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Entangled Gardens, Entangled Lives: Refiguring Presences Toward an Ethics of Care and Vulnerability in Preschoolers' Multispecies Encounters

Luke Muscat
St. Luke's School, New York, USA

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ABSTRACT

This praxis-oriented paper draws from a yearlong multispecies ethnography of preschoolers' encounters in an urban garden through child-led documentation. Thinking-with common worlds pedagogies, I attend to young children's everyday multispecies encounters with worms, bees, and flowers and describe their embodied, affective, and relational learning-with the more-than-human that was messy and situated. Important as we navigate the environmental destruction of the Anthropocene, I share moments of children's learnings where their developing ethics of relational care and environmental vulnerability surface as hope. Seeking to unsettle disconnected, humancentric, nature-as-resource scientific learning, I mobilized a pedagogy of refiguring more-than-human presences to center human/more-than-human entanglement, interconnectedness, and interdependency. Findings narrate learning encounters and pedagogical moves through vignettes and children's documentation of photographs, drawings, and writings.

Keywords: early childhood education, environmental education, common worlds pedagogies, decolonizing pedagogies, teacher-researcher

This article discusses preschoolers' developing ethics of relational care (Haraway, 2008; Puig de la Bellacasa, 2012) and environmental vulnerability (Hird, 2013) in their multispecies encounters through a pedagogy of refiguring more-than-human presences (Nxumalo, 2019) within the context of the Anthropocene. The Anthropocene is defined as unfixable environmental damage directly consequent to human activity, including ocean acidification, depletion of the ozone layer, global climate change, and rapid loss of biodiversity (Steffen, Crutzen, & McNeill, 2007). In responding to environmental crisis, the geological epoch of the Anthropocene has spurred drastic calls for educational research to cultivate, theorize, and deploy pedagogies to equip future generations to combat and solve colossal environmental problems (Malone et al., 2017; Sjörgen, 2020). However, responding to environmental change through human-centered approaches can reaffirm blinding human exceptionalism (Tsing, 2012) while positioning youth as child-saviors who will rescue humankind, as Taylor (2017) articulates: "grandiose geo-engineering fixes, simply rehears[ing] the same kinds of triumphalist anthropogenic interventions that disrupted the earth's system in the first place" (p. 1449). Responsivity to climate change as a means to preserving anthropocentric ways of life through human technological innovation without accounting for more-than-human experiences and interactions in environmental education pedagogies is deeply entangled with taken-for-granted early learning pedagogies imposing hierarchical humanisms of settler colonialism (Nxumalo, 2019). Such stewardship pedagogies implicitly reinforcing human mastery over the more-than-human wherein children are inheritors of more-than-humans as resources (Taylor, 2013; Tsing, 2012). Taking a common worlds approach inspired by critical early childhood multispecies and place-based educational scholarship of Taylor and Pacini-Ketchabaw (2019) and Nxumalo (2019), this paper adds to the living archive of praxis-oriented research (Lather, 1986) addressing the ethical response-ability (Haraway, 2008) of early learning to unsettle humancentric practices (Pacini-Ketchabaw,

2013; Pacini-Ketchabaw & Taylor, 2015) toward multispecies flourishing (Haraway, 2008) as co-inheritors, co-witnessers, and co-agents of the Anthropocene.

Entangled Common Worlds of the Anthropocene

From post-humanist and Indigenous perspectives that decenters humans as sole protagonists, human life is entangled with the more-than-human (Barad, 2007; Haraway, 2008; Nxumalo, 2019; Orman, 2025; Tammi et al., 2023). We ongoingly co-exist in agentic relations with worldly matter from before our first breath to long after our last; however, we humans have centered ourselves as matter that "matters" because we embrace and reinforce human/nature divisions of Enlightenment (Hohti & Tammi, 2019; Taylor, 2013). Therefore, human importance with mattering is deeply entangled and entrenched in human-centric settler colonialism discourses (Rose, 2015; Taylor, 2013) positioning more-than-humans as passive resources for human advancement (Tsing, 2012). These settler colonial discourses surface in early childhood education (Pacini-Ketchabaw & Taylor, 2015) in many ways, such as: (1) envisioning nature as someplace exotic and "out there" where "innocent" (white) children "explore" and "discover" nature's bounty (Taylor, 2013); (2) romanticizing and anthropomorphizing species that are "big" and "cute" while erasing and eradicating less idealized species that don't have faces, fur, and deemed pests (Taylor & Pacini-Ketchabaw, 2019); and (3) positioning the more-than-human as a resource for solely scientific learning disembodied from relationality, co-dependency, and ethical response-ability (Haraway, 2008). These beliefs and practices can actively uphold dominant colonial ideologies by solidifying the human/non-human divide, encouraging human exceptionalism, and perpetuating Indigenous erasure (Blaise et al., 2017; Nxumalo, 2019; Pacini-Ketchabaw, 2013).

Grappling with the dangers of anthropocentric gaze – a worldview that humans are the most important entities (Hultman & Lenz Taguchi, 2010) – in humanist stewardship pedagogies (Pacini-Ketchabaw, 2013; Taylor, 2013; 2017), common worlds pedagogies (Taylor & Pacini-Ketchabaw, 2019) identify the "ethical possibilities inherent in the messy and fraught child-animal encounters, interactions, and relations that are already taking place in local common worlds in the face of the precarious global ecological futures that we all inherit and face together" (p. 21). Borrowing from Latour (2004), the term "common worlds" recognizes the simple, yet profound, reality of how place is mutually constituted through the agentic entanglement of human and non-human communities (Taylor & Pacini-Ketchabaw, 2019). To date, common worlds pedagogies (Common Worlds Research Collective, 2020; also see www.commonworlds.net) have ushered in robust, empowering, and hopeful educational scholarship situating children and more-than-human multispecies learning-living as entangled co-witnessers and co-responders of the Anthropocene. As a pedagogical method of responding to the Anthropocene in early childhood education, common worlds pedagogies (Taylor & Pacini-Ketchabaw, 2019) seek to: (a) resituate humans within ecological systems by shifting attention toward the integral interdependency, co-habitation, and entanglement of life on earth – toward a "common good for all its constituents" (p. 1); (b) recognize the "micro-effects of these everyday child-animal encounters are part of the macro-politics of mortal ecological entanglements" (p. 5); and (c) engage in an ethics of "ongoing relational practices involving human and more-than-human actors and situated within the ordinary interactions and exchanges of everyday life." (p. 6). Common worlds pedagogies are mobilized on the micro-scale of child-animal interaction and within the mundane, seemingly banal everydayness of child-nature encounters to nurture children's ethical care and responsivity to the more-than-human toward the common good for all life on Earth (Haraway, 2008; Latour, 2004; Orman, 2025).

