the Earth to an entanglement within complex and dependent political ecologies that carry an agentive force that is distributed everywhere. New materialism, in this sense, thinks of the human as *particular* without being exceptional. Bogost (2011), Wolfe (2012), Morton (2013), Protevi (2009), and Massumi (2014) all insist that posthumanist thought does not require abandoning a concern with the human, but instead requires us to think of the human as the result of ontological entanglements with a multiplicity of nonhumans and their agencies. Human agency, then, is only ever possible in relation to a radically inhuman set of agencies that enable it. We need to figure out how to educate in ways that attune to the human as entangled with the more-than-human without hypostasizing “the human” as if it were separate or separable.

## TEACHING

As a faculty member in a teacher education program in New York City, Debbie frequently encounters teacher candidates who are interested in issues of environmental revival and sustainability within the urban metropolis. Oftentimes they come with excitement at the prospect of beginning a school recycling program, planting a community garden, or starting a letter writing campaign against deforestation. Some create handouts that ask students to record their daily carbon footprint, teach students how to scan the Internet to uncover corporate irresponsibility, and research conservation policies and practices. Others develop multimedia PowerPoint presentations, screen short

documentaries, or engage students in outdoor activities and explorations. Teachers use shocking statistics to draw out concern and stun students with bar graphs on waste tonnage, images of environmental degradation, or photographs of endangered species.

These projects aim to instill a sense of urgent action against the self-destructive effects of human life. Motivated in part by a fear of environmental “blowback,” they appeal to young children by providing information on the current issues and presenting possible courses of intervention and action. Yet, Bennett (2010) raises the question of whether environmentalism of this kind is enough to fulfill the political will that creates more sustainably oriented publics. Such interventions primarily rely on the recruitment of more human bodies and grace the problems in politico-participatory ways, but do they address the cultural and psychical modes of perception that, from the very beginning, inscribe nature as at the mercy of humankind? How, if at all, do these well-meaning efforts push teachers and students to think beyond the endorsement of ethical principles toward the actual practice of ethical behaviors in everyday life? In this process, she argues, responsibility can no longer be referred to as a set of doctrines, but instead, must emerge as a kind of ecology in which agency and action are enmeshed in a web of fluid and moving momentum.

Over the years, environmental education has been heavily critiqued for its inadequacy at using instrumentalism to surmount the cataclysmic disasters present in our era of neoliberal values, consumption, and waste (Kahn, 2010). In an attempt to shift our worldview from one of domination to one that acknowledges the deep interconnectedness amongst all forms of existence, a variety of discourses and fields have been developed under the moniker of ecological education. One such example is Richard Kahn’s insistence for a critical ecopedagogy that supports teachers in developing emancipatory learning environments in which young people embrace the necessity of all life forms and reimagine themselves as activists committed to ending oppression in all of its social, political, and ecological manifestations. Therefore, a critical pedagogical theory would instead investigate the complexity of an ecocrisis in relation to the struggle for humanization, problematizing then politicizing.

As Martusewicz and her colleagues (2011) argue, “ecological crisis is really a cultural crisis—that is, a crisis in the way people have learned to think and thus behave in relation to larger life systems and toward each other” (p. 8). In accordance with Kahn (2010), their work focuses on how unjust social behaviors, such as those that uphold racialized, class-based, gendered and indigenous oppression are essentially interconnected to the mistreatment of other life forms in that they stem from the same fundamentally violent way of thinking (Chen, 2012; Seshadri, 2012; Snaza et al., 2014). It is this colonizing impulse that turns the earth into an Other: unruly, unmethodical, and in desperate need of order and taming (Jardine, 2000).

Similar to the Freirean principle of humanization, one that has been interestingly critiqued for its unrelenting anthropocentrism (Brock, 2011; Snaza, 2013)—Freire did begin to theorize the non-human subject in the later years of his life—critical pedagogical theory, ecological politics, eco-humanism, and ecopedagogies (Kahn, 2010) understand schools as sites for ideological struggle and spaces where students and teachers politically organize against the hegemonic forms of power that sustain environmental degradation through structural and systemic inequality.

