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Wit(h)nessing Blasted Landscapes: Waste Pedagogies in Early Childhood Education

Cory A. Jobb, *Western University*

Supervisor: Pacini-Ketchabaw, Veronica, *The University of Western Ontario*
Co-Supervisor: Nxumalo, Fikile, *Ontario Institute for Studies in Education, University of Toronto*
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Abstract

The effects of the global waste crisis are actively reshaping the common worlds of early childhood, resulting in ecological inheritances of what Anna Lowenhaupt Tsing has named blasted landscapes. While blastedness has many shapes, childhood and waste intersect via one notable form, where post-closure and decommissioned landfills are increasingly converted into public recreation sites. Waste and discard studies scholars have drawn attention to the scalar discrepancies between industrial and post-consumer waste, yet environmental education frequently reinforces separation from and individual responsibility for waste, eliding the multi-scalar incongruence between the origins and the scope of the crisis. This dissertation traces a four-month inquiry with early childhood educators and children to generate conceptual and pedagogical orientations for reimagining child-waste relations at the Glenridge Quarry Naturalization Site, a former landfill, now recreation site in southern Ontario. Drawing on Louise Boscacci's word-concept *wit(h)nessing* and inviting interdisciplinary perspectives to help frame the *encounter-exchange* it makes visible, this walking-based post-qualitative inquiry insists on proximity and takes waste as a collective co-constitutive presence for human and more-than-human common worlding. Across four articles, this dissertation introduces wit(h)ness marks as a conceptual and pedagogical orientation, traces children's multispecies encounters with life and death in waste landscapes, offers propositions for walking-wit(h)nessing, and lastly, activates seed-bombing in waste landscapes as recuperative pedagogies for early childhood education. The inquiry offers important contributions for taking up waste relations as a pedagogical concern for early childhood education, where educators and children must be prepared to meet the world as it is, while working pedagogically toward more just shared waste futures.

Keywords: Early childhood education; Walking; Waste pedagogies; Wit(h)nessing; Pedagogical inquiry

Summary for Lay Audience

The effects of the global waste crisis are actively reshaping the common worlds of early childhood, resulting in ecological inheritances of what Anna Lowenhaupt Tsing has named blasted landscapes. While blastedness has many shapes, childhood and waste intersect via one notable form, where post-closure and decommissioned landfills are increasingly converted into public recreation sites. Waste and discard studies scholars have drawn attention to the scalar discrepancies between industrial and post-consumer waste, yet environmental education frequently reinforces separation from and individual responsibility for waste, eliding the multi-scalar incongruence between the origins and the scope of the crisis. This dissertation traces a four-month inquiry with early childhood educators and children to generate conceptual and pedagogical orientations for reimagining child-waste relations at the Glenridge Quarry Naturalization Site, a former landfill, now recreation site in southern Ontario. Drawing on Louise Boscacci's word-concept *wit(h)nessing* and inviting interdisciplinary perspectives to help frame the *encounter-exchange* it makes visible, this walking-based post-qualitative inquiry insists on proximity and takes waste as a collective co-constitutive presence for human and more-than-human common worlding. Across four articles, this dissertation introduces wit(h)ness marks as a conceptual and pedagogical orientation, traces children's multispecies encounters with life and death in waste landscapes, offers propositions for walking-wit(h)nessing, and lastly, activates seed-bombing in waste landscapes as recuperative pedagogies for early childhood education. The inquiry offers important contributions for taking up waste relations as a pedagogical concern for early childhood education, where educators and children must be prepared to meet the world as it is, while working pedagogically toward more just shared waste futures.

Keywords: Early childhood education; Walking; Waste pedagogies; Wit(h)nessing; Pedagogical inquiry

Epigraph

It may be said that we who are here are in the position of having to imagine how we will answer those who are not here, but who nevertheless already exist. What will we say to the children born in this century when they ask: 'You knew all you had to know; what did you do?' (Stengers, 2018, p. 106)

Dedication

For Helen, who would be proud.

Acknowledgments

There is plenty out there worth doing alone, but for everything else, there is a need for your people. It would behoove you to have a crew.