Central to common worlds pedagogies is ethical engagement. These ethics are expansive, situated, and attuned to "geo-historical tracings of the trajectories and convergences of animals, settlers, and indigenous people within settler-colonized lands" (Taylor & Pacini-Ketchabaw, 2019, p. 7). In cultivating a common worlds ethics, Taylor and Pacini-Ketchabaw think-with feminist science studies, more-than-human geographies, multispecies environmental humanities, Indigenous epistemologies, and post-humanist theories to channel theory into practice. Working with their expansive conceptual framing, this article attends to two notions of common worlds ethics: relational care and environmental vulnerability. Relational care (Haraway, 2008) is a situated, embodied, and affective-ethical way of interdependent relating (Puig de la Bellacasa, 2012), whereas environmental vulnerability recognizes "human and non-human asymmetrical vulnerability to an unknowable future" (Hird, 2012, p. 105).

Multispecies Bag Pedagogies and Refiguring More-Than-Human Presences

Drawing from Haraway (2024), "bag lady methods" are mobilized in common worlds pedagogies (Hohti & Tammi, 2023; Orman, 2025; Taylor & Pacini-Ketchabaw, 2019), including multispecies ethnography, geo-historical tracings of human and more-than-human convergencies within settler-colonized lands, and reconceptualizing child-animal relations through affect-attuned post-humanist, feminist, and indigenous theories. Methodologically, multispecies ethnographies "center on how a multitude of organisms' livelihoods shape and shaped by political, economic, and cultural forces" (Kirksey & Helmreich, 2010, p. 545), addressing the non-innocent ecological realities of the Anthropocene on entangled human and more-than-human life, culture, and future (Ogden et al., 2013). Analytically, multispecies ethnographies de-center human individuals as the unit of analysis by foregrounding and attending to the relational interdependencies of beings.

Within my own methodological and pedagogical teacher-researcher bag, I draw upon a collection of children's visual data, artifacts, and ethnographic classroom stories to amplify interspecies relational learning-with and children's growing affect and ethical attunements to more-than-humans on the grounds of an urban Church school garden. Seeking to expand and critically engage my own pedagogical orientations toward young children's environmental education, I trace the garden's geo-histories to both consider and trouble what colonial teachings children may inherit when human-centric ways of control over the more-than-human is normalized by garden design. It is within this scope of attending to everyday multispecies encounters that a pedagogy of refiguring presences can surface how "colonial legacies continue to have impacts on everyday life in multiple, often taken-for-granted ways in the banalities of everyday early childhood pedagogies" (Nxumalo, 2019, p. 41). As the head teacher of a preschool classroom of 4- and 5-year-olds, I attend to children's everyday multispecies encounters with worms, bees, and flowers in our urban Church school's garden common worlds by storying multispecies voices. In doing so, I unfold moments of preschoolers' developing ethics of relational care (Haraway, 2008; Puig de la Bellacasa, 2012) and environmental vulnerability (Hird, 2012) as hope for engaging in the ethical complexity of the Anthropocene.

Through vignettes and child-led documentation (Clark & Moss, 2011), I narrate children's entangled, embodied, and affective multispecies living-learning and a pedagogy of refiguring more-than-human presences (Nxumalo, 2019) to decenter children as sole protagonists in multispecies encounters. A pedagogy of refiguring more-than-human presences also worked interrupt "everyday material-discursive colonial place relations" (p. 43) inherited in our multispecies encounters with the Enlightened Church garden. By restorying "material-discursive stories of place, where both the stories and the 'storytellers' are more-than-human" (p. 43), children's ethical awareness of more-than-human entanglements surfaced in our decolonial interruptions with the garden that were not always innocent.

Garden Inheritances

It is important to consider what children might inherit in their encounters with the Church garden. The world-making of multispecies entanglements are situated within place-specificities, co-emerging as unique contact zones (Haraway, 2008) where species meet and co-author entwined futures. Although contact zones are in an ongoing state of becoming-with as they inherit and build upon place histories to give and support new life, children (and teachers) are not separate from these multispecies knots of ethical time (Rose, 2012). Therefore, to attend to children's multispecies encounters in this specific contact zone, the garden's vitality, agency, and settler-colonial history must be critically examined to situate the learning to come.

As a garden of Enlightenment, this garden is a network of landscaped pathways that cut between and divides nature from the human (Tammi et al., 2020). Publicly described as "an oasis" amidst a fast-moving city, the garden is the connective tissue between street, Church, school, and playground. Everyone must engage with the garden in their everyday comings and goings across the campus. Cement pathways trace through edged soil, mulch, woodchips, and a variety of plant life: trees, grasses, bushes, flowers. Most flowers are annuals and are planted in ceramic pots seasonally uprooted and replanted by garden staff, juxtaposing the trees and bushes that host animal life. Ecologically, it is important to note the negative impacts of planting unrooted annuals as opposed to native perennials on pollinator activity and soil health (Smitley et al., 2024). Each bend in the garden offers different places for humans to convene. For example, the intermediate spaces between street, school, and Church have several

roundabout paths shaded by large magnolia, crabapple, and holly trees and various flowering bushes and annual planters. Benches line these pathways, some with their backs to the towering Church stone walls and stained-glass windows, others facing the school's entrance and playground where children's vibrant voices echo from. Trailing behind and between the Church and school buildings, the garden's midsection is private to the school community. Small tables sit amongst trees, bushes, seasonal flowerpots, and a small amphitheater. Staff and families often have lunch at these tables, whereas students and teachers use sidewalks and the amphitheater as learning spaces. Early childhood classrooms lookout and open into this intersecting midpoint of garden pathways and are where some of the stories in this article take place. Other stories take place in the Church's small public flower garden, it's most far-reaching section. This flower garden lays amongst the wreckage of a past Church fire, where green life sprawls and blooms amongst charred brick. Inside the public garden, hedges, trellises, benches, and geometrically symmetrical paths create a feeling of tamed Earthly density, a "caged jungle" as a child described it.