While this educational mode is distinct from the “reduce, reuse, and recycle” approach to environmentalism, it continues to re-inscribe “the doubling of the human” (Snaza, 2014) in that politicized praxes require teachers to encounter the student as both presently human in the world and as beings that are not yet human. Social theories, like those in the critical vein, owe much to the notion that the world is composed of individuals that can be defined through political, linguistic, and epistemological forms of representation and in turn form, define, and reproduce representation itself. The posthumanist account, claims Barad (2006), shifts focus from linguistic representation to discursive practice by interrogating the differential categories of human and non-human. This means not only recognizing the body as socially and culturally constructed—de-humanized within society then potentially humanized through education—but also questioning what qualifies as the body, including the productive practices that acknowledge or disavow nature and materiality as intertwined in the act of becoming.

Imbued within systems of reason and governmentality, conventional classroom practices often delimit the kinds of obligations one is expected to take: the organized protester, the young researcher, the mindful consumer. They concretize our beliefs in the student as an object of teaching, the teacher as the harbinger of knowledge, environmental stewardship as the means to obstruct the current course of environmental destruction. Yet without interrogating the implicit and fundamental assumptions about the human subject itself, namely its dis-embeddedness from both nature and non-human materiality, we run the risk of enforcing a momentary ethics temporarily satisfied through contained activity and manipulation. This hasty move toward action is cautioned as potentially dangerous to new materialism and posthumanist theories and practices because it continues to rely on human individuality and agency as the only mode through which we potentially engage in the world. In our contemporary times, responses to the natural world require new ethical capacities, ways of unprecedentedly imagining a future far into time, a body in relation to forces we cannot predict, control, or directly sense.

The new student cohorts who are entering our university programs are from the first generation to experience a K–12 education overrun by the

external pressures of neoliberalism and neoliberal schooling. In these environments, new theories, new strategies, and new forms of identity are exceedingly constrained and limited. These are not overgeneralizations. From Debbie's observation in schools, when teachers propose a lesson that explores the cultural construction of nature as an exploitable resource, they are asked to locate where it fits into the mandated state curriculum. When teachers wish to analyze the economic forces that drive hyper-consumption and the impact of capitalism in everyday life, they are told to focus on skills and objectivity. When teachers create lesson plans that dissect the history of the coal-powered steam engine and its pivotal mark in human history, they are told to teach to the test. These examples from the field are not always the case, but they are frequent and frustrating. In what follows, we share how excerpts from standardized curricula can be interpreted as reinforcing the anthropocentric impulse over the non-human and use concerns raised by posthumanists and new materialists to invite a more refined sensitivity to ecologies.

## THE STANDARDS

In the area of elementary social studies, the relationship between humans and nature is generally expressed as: once upon a time nature dictated how humans lived, but through evolution, humans came to forget nature through an obsession with themselves. Starting at a young age, children learn that in the past, nature was a curious cultural deity of the environmentally responsible indigenous peoples, but their ways of living were foreign and often the reason for interethnic conflict and disruption in American history. European arrival marked a more modern and civilized way of living, with a belief in land ownership and the rights to extract resources. With it came mercantilism, trade, the movement of goods and services, profit, consumerism, and greed. Nature became waterways for transportation, plots for farming, animals for domestication, plants for harvesting and health.

If we begin the work of curriculum design from the New York State Scope and Sequence Learning Standards for Social Studies Grade K–6,<sup>5</sup> the area in which Debbie teaches and the subject apart from the earth sciences that is mostly likely to address issues of environmental concern, we will find that direct reference to “the environment” occurs in two of the ten thematic strands:

- Theme II: People, places, and environments—The complex relationship between human beings and the environments within which they live and work.

- Theme VIII: Science, technology, and society—The significance of scientific discovery and technological change on people, the environment, and other systems.

These themes serve as the conceptual grounds from which more specific content suggestions are made. If we filter through the rest of the document, we find the environment referred to in the following ways: “natural and man-made resources for communities,” “geography and natural resources shape where and how communities develop,” “communities use human and natural resources in different ways,” “role of climate, environment, animals, natural resources in the location and development of Native American cultures,” “communities conserve resources (recycling, etc.),” “geographic terms and features,” “geological history (plate tectonics),” “people adapt and make changes to the environment,” and “environmental issues (loss of rainforest, deforestation, limited resources).”