-Hanif Abdurraqib, *Go Ahead in the Rain: Notes to a Tribe Called Quest*

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Table of Contents

List of Figures

List of Appendices

Preface

A 306-word lament on a doll's head where in a conservative estimate each word is a stand-in for a year beyond my life that plastic will remain but maybe even then some

We build parks and shopping malls on top of decommissioned landfills now and I am standing at the foot of a hill under which a quarter-century of waste is buried beneath layers of soil and new plant life and a series of decisions that hide the problem we know but do not yet have the means to resolve and so burial is the best worst option but perhaps in a time where ideas seem endless where there is rarely a shortage of ideas the best worst option could be thought through a little longer and I do not know the colour of the hair that once threaded through the pinprick holes on the scalp of the partially-buried doll head that pokes up through the soil because the hair is lost to the elements and moss now grows through and I am thinking about how if you stand at the edge of a body of water where the tide rolls in and retracts and rolls in and retracts again and place a stone at your feet and wait for the energy to take over it will take just a moment or two to disappear even though it may feel as though the anticipation will last forever but unless it rains there is no water here and no sense of anticipation because the disappearing was swift even if it is a disappearing in name only and maybe if a trail winds around it can become just another place to walk and nowhere is just another place to walk and if you make a cemetery beautiful enough it makes forgetting possible and maybe even desirable and I do not know if the doll the head came from was meant to be trashed or maybe it was loved and the difference between the two is only a difference in attention.[1]

[1]This text was a contribution to a community art project co-facilitated by Thompson-Nicola Regional Library writer-in-residence Jennifer Chrumka and Kamloops Art Gallery education and public programs director Emily Hope. The exhibition, entitled Resonant Objects, ran from December 6, 2023-January 13, 2024.

Figure 1 Doll Head with Moss

Notes on Interludes: On Soundtracking Writing-Thinking-Walking-With Waste Landscapes

From January 29-February 2, 2020, many of the scholars, educators, activists, and artists who collaborated on the Transforming Waste Practices and Climate Action Childhood Network projects gathered in London, Ontario for *Responding to Ecological Challenges with/in Contemporary Childhoods: An Interdisciplinary Colloquium on Climate Pedagogies.* I took part in the colloquium as a graduate research assistant, contributing a short artistic piece, an intentionally jarring soundscape I titled *Quarry Sounds* composed from field recordings during my work on the Transforming Waste Practices project. Stephanie Springgay and Sarah E. Truman[2] draw on what Michael Gallagher[3] (2015) calls 'audio geography' to describe the intersections between sound, movement, and environments as an "emplaced, haptic, and affective understanding of body-place" (2017, p. 37). In the piece, I spliced together children's voices with sounds of construction, road noise, and the ambient sounds of the Glenridge Quarry Naturalization site. The soundscape I produced was not intended to represent a linear walk at the Quarry, but instead to mimic the overwhelm one might experience when grappling with the history of waste at this particular place.

As much as I enjoyed composing *Quarry Sounds*, it became evident as I began to write about the pedagogical inquiry that the soundscape was out of place in the dissertation. I began instead to pay attention to how music was living in the world outside of, but alongside my writing, how what was unfolding was a soundtrack I was inadvertently curating for my thinking about the inquiry. I gravitated toward particular songs not necessarily to help see through a research problem, but instead as a thematic companion to daily writing. To that end, in the spirit of making different kinds of writing practices visible, and to thematically transition you, the reader, from chapter to chapter, I have placed lyrical interludes from six songs through the text, and I also share them in a public playlist here, should that interest you. Through the poetics of these songs, I trace an emergent witnessing, an acceptance, a reciprocity, and an ethical commitment to being of and with the world.

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[2]Springgay, S., & Truman, S. E. (2017). A transmaterial approach to walking methodologies: Embodiment, affect, and a sonic art performance. *Body & Society, 23*(4), 27-58.

[3]Gallagher, M. (2015). Sounding ruins: reflections on the production of an 'audio drift'. *cultural geographies, 22*(3), 467-485.

Interlude

Starhawk in a street ritual pleas from Herald Square to the heavens, Earth and seas
Let the land move its people
And draw us lines from our fiery designs
Unknown unknowns
Let all our gardens grow
And overtake our history
Seeking strength in mystery
Let us feel the air inside the clothes that we wear
Try to find ghosts behind the buildings in our lives
Draw us lines
Bad weather
Anxiety and fear
Don't give in
Call on her
And live in fascination... Fascination forever

-Constantines, *Draw Us Lines*

Chapter 1

1 Introduction

Prologue: On Walking with Expansive Waste Worlds

I want to describe for you what it is like to walk the Glenridge Quarry Naturalization Site, a place that, in all likelihood, you will never visit, though it is possible, and if you ever find yourself in St. Catharines, Ontario with time for a walk I would encourage you to do so. A more likely possibility is that you will walk a place with a similar history, though their present forms may differ. Not all decommissioned landfills become parks. Some become shopping malls, or farmland, and even entire neighbourhoods have been constructed atop places which "[depend] upon a kind of forgetting" (Hird, 2017, p. 196). The proliferation of places like the Quarry are at once a testament to the limitations of memory, and our uncertain relationships with the things we try to forget, and in that I invite you to pay attention to what becomes of decommissioned landfills in the places you live and walk. I invite you to ask yourself, and pay attention to, as poet Adam Dickinson writes, "*what parts of me will become forcibly adjacent?*" (Dickinson & Bourgeois, 2019, p. 18).