Unlike urban gardens that grow vegetables or native plants to foster sustainably robust ecosystems, this garden is ornamental and aesthetic in its intention – it seeks to orient pedestrians toward beauty and calmness while pleasantly strolling from Point A to Point B. Established in the early 1820s in the image of The Enlightenment period, the garden is manicured and maintained toward symmetrical harmony, reflecting man's mastery, triumph, and control over nature (Plumwood, 2005). In its quest for beauty and order, I call into question the garden's humancentric spatial design and how fauna and flora are arranged to aesthetically enhance human movements, rather than create ecologically sustainable habitats for more-than-human residents to flourish or fostering interspecies relationships between humans and more-than-humans. When attending to place-specificities, it is important to question how settler-colonial way of being and doing is normalized through everyday acts that silence the vibrant agency of the more-than-human (Nxumalo, 2019). Kimmerer (2013) describes how Indigenous languages speak to the "grammar of animacy" of worldly matter as active, lively agencies to be listened to and embraced as elder kin. Kimmerer contrasts the grammar of animacy with how colonial languages impose categorical and hieratical thinking and doing: "The arrogance of English is that the only way to be animate, to be worthy of respect and moral concern, is to be human" (p. 59). This colonial grammar is normalized in the everyday asymmetrical relationship between human and more-than-human in the Church garden, evoking dominant child-centered pedagogies that hold a boundary between humans and non-humans. From this perspective, Tammi et al. (2018) considers how research with children can illuminate the ways "something is continually in the process of being normalized, sedimented, or 'striated' (Deleuze & Guattari, 1987) within the historical-social-cultural-material contexts of the child-animal relations" (p. 3).

Multispecies research with children must therefore attend to how relationships and habits of being are normalized geo-historically through place (Taylor & Pacini-Ketchabaw, 2019). Hence, I wonder how the garden's settler-colonial legacies are inherited by children (and adults) when they walk and encounter its pathways. Do children envision this garden space as aesthetically cultivated for their enjoyment? Like innocent explorers of the natural world typical of dominant child-centered theories (Taylor, 2013), do children view this garden as an extension of their playground, with flowers, seedlings, leaves, and branches for their easy picking? Perhaps validating these dominant narratives and images of Enlightened childhood, I have observed children trample young seedlings, rip leaves off trees, and unearth flowers only to discard these earthly bodies when something else piques their interest. I've seen children chase squirrels and gleefully squash bugs with little restraint. Most often, and perhaps the most divided from nature, humans rush through these gardens, late for class or eager to engage with peers, with little regard for the more-than-human life that co-creates this urban oasis. I, too, am guilty of running through the garden, similarly late or trying to complete several teacher tasks in my short prep period, with minute intention for acknowledging and engaging with the more-than-human. We all play a part in how place is assembled and geo-historical inheritances are invoked.

Garden Stories

Data draws from a yearlong multispecies ethnography (Kirksey & Helmreich, 2010) in my class of eighteen 4- and 5-year-olds. Located on an urban neighborhood Church school garden in the northeastern United States, children transversed garden pathways daily in their comings and goings and outdoor playtime but paid little attention to more-than-human presences until heavy autumn rainfall brought children into contact with worms. This initial,

emergent child-worm encounter sparked our multispecies ethnography until late spring, finishing with refiguring more-than-human presences in child-bee-flower encounters. Although children encountered other critters and plants in the garden throughout the year, the scope of this paper focuses on child-worm-flower-plant encounters. Using the Mosaic Approach (Clark, 2011) to amplify children's perspectives and lived experiences while mitigating teacher-student power imbalances, children documented their multispecies encounters with a GoPro camera, bringing "place, materials, and more-than-human worlds into sharp focus" (Templeton a& Vellanki, 2022, p. 230). Children's photographs and learning artifacts (drawings, writings, creations) as pedagogical documentation (Edwards et al., 2012) and narrations (Pacini-Ketchabaw et al., 2015) facilitated reflective dialogues and provoked further wonderings. Thinking- and acting-with Nxumalo's (2019) pedagogy of refiguring more-than-human presences, I worked to de-colonially interrupt place by centering multispecies relationships through restorying practices that "bring attention to both the limiting effects and ethical potentialities of everyday pedagogical encounters, particularly in relation to possibilities for new ethical accountabilities in multispecies relations… grounded in children's everyday uncertain, embodied, affective, and thoughtful responses" (p. 104). Throughout this research, my guiding questions were:

(1) How did engaging in multispecies ethnography and a pedagogy of refiguring more-than-human presences change children's relationship to the garden?
(2) How were settler-colonial discourses in early childhood garden pedagogies both interrupted and normalized in children's multispecies encounters and ethical negotiations?

To illustrate children's surfacing ethics of relational care and vulnerability in their multispecies encounters, I share a series of stories alongside children's photographs and artifacts (Figures 1 to 8 and 10 to 11). Beginning with autumn child-worms encounters and concluding with spring child-bee-flower encounters, these stories are anchored conceptually. Stories overlap temporally because children's ethical negotiations with more-than-humans and decolonial interruptions of place surfaced in multiple ways. Whereas child-worms encounters were emergent, child-bee-flower encounters grew from refiguring more-than-human presences to unsettle and decolonize a predetermined preschool bee curriculum.