Two implicit beliefs here deserve critique. The first is that the human is articulated as distinct from “nature,” a presupposition that is radically called into question by new materialism’s focus on entanglement. Second is that nature is an entity worthy of a particular kind of representation, one that is utilitarian and instrumental to human need and economic function, constrained and dependent on human intervention, and subject to a human’s willingness to either conserve or consume it. Here, nature is written into the content standards as an object to be scientifically studied, a place that we culturally inhabit, or a resource for the needs and wants of a community of people (Bowers, 2001). Social context and social foundations are disciplines that see the world as socially and culturally constructed, in which language matters, discourse matters, culture matters, but matter is figured as passive and exterior.

But the solution is not a simple matter of extending social theory to include non-human species and materiality; it would not be enough to have an ethical concern for the environment that remains at its core the property of human sovereignty (Smith, 2011). If we return to Bennett (2010), ethics then would need to shift in ways that reflect the tenets of the new materialist posthuman project. It would need to accommodate an understanding of the environment in its materiality. It must recognize matter as vibrant, agentic, and forceful, and grapple with the ways in which the porosity of human and non-human borders recasts notions of agency and self-interest. We have to locate agency in such a way that it is not owned or solely limited to the actions of human beings, and to recognize that human agency is an *effect* of previous inhuman actions and material entanglements.

In drawing from a wide range of philosophers including Baruch Spinoza and Gilles Deleuze, Bennett (2010) demonstrates how things are not simply

alive by biological definition, but rather are alive in their complex interrelationships, entanglements, and assemblages, and that objects carry *thing-power*, the capacity to animate, to produce effects, to shape the interconnected web of which we are all a part. Bennett states “As I have already noted, the items on the ground that day were vibratory—at one moment disclosing themselves as dead stuff and at the next as live presence: junk, then claimant; inert matter, then live wire” (2010, p. 5).

Bennett (2010) describes a Tuesday morning where she catches a glimpse of a black plastic glove, a mat of oak pollen, a dead rat, a white bottle cap, and a stick of wood assembled together over a storm drain. As she encounters them she recalls:

They shimmied back and forth between debris and thing-between, on the one hand, stuff to ignore . . . and, on the other hand, stuff that commanded attention in its own right . . . it provoked affects in me: I was repelled by the dead . . . rat and dismayed by the litter . . . I was struck by . . . the capacity of these bodies . . . to make things happen, to produce effect. (pp. 4–5)

Here Bennett (2010) argues, as she does through her work on hoarders, that ordinary man-made objects and things have an extraordinary ability to become vibrant, to shift and grow with their own momentum, to enact a material agency that sometimes can overwhelm the human with affect. The cassette tape collection that never gets played, the souvenir from a trip abroad, a book of poetry bought by a long lost love all carry a force of their own, and to some small degree, act independently from the words, images, and feelings they provoke in human beings.

This *thing-power* issues from a recognition that humans are not the only significant actors in the world and thus enables a more distributive agency. In turn, as much as humans are part of larger ecologies in which non-humans and even objects are actants, the human body is also composed and comprised of non-human matter. We ingest matter as a form of sustenance. Our bodies are constitutively tied to machines and technologies (Weaver, 2010; Pettman, 2011). In short, the human body is made up of vital materiality that is not merely “human,” although vital materiality is not limited to the human subject. In her work, Barad (2006) says reality is not composed of “things-in-themselves,” but “things-in-phenomena,” through specific intra-actions that diffuse agency everywhere. Therefore, this new materialism does two things: it redefines the self in ways that recast self-interest to include the material world, and secondly, it acknowledges that humans are not only composed of matter, but are also entangled in ways that produce new political ecologies. That is, the human is *emergent with* the world in its materiality.

While Scope and Sequence Standards delineate the content knowledge that teachers must teach, Common Core State Standards (CCSS), commonly referred to as performance standards, delineate how one must think about such content. Although CCSS policy documentation claims that standards are not curriculum insofar as they “define what all students are expected to know and be able to do, not how teachers should teach” (NGA & CCSSO, 2010, p. 6), Jory Brass (2014) reminds us that despite rhetorical twists and turns, CCSS has worked to normalize certain curricular aims, exclude certain kinds of educational experiences, and discipline curriculum, pedagogy, and assessment in ways that constitute radical shifts in how we think about knowledge.