As you enter the Quarry by foot one of the first things you will encounter is a sense of expanse—one that I will describe in two particular forms. The first form of expanse is an immediate kind, where, following any one of the possible pathways from the parking lot, you will be met by the openness of this landscape. The scope of this place—wide before you, though not limitless—is revealed in gravel trails which stretch out before you in heights and dips that rise and bend out of sight behind the tall grass and reappear again to snake up the hillside. There are trees, though not enough to shade most of the Quarry, and those that are present can obscure the expanse in their own way, forming a canopy over portions of trail, or standing tall to shield you from tumbling down the slope of the Niagara Escarpment at the site's outermost northern edges. How you encounter the expanse of the Quarry may differ, depending on the time of day and season. In winter the wind moving through and past you is dry and harsh, while the unpredictable freezing and

thawing and freezing again leaves the trails rough and uneven. In warmer months, depending on your affinity for open skies in the heat and humidity of a sticky southern Ontario summer you may embrace its potentialities for a leisurely walk or turn back early, realizing its and your own limitations. You may bypass its paths altogether, treating it as a thruway to the aforementioned outermost edges, which, on closer view, reveal a link to the Bruce Trail. What is possible in this place is a matter of perspective which can also be taken up as a kind of expanse. I have seen it in the ways—in spite of the signage which warns them against doing so—children can rarely resist climbing upon the metal sculptures, a rainbow and a lightning bolt and waves in the Children's Science and Nature Zone. You may look beyond the human from a particular vantage point, like making your way to the boardwalk above the borrow-pit pond to peer into the cloudy green-blue water below as catfish and ducks and frogs and herons remind you that who and what lives here is also a form of expanse. Some perspectives will take you beyond the park itself, like looking up from the foot of the hill to its crest as it gives way to the open sky above or reaching the summit overlook and straining your vision to orient yourself in place, only to be met with a greater sense of expanse. Squint your eyes to the edge of the horizon and on the clearest of days Toronto's hazy cityscape is visible across Lake Ontario to the north, and the city of Niagara Falls and the mist rising off its namesake to the southeast.

If this is beginning to sound idyllic allow me to complicate that, because I too can be seduced by the beauty of this place, and I do experience a love for this place, but we must also open the places we love and our ideas about the places we love to a greater scrutiny. Here, lest you find yourself slipping into romanticism and wonderment at the natural environment and begin to feel a distance between yourself and the thrums of life under capitalist consumption and discard, the buzz from north-south commuters on Highway 406 to the east punctuates the soundscape, and the familiar Golden Arches greet you at a quick glance to the west. Yes, the Quarry is a space built for walking, a place to amble over its trails, to linger with snails and Canadian geese, but the longer you linger you may begin to notice the cracks in the facade. Walking-with these cracks, as I will argue, invites ways of witnessing this site with greater complexity, ones that open to practices

which make attuning to the second form of expanse possible, and from where, to invoke Thom Van Dooren (2014, p. 293), "perhaps we *must* critique what we love."