Touch

"Touch, regard, looking back, becoming with – all these make us responsible in unpredictable ways for which worlds take shape." (Haraway, 2008, p. 36)

This learning starts with touch. Thinking-with Haraway (2008), touch is the affective, embodied, relational genesis that "peppers its partners with attachment sites for worldmaking" (p. 36). Through touch, children engaged in worldmaking with the more-than-human, unpredictable worlds that stirred children's ethics of relational care and vulnerability in entangled learning-living. I narrate how touch surfaced ethics of relational care and vulnerability across two vignettes:

"They touch; therefore, they are"

> *Preschoolers' earliest moments of ethical care and vulnerability emerged on the watery, muddy grounds of the urban Church school garden, where children noticed worm movements amidst squelching dirt and dark puddles (Figure 1). Captivated and excited by worm movements, children gathered around to get a closer look – "It's dancing!" cheers a child. Giddy laughter and shrieks are cut short – "they're drowning!" shouts another child. Children hesitate, pondering the information. Was the worm dancing or suffering? The child's message was heard, and children begin scooping up worms from puddles. Although at first hesitant to touch worms, preferring to use a plastic spoons or containers (Figure 2), children begin gingerly pinching their fingers to pick-up worms. Child skin meets worm skin, giggles erupt, a relation is formed, a world emerges: "they touch; therefore, they are" (Haraway, 2008, p. 263). Cradling worms (Figure 3), children slow their bodies and bring their faces closer, as if bringing nose to "nose." Greetings ensue and children gently place worms in their recycled yogurt containers, determined to save as many as they can. Splashing along, children call out "worm alert!" to each other, signaling a worm has been found and for everyone to come (Figure 4).*

Children gather and rescue worms until their outside time has ended. Someday later, children quickly move amongst the garden, "worm alert!" fills the air, and begin "rescuing" worms. This time, children take time to prepare for their encounters. Some children use leaves to hold worms (Figure 5), others construct worm "homes" in their containers. Filled with wet soil, fallen leaves, and dried berries, children fashion beds for rescued worms (Figure 6). Many children adopt higher pitched, sing-song voices when greeting worms, some give names, "Hi, Wormy," and offer farewells when playtime ends. Over time, children contemplated where to put worms after housing them in their containers. Whereas some transferred their premade homes back to the Earth, other children placed worms on drier ground, under bushes, or in planting pots.

Figure 1: Noticing worms

Figure 2: Using plastic spoons to rescue worms from puddles

Figure 3: Touching worms

Figure 4: *"Worm Alert!"*

Figure 5: Holding worms on leaves

Figure 6: Worm beds and homes

Touch was an affective and embodied opening for child-worm attachment, worldmaking, and becoming-with. Through touch, children opened themselves to caring and being affected that became accountability and response-ability. Haraway (2008) believes "touch ramifies and shapes accountability. Accountability, caring for, being affected, and entering into responsibility are not ethical abstraction" (p. 36). Over time, children's ethics of relational care and vulnerability materialized as embodied more-than-human caring practices, "where caring involves affecting and becoming affective" (Nxumalo, 2019, p. 112). From gingerly handling worms, slowing down their movements, and adopting nurturing voices to purposefully building beds, homes, and locating safe places for worms to reside, children negotiated relational care and worms' uneven vulnerabilities to intense rain and pooling water. Rose (2015) reminds us that the act of responding requires us to be open, to listen with attentiveness, and be called into connection. Touching worms elicited response-ability, affective-understanding, theory building, and meaning-making, a thinking through the skin that "reflects, not on the body as the lost object of thought, but on inter-embodiment, on the mode of being-with and being-for, where one touches and is touched by others" (Ahmed & Stacey, 2001, p. 1). Learning was ethically entangled with life, situated and relational, following Taylor and Pacini-Ketchabaw's (2019) observation that "those who carefully seek intimacy with [more-than-humans] might learn about the precarity of life through (literally) holding the responsibility another life" (p. 59). Learning-with worms, children mobilized embodied-knowledges and affective-attunements, negotiating ethical care and vulnerability to

respond to their common worlds. However, touch can be non-innocent, and critically attending to multispecies encounters requires troubling human-centric tendencies for care as human-imposed. When our time outside ended, children abruptly and one-sidedly ended their interactions with worms. Returning inside, where there was no soil, worms, leaves, or mud, children's intentions switched to the next part of their school day. I wonder what possibilities could have unfolded if children weren't governed by institutional clocks (Clark, 2020), where their multispecies interactions didn't exist solely on human timetables. What would children experience if worms were the ones who decided to end an interaction?

"Touch and regard have consequences"

> *Mid-spring blooms and preschoolers pool their prior bee knowledge to answer my question: "How do you know it's a bee?" This question was intentional to refiguring bees as solely a site for scientific investigation (Nxumalo, 2019). Rather than asking children* what *they know about bees, soliciting factual knowledge, asking* how *children know it's a bee elicits more personal, affective knowledge grounded in embodied real-life experiences. Here my intention was for scientific information, like bee color, shape, size, features, and behaviors, to be mobilized as relational knowledge to better get to "know" bees and living-with bees in our common world. The topic becomes pollination and children discuss bees, flowers, pollen, and honey. Working toward unsettling human control over more-than-human (Tsing, 2012) and restorying bee-human-plant relations as commodified pollination networks, children were reminded of the crabapple tree's entangled interdependencies (see Figure 9 and following section for more details). Specific wonderings about pollen led children to flowers. Robust in the urban garden, children pretend to be bees and "fly" around looking pollen and nectar (Figure 7). Lightly bringing their noses into flowers, like a proboscis, children inhale deeply, smelling sweet aromas and releasing blissful sighs "ahhhh, sweet nectar!" Getting closer to flowers, touching flowers, children encounter unexpected flower agencies – "touch and regard have consequences" (Haraway, 2008, p. 36). Transferring golden yellow pollen from stamen to stigma (Figure 8), children apply too much pressure and the stamin or stigma breaks. Children gasp and freeze, noticing and feeling their touch's consequences. Instead, children try to move fast and pollen flies into the air, scattering in their faces causing itchy eyes, sneezing, and coughing, particularly for those with allergies. Responding to flower agencies, children slow their movements and proceed thoughtfully to transfer pollen, adjusting their movements to neither hurt the flower nor themselves.*