In K–6 public school classrooms, the strict enforcement of the CCSS, written by key stakeholders in the testing industry including, ACT, the College Board, Achieve Inc., and Student Achievement Partners and endorsed by the Business Roundtable, the U.S. Chamber of Commerce, major corporations and entrepreneurs such as Joel Klein and Jeb Bush<sup>6</sup>, has led to an education disproportionately focused on the testing of literacy and math. The teaching of social studies, once a standalone discipline, has now been subsumed as a literacy subcategory entitled “informational texts.” For those who do work in the area of social studies education, the teaching of history and historical thinking, which includes the examination of social justice, globalization, systemic and ideological discrimination, war, and genocide is anything but objective inferences made from source materials and texts.

As understood, an examination into curriculum and pedagogy, at least in the context of the United States, must acknowledge the pervasiveness of mandated curriculum, including its neoliberal inflections, tendencies, and top-down enforcements that seep particular kinds of knowledge into the psychical corners of teachers and their profession. Moreover, Kahn (2010) argues that the business model response to the environment, more popularly termed “sustainable development” or Third Wayism, is little more than a neoliberal shell to open closed markets and govern the various facets of nature in more profitable ways. The primacy of market economies may not be directly reflected in the Scope and Sequence or CCSS, but David Harvey (2007) reminds us that neoliberalism functions in the control of representation and ideology, namely the way we perceive things and, in this case, how we understand our relationship to the material and non-human world. What new materialism might enable, we argue, is a way of working from within this system toward alternative attunements to the human’s entanglement with nonhuman materialities.

In the CCSS social studies-based literacy unit, “Where Is Home?” second grade students are required to represent their relationship with various kinds of habitats by “writing informational/explanatory texts in which they introduce a topic, use facts and definition to develop points, and provide a concluding statement or section” on either a rural, suburban, or urban

community. Common Core's essential aim of the first week of the unit is expressed as follows:

In Grade 2 Social Studies students will, over the course of an extended time of study during the year, learn that there is a complex relationship between human beings and the environments within which they live and work. Students will use the text features of informational texts while at the same time recording and sharing facts they have learned about different types of communities during shared and independent reading. Students will decide which type of community to write about and collaborate in writing an essay together. They will group facts under headings and collaboratively write to demonstrate how to group facts. They will be introduced to the idea of grouping ideas in paragraphs with a concluding sentence.

In using the popular curriculum design model known as Understanding By Design (Wiggins & McTighe, 2005), the "informational essay" described above is the end goal to which all teaching experiences must be aligned. Since the accompanying evaluation rubric describes proficiency through the criteria of objectivity, organization, and full completion of all essay segments, the suggested texts and learning experiences for this 4-week unit ask students to identify characteristics specific to each community, organize them into definitive categories, and write about them in an objective and neutral tone. Objectivity is a criterion upon which the students will be evaluated.

Therefore, students read non-fiction books and establish, for example, that urban communities have big buildings while rural communities do not and that rural communities have natural open spaces but urban communities do not. The expectation that 7-year old children write "informational essays" is in itself a product of the backwards-mapping model. In determining the curriculum for K-12 education, the writers of the CCSS determine 12<sup>th</sup> grade college ready skills as the starting point, then work backwards all the way into early childhood in order to draw out their aims and goals for each grade level. Bennett's (2010) words sadden our reading of this Common Core assessment. She says, "*thing-power* perhaps has the rhetorical advantage of calling to mind a childhood sense of the world as filled with all sorts of animate beings, some human, some not, some organic, some not" (p. 20). She returns us to natality as a way to remember a world before the life-matter binary defined our adulthood and we decry the fact that teachers are required to reduce the adventurous joy of an unexamined seven-year old life into definable targets, evidence-based readings, and factual truths. Moreover, the ways this standard limits "community" to the human cannot go without critical engagement, for new materialist thought requires us to conceptualize "community" beyond the anthropocentric (Bennett, 2010; Snaza, 2013).