The second kind of expanse, which is central to the purpose of this research, requires some digging to uncover, because covering and obscuring is how waste is most often dealt with. You may uncover it, as I first did, walking with my young child, whose prodding at the landscape fabric that flapped at the surface of an eroded gravel trail unwittingly inspired my own curiosity at what might lie beneath—what is being covered here? I do not mean this conspiratorially, but rather to point to the often-unseen historicities of waste landscapes (Hill, 2016; Riebeling, 2022). My own coming into awareness about waste as a form of expanse began as an attunement to local concern, a tentacular 'curious practice' (Duhn & Galvez, 2020; Haraway, 2015a) I directed toward the stories of waste and its impact on this place. But the longer you linger at the Quarry and places like it, the clearer it becomes that waste is a cross-temporal and multi-scalar expanse, one which Marco Armiero (2021) describes as "planetary and place-based" (p. 3). It is an expanse that allows one to, as Rebecca Altman writes, "sense the scale of earthly devastation and what is at stake" (2014, p. 88), even as the impact of waste-worlding remains indeterminate (Hird, 2016). Building atop former landfills like the Quarry produces a particular form of indeterminate blastedness (Tsing, 2014) such that even the language describing their risks remains uncertain—as is the case with contaminants of emerging concern (CECs), the concentration of which has been shown to remain elevated years beyond closure, risking the contamination of groundwater (Propp et al., 2021). I have come to understand this blastedness as an all-too familiar story of waste and how it has come to intersect with human and more-than-human being and becoming, with living and dying in the age of the Anthropocene. By this I mean to say that waste is a marker of new worlds, new forms of relationality that matter now, and will matter for generations to come. As an early childhood education scholar, this is an invitation to ask questions of the kinds of worlds young children stand to inherit. What is early childhood educations' response-ability to grappling with the scale to which the expansive and expanding global waste crisis—and specifically landfilling, our primary method of processing—has so inextricably (re)shaped the lands we walk upon?

Moreover, what becomes possible to think otherwise in crafting pedagogical responses to waste landscapes?

I begin with this prologue as an attunement to these two intersecting forms of expanse, reading their forms and impact on childhood in the 21st century as a way of tracing the genealogy of the research project that this dissertation will detail through a multi-disciplinary lineage of thinking and doing research with children and educators. Following a long trajectory of post-foundationalist and reconceptualist scholars in early childhood education, I am interested in refusing disciplinary boundaries as an enactment of an ethical and pedagogical commitment to conceptualizing childhood beyond the rigidity of child development, to an opening of citational practices that makes other ways of thinking and doing possible (Land & Frankowski, 2022). Though my own disciplinary background is in early childhood education and curriculum studies, this dissertation invites perspectives from children's geographies, decolonial studies, feminist science studies, the environmental humanities, waste and discard studies, post-qualitative inquiry, arts-based activism, and more to engage with the complexity of life in waste landscapes, which frequently contribute to the ongoing project of eroding the nature/culture dualism. Across the four papers that comprise this dissertation, I am careful to position the Quarry not as a neutral space for recreation, but instead a site of complex and contested histories. expansive ones through which this project aims to illuminate the entanglements between childhood, and what Myra J. Hird (2021) has referred to as waste flows in what is colonially known as Canada. Waste flows, Hird argues, are constitutive of everyday life under capitalism's logics of efficiency, and as the papers will show, childhood is not separate from, but implicated in, the myriad ways waste is encountered and experienced. These ecological inheritances are thus taken up as matters of concern for contemporary childhood. Learning to live with and alongside sites like the Quarry requires acknowledging, as Anna Lowenhaupt Tsing (2014) writes, that "blasted landscapes are what we have, and we need to explore their life-promoting patches" (p. 108).

1.1 Introduction

Young children in the 21st century encounter complex places and spaces and navigate emergent subjectivities in landscapes that have been shaped by long histories of human extraction and intervention under the guise of progress and modernity. One central concern in critical early childhood scholarship is the role of pedagogy in shaping childhood subjectivities with/in a commons that disrupts and resists the construct of the nature/culture divide (Nelson, Pacini-Ketchabaw & Nxumalo, 2018; Pacini-Ketchabaw & Nxumalo, 2016; Taylor & Giugni, 2012). Former landfills are one example of such locales, spaces that are at once both the material enactment of what Hird (2013) characterizes as "ubiquitous places of forgetting" (p. 107), and—as they are increasingly repurposed for public use—places for leisure and recreation (Wilczkiewicz & Wilkosz-Mamcarczyk, 2015). This dissertation centres upon a pedagogical inquiry at the Glenridge Quarry Naturalization Site in St. Catharines, Ontario, a former rock quarry and municipal landfill, now repurposed as a naturalization site, and one example of early childhood common worlding in landscapes produced through their ongoing relations with waste.