Figure 7: Looking at and smelling flowers from bee perspectives

Figure 8: "Touching" pollen (*picture taken by teacher)

Grappling with their preconceived notions of human mastery over the "passive" more-than-human, children negotiated ethical care and vulnerability in their embodied, affective, relational meaning-making encounters with bees and flowers. To learn-with bees, children and teachers consulted science as an advisor for getting closer to bees and understanding the interconnection of bee lifeworlds (Nxumalo, 2019), particularly bee-flower entanglements. Pretending to be bees, children metamorphosized, "a visible infolding that melts the boundaries that have been constructed between human and animal ... a moment of intersubjectivity to be celebrated" (Bone, 2010, p. 411). Becoming bees, children attuned relationally and affectively to flowers in "the dance of world-making encounters" (Haraway, 2009, p. 249) where both human and more-than-human agencies entangle (Taylor & Pacini-Ketchabaw, 2019). Touching and encountering flower agencies, children's embodied sensemaking of pollination was intertwined with flower bodies and learning-with flowers.

Touch, however, has consequences and unexpected ethics of vulnerability emerged in these co-created encounters, in which children were surprised by flower-pollen agencies. An ethics of vulnerability draws "attention to the extended others – human and non-human – affected by our actions" (Hird, 2012, p. 115). Perhaps, in their touch, children encountered the environmental vulnerability entangled with the physiological impacts of urban living and pollen activity and sensitivity. Urban inhabitants are 20% more likely to suffer from airborne pollen allergies than rural inhabitants (Carinanos & Casares-Porcel, 2011). Some contributing factors include lack of access to green spaces, uniformity amongst green spaces, pollen allergens interacting with air pollutants, and earlier intense pollen activity due to longer pollen seasons as a result of climate change (D'amoto et al., 2016; D'amato, 2000). Furthermore, pollen's vertical distribution is unequal. Pollen abundance increases at higher levels, disproportionately effecting the pollen sensitives of urban dwellers' who live in multistory apartment buildings (Armentia et al., 2004). When pollen counts are high, parents and teachers may restrict children's time outside to avoid allergic reaction. Encouraging children to remain indoors because of pollen imposes on children's thinking of pollen as a nuisance, rather than a life-giving ecological process, while simultaneously preserving pollen sensitivities. These physiological experiences are reciprocally consequential to Enlightened urban design that separates human from nature and produces pollution from human overconsumption of nature (Tsing, 2005). In this vignette, children touch flowers and engage with pollen despite their environmental vulnerability. Children slowed down and made precise movements to mitigate both hurting the flower and themselves as affective, embodied responses to mutual vulnerabilities. Becoming bees, touching flowers, and encountering pollen refigured more-than-human presences, transforming humancentric learning about bees and flowers as scientific subjects toward situated, messy, and relational interspecies learning-with.

Refiguring More-Than-Human Presences

"*Storytelling is an act of witness – of paying attention, and the recounting, of bearing witness – to lives and deaths in a way that grapples with what they mean and why they matter."* (Rose, 2016, n.p.)

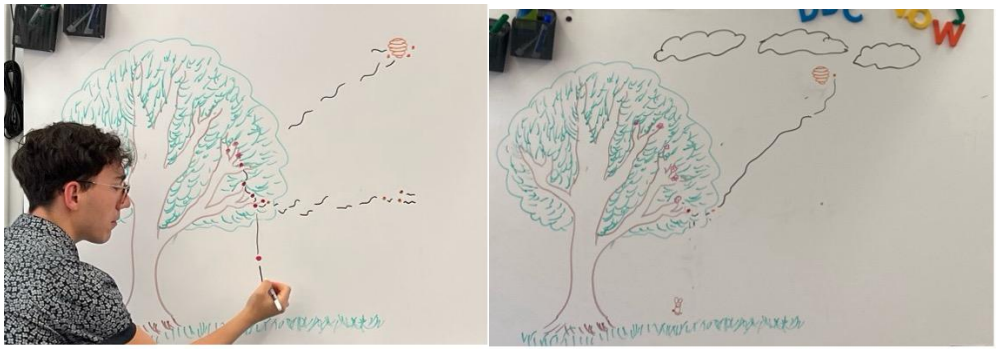
Refiguring presences was "a form of decolonial interruption," (Nxumalo, 2019, p. 42) engaged through restorying bee-garden-child relations to bring "attention to both the limiting effects and ethical potentialities of everyday

pedagogical encounters, particularly in relation to possibilities for new ethical accountabilities in multispecies relations… grounded in children's everyday uncertain, embodied, affective, and thoughtful responses" (p. 104). This refiguring began in the transition from winter to spring, when snow melts, ice thaws, and green shoots crack through hard soil. Earth Day neared and topics of environmental conversations about recycling, global warming, clean energy, and air pollution were afoot and children had a special ear for *The Lorax* by Dr. Seuss's (Geisel, 1971). Unlike most children's stories that fantasize and romanticize child-nature relations as mutually harmonious and innocent (Moxnes & Aslanian, 2024; Taylor & Pacini-Ketchabaw, 2019), *The Lorax* differs somewhat because it attunes to more-than-human agencies by voicing matters of entanglement in ecological systems (Barad, 2007; Haraway, 2008). *"I speak for the trees!"* warns the Lorax to the Onceler, whose capitalist and extractive greed causes environmental destruction, resembling a dystopian Anthropocene (Metinoğlu, 2020). *"Whack!"* – the final Truffula tree is cut down, children gawk, concerned brows furrow at the environmental destruction and suffering of all constituents. The final page, however, offers hope. The Onceler gives the child the last Truffula tree seed, and the last page is blank. This blankness stares back at young faces, a suggestion, a storied call to environmental action, as if asking: "How does this touch make us more worldly, in alliance with all the beings who work and play for an alter-globalization that can endure more than one season?" (Haraway, 2008, p. 5). Children mull over the story, enact it in their play, and ask to hear it again and again. Although *The Lorax*'s warning speaks to a human-centered, morality-based sense of care (Hird, 2012), it pulled at the children and nudged their attention toward relationality and interdependency. Their response encouraged me to try restorying our entangled garden's place story (Nxumalo, 2019)