In this assessment, CCSS not only establishes particular meanings about knowledge, but also presents them as absolute truths that can be located within and culled from the language of text. Devoid of context, the reader, or relations of power, knowledge is reduced to discrete categories, units, and sets of things that can be proven through a skills-based value-neutral methodology. However, meaning is not a property of individual words or dislocated texts. Rather, meaning, like everything else, is reconfigured, bracketed, and brought forward through material-discursive practices that not only describe the object, but produce its local intelligibility from sociohistorical material conditions. Everything is emergent. There is little room for play in the CCSS assessment for the investigation of how the outside entangles with our bodies and shapes our sentiments, movements, and memories. There is little acknowledgement that at the same time the world constitutes us; we are simultaneously transforming the spaces and places within which we live, consuming and breathing, planting and tilling, interrupting sound, texture, and light through our relationship with nature, as material subjects and amid the vibrancy of the non-human material world around us. As Bronwyn Davies and Susanne Gannon (2009) so eloquently describe, we are immersed in a moment of becoming, as “folding, unfolding, being enfolded, enfolding earth, light, air, and other beings” (p. 23).

One clear outgrowth of our modern knowledge society is that power is exercised less through direct force and more through systems of reason that order and classify what is said, thought about, and done. Reason becomes the method by which humans interrogate nature as a universal logic from which statements of truth are determined. Knowledge societies not only define historically generated principles about what is seen, acted on, and hoped for, but also come to define a particular educational agenda that aims to cultivate individuals for the deterministic and humanistic needs of society. Standards then come to symbolize what counts as knowledge (Pedersen, 2014). They forward particular conceptions of the self and legitimize ways of responding to the world. As argued by Thomas Popkewitz (2013), disturbing this order may seem a disruption to all the security we have about knowledge and truth, yet it is this very disturbance that enables alternatives and new possibilities of thinking outside the rules and standards that bind us.

While much of education accepts the work of teaching as a cultivation of the self, in tandem with the cultivation of knowledge and reason, Biesta (2013) locates the question of humanness in the encounter with what and who is the other, rather than in any defined essence toward which we should aspire. In rejecting preexisting notions of the human, Biesta instead reaches for the singularity of an emerging self, urging educational practice into the realm of the ethical as it “constantly overflows, exceeds, subverts, and delimits any and all decisions about the properly human” (Smith, 2011, p. 51). Therefore, ethical relations cannot be initiated through absolute ruling or set truths within a managed knowledge society, but is a relationship that

is emergent through an individuals' concerned involvement with the singular reality of another's material existence, human or non-human.

Today, strict curriculum standards and assessments in schools have built seemingly insurmountable enclosures around classroom practice. They have narrowed a condition of possibility once informed by diverse modes of thinking, contingent meaning, and the curiosity to question. New ethical capacities include examining the limits of what we know about being human, pausing to dwell upon a world that is populated, vibrantly and affectively, by human histories, naturecultural forces, and more-than-human materialities. It would have been much different if the CCSS assignment had asked the child to share freely about their experience in different kinds of communities, to write descriptively about the landscapes that abound, to think of their entanglement with human and non-human entities, to express through the pen how they make meaning within different contexts, to speak on attitudes, stirred emotions, stories of animated objects, and their love for the non-human. While current practices are narrowly focused on the strict control of curriculum and pedagogy, perhaps the issue is not about finding more ways to establish predetermined ends in teaching, but more about relational forms of educational agency emerging among children, teachers, and the array of non-human actants in the moment that education presents itself. Perhaps it is the child that has much to teach the adult about a new materialist experience in the world.

Certainly, these suggestions are no solutions, but one interesting example is *Geologic City* by Jamie Kruse and Elizabeth Ellsworth, an attempt to visualize the ways in which modern life, geological time, and material traces are deeply embedded in everyday reality. Through its pages, readers stop to sense, through photographs and text, 20 iconic and unfamiliar sites in New York architecture and infrastructure. In each example, the human convergence and interaction with the forces and flows of geological material are visceral (if we decide to take notice). In Central Park, human hands have carved steps into an outcropping of smooth Manhattan bedrock, "an invitation of geo-poetic futility" that asks visitors to freely associate with the grooves and bends of the Pleistocene glacier that long ago etched itself into the 450-million year schist. Matter is not passive, says Ellsworth and Kruse (n.d.):

Mountains are in constant motion. The stuff of rocks is in continuous transformation . . . New understandings of the power of relatively ephemeral geo-bio-socio assemblages have altered our senses of the place we inhabit. No longer the inert matter outside of ourselves that is there to support us and our buildings, the geologic is a cascade of events. Humans and what we build participate in their unfolding. (n.p.)