Reconceptualizing what it means for children and educators to be in relation with place is a pedagogical project (Chan & Ritchie, 2019), particularly amid times of ecological precarity, the rapid acceleration of potentially irreversible effects of anthropocentric climate change (IPCC, 2018), and the global waste crisis. This project sought to illuminate the possibilities for generating responsive early childhood pedagogies in blasted landscapes—a term I borrow from Anna Lowenhaupt Tsing (2014)—such as the Quarry. As a conceptual starting point this research began as an exploration of the possibilities for place-attuned research on early childhood pedagogies with children's common worlds (Comber, 2011; Duhn, 2012; Nxumalo & Pacini-Ketchabaw, 2020; Somerville, Davies, Power, Gannon & Carteret, 2011; Taylor & Giugni, 2012). Yet, thinking with place alone does not account for the multifaceted ethical and political realities of landscapes such as the Quarry; thus, the project required interdisciplinary thinking to broaden the pedagogical possibilities. As a means of complexifying place relations, I turn to walking research (Springgay & Truman, 2018) and Louise Boscacci's

word-concept *wit(h)nessing* to attend to questions of childhood-waste co-poiesis in the Anthropocene—itself a contested term, alternatively conceptualized as the Capitalocene, Plantationocene, or the Cthulucene (see: Haraway, 2015b; Moore, 2017). Working with three early childhood educators and eight children, I carried out a four-month post-qualitative inquiry that drew inspiration from walking ethnography (Moretti, 2017) and walking methodologies (Springgay & Truman, 2018) to explore the possibilities for waste pedagogies in what I contextualize as a blasted landscape. In this introductory chapter, I establish the context for this project, including its origins, intentions, and orienting questions, its theoretical framings, its methodological considerations, and lay out the remainder of the dissertation. Throughout this introduction and the articles that follow, I weave together interdisciplinary conversations to attend to the necessity of responding pedagogically to the ethical and political complexities which waste makes urgent in how researchers understand children's common worlding. In doing so, I offer timely conceptual and empirical directions for researching early childhood pedagogies in waste landscapes.

1.2 Why Waste Landscapes?

The research began with an interest in how educators might generate place-attuned pedagogies in blasted landscapes like the Quarry by attending to the necessary work of (re)storying place (Cameron, 2012; Hamm, 2015; Nxumalo, 2019). Geographer Yi Fu Tuan (1977) suggests that places are "centres of felt value" (p. 4), and I became interested in how young children at the Quarry, and places like it, establish a sense of place—which Tim Cresswell (2004) conceptualizes as the feelings and meaning associated with physical spaces— amidst a quite literal manifestation of the nature/culture divide (Latour, 1993; Taylor, 2013). While the concept of place was central to this research, it became important to think with interdisciplinary orientations to, as the prologue to this chapter suggests, open to a more expansive understanding of how places like former landfills shape childhood and educator subjectivities. Storying the Quarry when presenced in a way that disrupts the nature/culture divide was one way to challenge notions of stewardship inherent to environmental early childhood education and instead craft differently responsive pedagogical orientations for how educators and

young children encounter waste landscapes. The purpose of this project was to explore how, pedagogically, educators might respond to the proposition of such a disruption, and what is needed conceptually to make such responses possible. Increasingly, childhood is experienced in landscapes shaped by their relations with waste, landscapes which blur the nature/culture divide, situating humans as relationally emplaced within the interactions between humans and more-than-human others and shared waste environs. In Southern Ontario, the Quarry is one such site children and educators gather, and in turn, establish a place-based connection to the landscape that moves beyond a conception of humans as separated and distant from the natural world, and toward one of situatedness (Taylor & Giugni, 2012; Taylor, 2013), or what, as this dissertation will show, Louise Boscacci (2018) describes as a sense of *with*-ness.

1.3 Orienting Questions

1. What nature/culture narratives are embedded within the Glenridge Quarry Naturalization Site? What are the possibilities for restorying the Quarry with young children through walking-based methods?
2. What are the possibilities for early childhood educators developing situated, responsive pedagogies of place at the Glenridge Quarry Naturalization Site?

1.4 Setting the Context: Why Here?

Critical early childhood researchers have generated theoretical and pedagogical orientations for how educators and young children may respond to the environmental and ecological complexities of life in the Anthropocene (Pacini-Ketchabaw & Nxumalo, 2016; Taylor & Pacini-Ketchabaw, 2015). Taylor (2017) has argued that environmental education offers a limiting paradigm for reimagining life in the Anthropocene and often reproduces binaried nature/culture divisions that frequently position humans as stewards or saviours of the natural environment. Place-attuned early childhood education is one possibility for disrupting binaried logics, but waste landscapes complicate a sense of place, and there is a continued need to consider the pedagogical possibilities for thinking with place in blasted landscapes, which, as Tsing (2014) writes, “produce our

livelihoods" (p. 87). The Glenridge Quarry is uniquely situated in what is currently known as St. Catharines, Ontario, resting atop the Niagara Escarpment bordered by a provincial highway to the east, while businesses and the large, developed urban campus of Brock University sit to its west (Hutson & Montgomery, 2010; Kelly & Larson, 2007). The naturalization site is already a site of historical complexities—it is situated on the traditional lands of Haudenosaunee, Anishinaabeg, Ojibway and Chippewa peoples, where the rapid urban growth of Southern Ontario rests within the Mixedwood Plains Ecozone. Swaths of land—from portions of the Niagara escarpment, to the Rouge River that runs through urban Toronto—are dotted with some of the last remaining stretches of Carolinian forest between major highways.