Storying Entangled Gardens

> *Contemplating how to restory the garden, I was sitting in the public section of the garden and encountered a local tour guide. In conversation, they identified a crabapple tree and explained that the tree was baring less fruit than past years because an absence of pollinators. I decided to center this crabapple tree and its interrelations to restory the garden as an entangled place of co-habitation, creating "an opening for grappling with the ethical potentialities of plural more-than-human worldings where both the human and more-than-human 'shape and are shaped by political, economic, and cultural forces'" (Kirksey & Helmreich, 2010, p. 545, cited in Nxumalo, 2019, p. 43). While orally storytelling the crabapple-pollinator-garden, I illustrated interconnections of trees, bees, apple blossoms, more-than-humans, and humans on the whiteboard (Figure 9), emphasizing interdependency between pollinator activity, apples, and others, while leaving space for children's theory making about the crabapple tree*.

Figure 9: Teacher restorying crabapple-tree-bee-garden worlds (*picture taken by teacher)



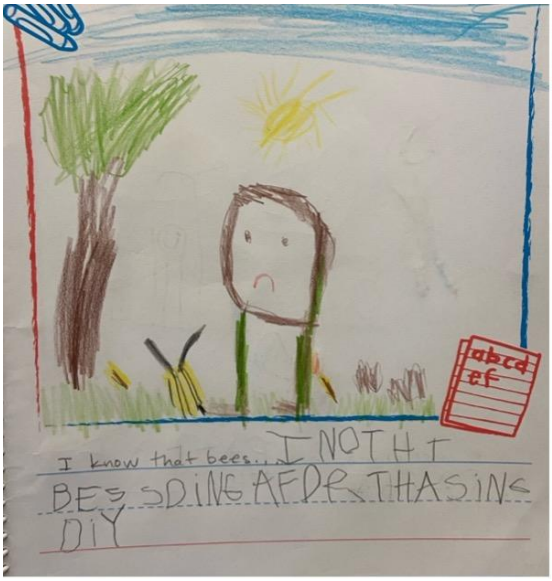
Drawing from *The Lorax* and our investigations into environmental conservation, children's theories spoke to human/more-than-human entanglements, wherein human pollution hurt and killed bees, therefore impacting the crabapple tree and animals/humans that depend on its fruit for sustenance. During my storytelling, a child exclaimed: "animals will be hungry and die!" Their situated and relational knowledge of ecological interdependencies resurfaced again in their drawings and writings (Figure 10) of the entangled garden, showing bee pollination of the crabapple tree and flowers, with some bees dawning smiling faces. This attention to interconnectedness matters within "the context of extinctions, this attentiveness to the relationality and interdependence of lies is particularly important because the death, and subsequent absence of a whole species,

unmakes these relationships on which life depends, often applying suffering and death for a whole host of others" (van Dooren, 2010, p. 273).

Figure 10: Children's entangled garden drawings/writings

Children visited the public garden in small groups, excited to meet the crabapple tree. Over time, children grew aware of the lack of bees. Fleeting bee comings-and-goings were quick. Pausing near flowers, children listened to locate bees, get closer, and observe bee movements between and amongst blossoms. Being proximal to bees, children voiced their knowledge of bee stings, primarily its pain but also how bees die after stinging others (Figure 11). Despite their bee sting worries, children continued to seek closeness to bees. Whereas before children would yell, swat their hands, or shrink away when bees darted about, children began practicing slowing and stilling in bee presences. Noticing these movements, I voiced my observation of child's movements: "I noticed you froze your body when the bee was near" to which the child replied, "because I am wise."

Figure 11: Uneven bee-child vulnerabilities



In restorying the garden's entanglement, I wondered how children's thinking- and learning-with bees-flowers-trees surfaced an ethics of asymmetrical, uneven vulnerabilities. Salient occurrences were in children's embodied attunements – listening for, slowing down, and stilling their bodies in the presence of bees, recognizing that a bee sting was more costly to bees than to humans. However, children's vocalizations and drawings of garden interdependency (Figures 10 and 11), where both humans and more-than-humans were impacted a by bee death, pointed toward a deeper ethical negotiation of environmental vulnerability in which "humans are vulnerable to living and nonliving earth processes" (Hird, 2012, p. 107). No doubt these wonderings of human vulnerability were ushered and introduced in their reading of *The Lorax*, but perhaps it was the situated, messy, and relational experiences of child-bee-flower-tree encounters as decolonial interruptions to an ecologically damaged place that brought awareness to their understanding of human and more-than-human precarity and interconnectedness.

Decolonial Interruptions and Resonances in the Garden

In the time of the Anthropocene, Haraway (2008) calls for action toward multispecies flourishing, requiring "a robust nonanthropomorphic sensibility that is accountable to irreducible differences" (p. 90). Following and amplifying the prolific scholarship of Taylor and Pacini-Ketchabaw (2019) and Nxumalo (2019), these garden stories illustrate children's ongoing ethical negotiations of relational care and environmental vulnerability in their multispecies encounters and my pedagogical moves toward refiguring more-than-human presences. Through touch, affect, embodiment, response-ability, metamorphizing, and restorying entangled child-garden interconnectedness, children's ethics of relational care and vulnerability emerged in their everyday multispecies encounters, photographs, drawings, and writings (Figures 1 to 8 and 10 to 11). These stories illuminate how seemingly mundane, banal, and unimportant child-more-than-human interactions can be sites for ethical relations and unsettling the

colonial legacies of erasures in early childhood pedagogies (Nxumalo, 2019). However, it is also important to critically examine and trouble the ways these garden stories also normalized settler colonial ideas in early learning.