In the photographs, there is a profound intersection between humans, matter, and geological time—the tenants of an apartment building in Bedford-Stuyvesant are surrounded by a housing structure composed of Jurassic sandstone. Rockefeller Center becomes 70 stories of fossilized marine animals and shells of aquatic organisms, teeming with visitors, residents, and employees.<sup>7</sup> There is a spectacular ability in such images and words to represent such convergences, and simultaneously, to shape the way we think of our relationship with the material reality around us.

## POLITICAL ECOLOGIES

According to Nikki Rotas (2014), unlearning environmentalism in favor of a new materialist ontology calls for a conception of ecologies that contests the unexamined habits of mind, and shifts thinking and doing toward a praxis of knowledge creation, not repetition, mimicry, or closed solution. Most often when dire situations arise, we react hyperactively with a response that not only tethers us to the very actions we despise, but also heightens us to an anxious pace that inhibits a careful and attentive interrogation into the everyday assumptions that enable this behavior from the start (Jardine, 2000). If only we could locate the root of the problem and hold its perpetrators accountable, we could fix it. If only we could galvanize the agentive spirit, we could band together and stop this devastation. If only we teach the children to behave in a more responsible manner, to recycle their plastics and lower their everyday consumption, then we might have a foreseeable future.

Such responses come into unique curricular form when considering the psychical dimensions of schooling. Imagine the classroom. There is of course the teacher, framed as both an expert and a failure, charged with the responsibility of allaying the nation's anxieties by cultivating a young cadre of responsible citizens. Deborah Britzman (2006) calls the teacher's embodiment of societal expectation "isolation-in-intimacy," an awareness of the potential he or she has in contributing to a condition of possibility from which a child subject comes into being. In speaking of her own teaching experiences, Britzman admits that anxieties about the terrible state of the world catapulted her into a teaching disposition that rendered everything political, a forcefulness that attempted to tame the blurry judgments of others and make certain an idealized and effective outcome.

However, John Dewey (1938/2007) advises, there must be an intelligent theory of experience that undergirds any effort to understand and enact politics in school; for without it, learners would be "at the mercy of every intellectual breeze that happens to blow" (p. 51). For Dewey, experiences are composed of meanings, tools, arts, institutions, traditions, and customary beliefs that unfold in the course of living together. Experience, as fodder for

inquiry, is determined operational insofar as it is not a closed study with a resolution, but rather a series of practices that are performed upon, a precondition that opens up for even further operations and inquiries. Environmental education, then, is more than a demand for problem-solving and intervention; it is a relational praxis that fosters the creation of new knowledge and representations, a moving ecology where philosophical, ontological, and empirical realities converge and intertwine with the ethical, political, social, and cultural dimensions of self and agency. It is about an attunement to more-than-human entanglements in an always ongoing emergence.

If we give up the futile attempt to disentangle the human from the non-human, if we acknowledge the force of material assemblages and recast notions of political action to that of political ecologies, we may be able to begin working from a position that does not inherit the impulse of human domination and conquest. Bennett (2010) extends Dewey's (1938/2007) notion of the public toward posthumanism in order to theorize a politics in which matter comes to matter as an impetus for action. In the *The Public and Its Problems*, she claims, Dewey presents the public as a confederation of bodies that are pulled together by a shared experience of harm that coalesces over time. These publics, (as there are multiple publics at any given moment) do not preexist the problem, but rather emerge in response to it. As problems shift and move, so do publics. They are contingent and temporary. They form, collapse, split, and merge. "Conjoint action," to use Dewey's (1938/2007) term, is not under the control of any rational plan, nor are there exact causes to be identified and extinguished. Instead, conjoint action is immediately enmeshed in a web of connected initiatives and endeavors composed by human, non-human, living, and material entities.

## CONCLUSION

Multiple and varied attempts are made by the authors in this article. First, Debbie's experiences in New York City elementary schools demonstrate that engagements with nature and the environment are persistently caught within humanist traditions that place agency and action as equivalent to humanness. Curriculum standards, such as the CCSS and the Scope and Sequence for Social Studies, unequivocally represent the non-human as a resource to be cultivated and managed while pedagogically demanding a kind of representationalism bent on factual knowledge and extraction from literal text. Embodied beliefs over both the object of teaching and the subjects who teach are saturated with the sediments and residues of history, society, and culture. They forward certain concepts of self, the other, and the ways in which we engage in the world around us. Even while working with (and against) these standards, we must focus on "learning how to open the presences of otherness and how to form relationship of mutuality with others

we can never fully know” (Guenewald, 2003, p. 40). Pedagogies inspired by posthumanist and new materialist ontologies are situational encounters made up of entanglements and interweavings, conjoint actions and political ecologies, entanglements that are alive, vibrant, and powerful.