Despite its prominence within the city as a hiking and recreation destination for children and families, there is a dearth of research and storying of the site itself. Entomologists have, to date, conducted some of the only studies represented within academic literature at the Glenridge Quarry (Onuferko, Skandalis, Leon Cordero, Richards, Didham & Brady, 2018; Richards, Rutgers-Kelly, Gibbs, Vickruck, Rehan, & Sheffield 2011; Vickruck & Richards, 2012), and these studies concern the diversity of the bee population at the Quarry, rather than human-Quarry interactions. There has been limited research into place-based encounters with the landscape, and the work is not situated specifically within the Quarry, but rather the broader geographical terrain of the Niagara Escarpment (Hutson & Montgomery, 2010; Kelly & Larson, 2007). I purposely selected the Quarry as a site for inquiry with young children and educators because it is a landscape which blurs the nature/culture divide and inextricable from its entanglements with waste. Thus, restorying the site (Nxumalo, 2015) throughout this research became one necessary component of situating the Quarry as a place for inquiry.

The places and spaces of early childhood matter deeply. In their edited collection, *Unsettling the Colonial Places and Spaces of Early Childhood,* Veronica Pacini-Ketchabaw and Affrica Taylor (2015) write of the ways in which place relations in early childhood are situated in an imbricated layering of often-overlooked and contested histories—including the ongoing legacies of settler-colonialism and environmental degradation. Pointing to the tensions inherent to making visible these contested, and often

violent histories, they write: “Place matters. The kind of place matters. Even the matter (the material components) of places matters” (p. 13). Educators’ pedagogical movements facilitate place-making with young children (Duhn, 2012), and landscapes such as the Quarry offer unique possibilities for generating walking-based critical pedagogies. However, much of the available research centres landscapes that are coded as ‘natural’ environments. My research builds on a small, but growing body of scholarship which seeks to understood how pedagogy and curriculum may be reframed to illuminate the place-making potential of unique environments that transgress the nature/culture divide (Haraway, 2003; Latour, 1993; Taylor, 2013) in waste landscapes such as the Glenridge Quarry.

The research followed reconceptualist perspectives in early childhood education, which emerged as a presence in the scholarly discourse between the late 1980s and the early 1990s to contest the singular, developmentalist narrative of early childhood (Bloch, 2013; Bloch, Swadener & Canella, 2014; Kessler, 1991; Swadener & Kessler, 1991). First, I orient this research within a common worlds (Taylor & Giugni, 2012) framework as a means of exploring the subjectivities and situatedness of contending with young children’s relationality in waste landscapes, and educators’ thinking with curriculum and pedagogies that disrupt dominant developmentalist, hierarchical and binarized norms of early childhood education.

Second, children’s place relations have emerged as a salient research topic in early childhood education (Brillante & Mankiw, 2015; Christensen, 2008; Duhn, 2012; Nairn & Kraftl, 2016; Pacini-Ketchabaw & Taylor, 2015; Taylor, 2013). This research contributes to a small, but growing body of early childhood research on environments that transgress what Bruno Latour (1993) and Donna Haraway (2003) point to as the nature/culture dualism. The Quarry is one such site, sitting in the in-between, where what is purportedly a ‘natural’ site is in fact heavily reliant on human intervention and maintenance for its continued existence. Instead, sites such as the Glenridge Quarry are perhaps more representative of hybridized nature-cultures or naturecultures (Haraway, 2003; Latour, 1993), or the liminal space that blurs the boundaries between the human and more-than-human world (Abram, 1996). Here, in my framing of the Quarry,

the notion of place in human geography and childhood studies necessarily intersects with scholarship on land-based education and pedagogies (Tuck, McKenzie & McCoy, 2014), and widens to incorporate concepts from the environmental humanities and walking research to refigure children's encounters with waste landscapes. The conceptual and empirical work which emerged from the inquiry provides important understandings of the possibilities for rethinking pedagogies in such spaces that are not yet understood within early childhood education.