Caring and Non-innocent Touch

Touch surfaced in children's multispecies encounters. With worms, their hands engaged in the "dance of world-making encounters" (Haraway, 2008, p. 249). While care emerges in relation, its obligations also create new and surprising relations (Puig de la Bellacasa, 2017). Like Nxumalo (2019) shares, in restorying garden relations,"even the playfulness of children's encounters with gardens and garden worms is a site from which to consider how touching worms holds consequential possibilities for children to learn how to get along with and care for more-than-human others in these messy inherited histories" (p. 85-86). This was illustrated in the ways that children's touch led to caring for worms during heavy rainfall, such as the emergence of *"Worm Alert!"* and the constructing of worm beds and homes. Their touch opened unexpected affective relations, embodied thinking-with, and responsibilities. Albeit not considering future worm lives past their outdoor adventures, children's caring processes reflected Puig de la Bellacasa's (2012) three dimensions of relational care: embodied-material labor, affective relations, and ethical political contextuality. As showcased in Tammi et al.'s (2020), multispecies ethnography of Finnish greenhouse school, caring touch became worlding as the inter-species dance of encounters emerged in children's caring hands, the mutual positive affect of stroking, and navigating precarious touch. Similarly, Taylor and Pacini-Ketchabaw (2015) found that relational care (Puig de la Bellacasa, 2012) surfaced in child-worm encounters, in the forms of tickling touch, caretaking, and mourning earthworm deaths. Taking-seriously children's interspecies relating with earthworms, the authors asked, what happens when children learn "to take these sophisticated animals seriously? What possibilities reside in different forms of relating and intersection with earthworms?" (p. 517). In this article, touching worms was indeed a dance of encounters: worm-child intertwined futures co-creating movements storie together, a thinking-with for both child and worm.

Taylor and Pacini-Ketchabaw (2015) also ask, "How might these sticky beings, who are indispensable in our world, also become indispensable in our pedagogies?" (p. 517). Touch, however well-intended, can also be non-innocent. The children and I did not consider the worms beyond our caretaking and migrating of them in the garden; we did not consider the worms' lives outside of our garden encounters and human-centered gaze. In a study of kindergarteners relations to their school's composting yard, Tammi et al. (2018) theoretical concept of withlings (human and non-human becoming-with as an ongoing assemblage of relational doings) illuminated the non-innocent emergence of joy in the suffering of earthworms in the normalization of humancentric nature-as-subject scientific learning. This was, perhaps not-so-coincidentally, described in kindergarteners use of the phrase "worm alert, worm alert!" (p. 5.) to initiate a "worm rally," in which children playfully gathered earthworms from a compost bin, transported them to a table for study, and then left them in plastic containers for subsequent weeks, eventually drying out and dying. In this study, our engagement with worms was ended by the transitional school bell of changing periods, the institutional realities of hurried children (Clark, 2020). If children's encounters with worms were not abruptly stopped, what possibilities for relational care may have unfolded? Would children have thought of worms beyond the signal of well-rehearsed halting of learning activity? These questions illuminate the frictions of human and more-than-human encounters (Pacini-Ketchabaw, 2013). Friction "reminds us that heterogeneous and unequal encounters can lead to new arrangements of culture and power" (Tsing, 2005, p. 5). The institutionalized organization of neoliberal agendas focuses on measuring the performativity of child outcomes as an investment for future capital (Clark, 2020). For Tammi et al. (2018), the human/nature divide was reinforced in the scientific subjectification of earthworms as composting resources, who were left to dry-out and die after children's observations. My study also reinforced this discarding of more-than-human life as resources in the non-innocent ways children displaced worms at their teacher's transitional signal.

These non-innocent touch relations also emerged in children's developing ethics of vulnerability with flowers and bees. Their touching of plants was asymmetrical – displacing flowers and their pollen, interrupting pollen circulation in a garden of overwhelmed with annuals rather than native perennials during a global declining pollinator activity (Smitley et al., 2024). Children's encounters with flowers were also embodied investigation and humancentric intention to see a whole being as collection and naming of functional parts (Kimmerer, 2013). Hence, friction emerged in children's non-innocent encounters and mutual environmental vulnerabilities, where both humans and

non-humans were vulnerable to each other's agencies. Some species, like the few bees sighted, were beyond children's physical touch. Children touched bees with fingeryeyes (Hayward, 2010), "making a new preposition of observation: seeing with tact; touching by eye; feeling from vision" (p. 582). Children's haptic touch grew into an embodied sensemaking, in which their bodily movements slowed, stilled, and augmented to the flight patterns and agencies of bees, in turn responding to the asymmetrical vulnerability of bees and humans as well showcasing children's awareness of the precarity of physically touching bees. Hayward (2010) describes the haptic-touch of fingeryeyes occurring through an apparatus, such as a microscope. I wonder how the GoPro camera acted as an amplifying apparatus of children's fingeryeyes, enabling haptic-touch with beings out of reach, like elevated flowers and bees, or when a child's own sensitive touch was too much for direct contact. Children's encounters further troubled touch that cannot be seen nor felt through hands. The microbial level of touch (Hayward, 2010; Ogden et al., 2013; Yong, 2016) is also entangled in multispecies encounters, like pollen particles connecting with eyes, nose, and mouth or the microbial connection between hand and worm. I likewise wonder about the dimensions of sonic-touch, the movement of hair cells in children's cochlea that sensed and heard the buzzing vibration of bee wings. As Haraway (2008) describes it, "caring means becoming subject to the unsettling obligation of curiosity, which requires knowing more at the end of the day than at the beginnings" (p. 38). Despite pollen allergies and fears of bee stings, children's drawings of bee-flower-tree life illustrated their affective attunement to the precarity of bee deaths. In refiguring more-than-human presences through storytelling, children's drawings expressed their sadness about bee death whereas our discussions of *The Lorax* placed children within the interconnected web of relations that reflect human vulnerability to bee extinction.