Kruse and Ellsworth (2011) present us with one example of how a new materialist representation can be textually conceived. Within the pages of *Geologic City* are images that through their simplicity carry the history of a million years into the present day infrastructures that surround us. Stop, they plea—and imagine—that as we sit in the backseat of a New York City taxi cab, swirling through the streets, dodging pedestrians and passing by high-rises and skyscrapers, we are already riding along a history of crude oil millions of years in the making. The buildings that tower above hold us in a geological time that is discontinuous and present, alive and active; there is no outside of this materialism, there are only continuous exchanges and complex flows and movements (if we can learn to pay attention.)

What is a new praxis that hedges the anthropocentrism of conventional environmentalism? Can a politics be conceived over landscapes and environments of experience that are intricately connected and bound? When entering the school, we are apt to forget that its walls are made from compressed mud and minerals, held upright by long tree trunks, cut, processed and shipped; that fibrous papers hang from their walls, colored by plant-based pigments and graphite minerals; that the woven rugs and pillows are made of cotton; and that the halved milk cartons hold fragrant soil from which the pinto bean seedlings sprout their first baby leaves. We deny the intermingling of nature in our homes, give no notice to its omnipresence and contribution, and govern ourselves through the force of binary opposition that sets humans against nature. Environmental changes, exclaims Smith (2011), can no longer be regarded as externalities of the human experience; they are inherently political in how they fold into the conjoint action that emerges into publics of distributed agency not reducible to that of humans.

New constitutions of being in the world are based on a creative reconceptualization of what is already believed about the human condition, an unsettling of old ways in order to open up a mindfulness to the already hybrid place of nature in everyday life. Just as the justice demanded to the human other, the landscape of experience is one worthy of recognition and care, not as intervention but as a provocative and productive reformulation that includes nature as not only a part of the human condition, but foundational and inseparable. The point of pedagogy in the ecological vein is not the categorical difference between human and nature, nor is it the dimensional separation of various environmental habitats such as urban, rural, or suburban, but rather the process of creating difference, the evolution of our thought on what is different and the kinds of difference that justify certain kinds of vulnerabilities. As politics is systematized and reduced to practice, it

ceases to be a condition of possibility that reveals who we are. Political actions that are predetermined most often demonstrate their purpose through thoughtless associations with ideals of societal progress. If we are interested in ethical responsiveness, by way of thinking, feeling, and acting in/as the world, then we must learn to focus attention on the capacity to act, a capacity that is inherent in all matter, and to accept such work as creative, without end, and ontologically located. We must also accept that this action is never simply human and that it is, following Connelly (2013), extremely fragile.

## CONTRIBUTORS

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## NOTES

1. Throughout this article, we use “entanglement” in the sense given by Karen Barad (2006) who notes that current physical sciences of matter—the particles that make up the “things” we encounter in the world—make it difficult to speak of things as bounded, separate entities. The word “entanglement” signals that the “human” is not actually a being existing apart from the rest of the world, it “is” the world.

2. We put “nature” in quotation marks here to signal our suspicion of this concept. Following Morton (2007), we would argue that “the very idea of ‘nature’ which so many hold dear will have to wither away in an ‘ecological’ state of human society” (p. 1).

3. This opens onto a renewed focus on play (see Massumi, 2014).

4. This rhymes with Massumi’s (2014) analysis of playing animal: “if there are universals of human existence, the childlike propensity to play animal is surely at the top of the list. There was never a child that did not become-animal in play. The project of animal politics: to make it so that the same could be said of adults” (p. 89).

5. <http://schools.nycenet.edu/offices/teachlearn/ss/SocStudScopeSeq.pdf>

6. For a comprehensive look at the network of corporate and federal agencies involved in the creation of the Common Core State Standards, see Morna McDermott’s mapping: <http://www.youtube.com/watch?v=vvUMkIro27E>

7. See Jussi Parikka’s (2015) analysis of the “deep time” of media for a more sustained account of how this might work.

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