Lastly, and further to my second point, children's experiences in outdoor environments are frequently coded as 'nature'-based learning, or environmental education (Cocks & Simpson, 2015; MacQuarrie, Nugent & Warden, 2015), where the (perhaps) unintended consequence is to perpetuate the nature/culture dualism and exacerbate logics of surrogacy or stewardship (Taylor, 2017). In this dissertation, I follow historical and ongoing conversations within human geography, reconceptualist curriculum studies and early childhood studies to contribute to scholarship that argues for thinking through interactions with the more-than-human world as emplaced and activated by walking are one possible counterpoint to a conservationist or stewardship approach to thinking with place that is dominant in early childhood education (Cocks & Simpson, 2015; MacQuarrie, Nugent & Warden, 2015). Instead, the research drew upon the emerging field of walking research (Springgay & Truman, 2018) to enact a reframing in line with Latour's (1993) concept of nature-cultures, or Haraway's (2003) notion of naturecultures. One in which the hierarchical dualism is eschewed in favour of a hybridized understanding of the complex common worlds of early childhood.

1.5 Theoretical Framings

1.5.1 The Common Worlds of Early Childhood

Common worlding emerged in the last decade as a conceptual and pedagogical orientation, a way of thinking and doing early childhood education for reimagining, as Affrica Taylor and Miriam Giugni (2012) first proposed, "how to live well together, and to flourish with difference" (p. 109). I highlight this point to establish a clear distinction

between my chosen conceptual orientation for this project and what, perhaps, a more obvious conceptual orientation may have been. Despite the environmental historicity of the Quarry, and while some conceptual overlap may emerge, this research was not about environmental education in early childhood, but rather about the interdisciplinary intersections possible when understanding waste landscapes as an expansive and constitutive force in contemporary childhood(s). This distinction is important given the context of the research; namely, that our pedagogical and curricular encounters with the Quarry were not bounded within a narrative of remediating the cycle of environmental degradation and stewardship inherent to settler-colonial logics of encounters with land (Snelgrove, Dhamoon & Corntassel, 2014).

The intention behind this research was not to change, alter, or 'fix' the Quarry, where ongoing maintenance work falls to the municipal parks and recreation department (Niagara Region, 2017). Environmental degradation and purported (re)generation are tied to settler and neoliberal logics of extraction and repair (Tuck & Yang, 2012). And yet, our presence had an effect, one which points to the importance of pedagogical accountabilities to children's common worlding. Drawing from a common worlds theoretical framework oriented the collective thinking between myself, educators, and children around the curricular and pedagogical response-abilities (Blaise, Hamm & Iorio, 2017; Haraway, 2008) that may emerge from attuning to children's place relations, and recognizing the ways in which we are implicated in the Quarry's history and futurity. If, as Taylor and Giugni (2012, p. 117) suggest, the common worlds project is conceptually situated around "learning how to world", I wish to take seriously what it means to think differently about place-attuned pedagogies, its limitations and its openings to thinking otherwise.

Reconceptualizing place encounters in early childhood education is a pedagogical project, and I echo some of the scholarship that has emerged from the Common Worlds Research collective (see: Blaise, Hamm & Iorio, 2017; Iorio, Hamm, Parnell & Quintero, 2017; Nxumalo, 2016; Pacini-Ketchabaw & Taylor, 2015; Taylor & Giugni, 2012) to embrace the necessary entanglement of the conceptual and the pedagogical. Donna Haraway (2016), in her book *Staying with the Trouble* points to the inextricably tangled

relationship between thinking and doing, stating, “the question of whom to think-with is immensely material” (p. 43). It was thus not possible to disentangle our encounters with the Quarry from the theories we inherit and bring to our practice, and the theories we generated on our walks.

1.5.2 Thinking with Place

Place, as a concept, does not carry a singular or operationalized definition within the available literature, nor has it remained consistent over time. There is a plethora of research originating within human geography and extending outward into cross-disciplinary research that is useful for contextualizing place in early childhood inquiry. For example, Doreen Massey’s (1994; 1995; 2005) formative writings on place drew from her analysis of feminist geographies and the global politic to provide an analysis of place as situated and contextual, constituted by, “local uniqueness” but, “always already a product of wider contacts” (1995, p. 183). Karen Nairn and Peter Kraftl (2016) write extensively on the role of establishing meaning within place in early childhood, echoing scholarship from Steve Harrison and Paul Dourish (1996), who argue that “‘places’ are spaces that are valued” (p. 3). Similarly, Cresswell (2004) suggests that a “sense of place refers to the more nebulous meanings associated with a place: the feelings and emotions a place evokes” (p. 1). These conceptualizations align with early place theorists—including Tuan (1977) who, in theorizing the distinction between space and place, suggests that place-thought consists of a “pause in movement [that] makes it possible for location to be transformed into place” (p. 6). And yet, place is complicated, often romanticized, depoliticized, and grounded in settler colonial logics of ownership and Western onto-epistemologies. In their work on critical place inquiry, Eve Tuck and Marcia McKenzie (2015) complexify place and land relationality, drawing on Indigenous frameworks to insist on resistance and interdisciplinarity as orientations for thinking beyond the constraints and erasures of Western conceptualizations of place.