(Re)storying Garden Inheritances

The garden anchored these stories. Nxumalo (2019) asks, "How might critical attunements to place become central to early childhood [garden] pedagogies?" As a place, the garden is a "gathering of things, human and nonhuman bodies, and stories that require attention beyond the individual child's experiences… and is also enacted through colonial and neocolonial assemblages" (p. 43). In my research questions, I wondered how engaging in a multispecies ethnography and pedagogy of refiguring more-than-human presences would influence children's relationship to the garden. To refigure more-than-human presences in this garden and actively work toward resisting and disrupting its settler colonial inheritances, we restoryed the garden as entangled, interconnected, and situated. Bringing to life place stories of plants and animals, both human and nonhuman, that co-produce the garden against settler colonial histories and inheritances spurred children's ongoing ethical negotiations of relational care and environmental vulnerability. Through touch and fingeryeyes, responding with care, and experiencing the mutual vulnerability to worms, flowers, and bees, children (and myself) reoriented our relationship to the garden as a lively place.

Taking serious Tsing's (2012) notion that "human nature is in interspecies relations" (p. 144), Kirksey and Helmreich (2010) review of multispecies ethnography affirms that "plants must be key players, too" (p. 533). Their call encouraged multispecies ethnographers not to solely focus on human's interspecies relations with animal, but also with flora and fauna. Similar to the frictions in forest pedagogies between children and non-native blackberry bushes, whose delicious barriers required the pricking pain of thorns, that Pacini-Ketchabaw (2013) noted, children in this study experienced the dually sweet aroma of flowers and the itchy, sneezy irritation of their pollen. Pacini-Ketchabaw (2013) articulates how we not only shape forests, but forests shape us as "assemblages of human and more-than-human entangled in multiple relations, co-shaping each other" (p. 361). The children in this study have likely been shaped by their sensitives to pollen as urban dwellers (Carinanos & Casares-Porcel, 2011; D'amoto et al., 2016; D'amato, 2000) and numbness to more-than-human presences amongst rushed city living, pausing with little regard for more-than-human co-inhabitants. This garden, on the Indigenous lands of the Lenape people, was colonized in the image of Enlightenment, where human mastery over the more-than-human is evident in its symmetrical design and maintenance for human enjoyment. Some of the ways children's relationships changed to the garden were in their playful metamorphosizing (Bone, 2010) into bees; to "be a bee." Perhaps children's embodied taking-on of bee perspectives led to newfound relationality to flowers and plants, a step closer to reclaiming Kimmerer's (2013) grammar of animacy – a beyond-human way of listening and speaking "that lets us speak of what wells up all around us" (p. 55) and "remembering our kinship with all of the animate world" (p. 56).

Children's changed relationship with the garden was also seen in their regard for the consequences of touch (Haraway, 2008). Touch attuned children to other beings that co-create the garden-school-Church assemblage, opening possibilities for decolonial interruptions of place. In this shared garden, children attended to more-than-human lives of worms, bees, and flowers; attuned to more-than-human agencies of wiggling worms, fragile yet powerful flowers, and the fleeting energies of buzzing bees; and listened with a grammar of animacy by becoming bees. Whereas before the garden was an extension of their playground and a highway for human traffic in getting from Point A to Point B, these young children grew to engage with the garden as a lively being full of entanglement. However, I am unable to speak about the longevity of children's more-than-human encounters in our shared garden home. Each year children move up consecutive grades, from preschool and beyond, where normative humancentric learning can be implicitly taught through child-centered pedagogies positioning humans above nature. This unlearning of settler colonial teachings is an ongoing decolonial practice. While I cannot say that I know what future views and relationships these children will have with the more-than-human, I hope that this multispecies ethnography and pedagogy of refiguring more-than-human presences initiated "important cracks in the increasingly normalized techniques of framing early childhood education as a preparatory site for already pre-determined desired subjects of neoliberal economies" (Nxumalo et al., 2018, p. 434). I hope these cracks encourage children's ethical relations with more-than-humans as our planet continues to urbanize and change in the time of the Anthropocene.

Concluding Thoughts

My research-practice mobilized common worlds concepts through a pedagogy of refiguring more-than-human presences to decenter children as sole-protagonists in multispecies encounters in an urban Church school garden by centering entangled, agentic living-learning of children, worms, bees, and flowers. Through this experience, I have come to better understand and experience Nxumalo's (2019) pedagogical call: "these modes of caring are the kinds of attunements needed in the current time of the Anthropocene, grounded as they are in responding to the situated real-life messiness and uneven inheritances of the places children co-inhabit… rather than in universalized or precalculated understandings of what counts as care or of who or what is deserving of care" (p. 112). To reconfigure the natures of early childhood (Taylor, 2013), this work was made possible because my community embraced critical and complex thinking, opening themselves to other ways of knowing, learning, and being beyond dominant discourses of Euro-Western, developmentally based notions of "quality" (Dahlberg et al., 2012) in early childhood education (Pacini-Ketchabaw et al, 2015) and toward a collective orientation of unsettling "innocent child-in-nature discourses and trouble[ing] human/nonhuman, meaning/matter, and nature/culture divisions" (Nxumalo, 2019, p. 109). As I continue in this journey alongside children, families, teachers, administrators, and researchers, my concluding thoughts on these garden stories lie with Deborah Bird Rose (2011), who offers a profound potentiality: "Perhaps the most that can be said is that we encounter a wild and crazy ethic: we respond because we are here, because this opening occurred in our presence, because the zone [of death] is so thin, the lives so precious" (p. 145).

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Luke Muscat, EdD, is a head pre-kindergarten teacher at St. Luke's School in New York, New York, USA. He can be contacted at lmuscat@stlukeschool.org.