1.5.3 Wit(h)nessing

It is from this sense of constraint that this project sought more conceptual openings, to properly situate both childhood and the Quarry within the wider context of the global waste crisis, and our place in it, our place *with* it. First emerging from the work of feminist psychoanalyst Bracha L. Ettinger (2001, 2006), wit(h)nessing originated as a mode for thinking through "witnessing while resonating with an-Other in a trans-subjective encounter-event" (Ettinger, 2006, p. 220). For Ettinger, subjective transformations are made possible through and by encounters with others. Louise Boscacci (2018) introduced the word-concept to the environmental humanities, building on its potential as a conceptual tool through which we might understand human and more-than-human co-becoming. That is, there is a *with*-ness to human and more-than-human co-existence, we emerge alongside Others, and in the context of the Anthropocene, it can also be said that anthropogenic harms like waste and climate change are subject-forming phenomena. For early childhood education, as this dissertation will show, wit(h)nessing is a powerful concept from which we might reconceptualize pedagogies by considering waste and its impact on the places and spaces of early childhood as a co-poietic presence.

1.6 Literature Review

This brief overview is intended to situate place as a concept at the root of this study, but also illustrate the departures from place that became necessary to deepen our engagement with waste landscapes. To clarify place in relation to my area of focus, I provide an overview of the intersections between place and pedagogy, place and the nature/culture divide, and place as an embodied, material phenomenon.

1.6.1 Place and Pedagogy in Early Childhood Education

Place is a generative pedagogical presence in early childhood education, (Orr, 2005; Taylor & Giugni, 2012), particularly in contexts that challenge assumptions about what constitutes a 'natural' place. By this I mean waste landscapes as produced and maintained, or built environments present a particular challenge for how children and

educators might think with human and more-than-human relationality. Barbara Comber (2011) argues that pedagogy is strengthened when educators are attuned to the place-specific contexts of their educational surroundings. However, while the findings indicate the importance of understanding place as it informs pedagogy, Comber's (2011) research focuses on literacy education, and establishing place through text-to-self cognitive connections, rather than human/more-than-human-place encounters.

Veronica Pacini-Ketchabaw and Affrica Taylor (2015) detail their research on place-making with young children in environmental early childhood education, in locales including the forests of British Columbia, and the Australian Bushlands. Further, they grapple with the theoretical and pedagogical implications of making place with young children through a post-colonial framework, arguing that attuning to the colonial histories of children's geographies requires contextual, situated pedagogies. Elsewhere, Fikile Nxumalo (2015; 2019a; 2020) attunes place-work to the history of a forest affected by colonial logging histories and explores place as a grounding concept for figuring Black and Indigenous childhoods in the context of settler-colonialism and the Anthropocene. Iris Duhn (2012) theorizes extensively on the inter-relations between pedagogy and place, arguing that "a pedagogy of places assembles and folds into places of pedagogy" and that to teach from a "pedagogy of places" (p. 104) is to take the complexities of place seriously as a pedagogical mindset. Although the literature indicates critical interrogation of pedagogies of place, Duhn's (2012) research centers places that are coded as 'natural' while my research attunes to the many human interventions required to sustain the Quarry's presence as a means of situating the Quarry as a blasted landscape.

1.6.2 Place and the Nature/Culture Divide

Originating in philosophy and environmental studies, the concept of the nature/culture divide has been brought to the forefront of multi-disciplinary research (Haraway, 2003; Latour, 1993). Its conceptual relevance to early childhood education and childhood studies has been suggested by scholars including Alan Prout (2004) and Affrica Taylor (2013; 2017), who theorize that responsive and attuned interactions with place can no longer ignore the entanglements between humans and the more-than-human world (see

also Abram, 1996). Similarly, Susanne Gannon (2015; 2017) theorizes the effects of a binarized conception of nature and culture. In her work, Gannon details research on the interactions between children and 'wild' animals in Australia, suggesting that "culture and nature interact coextensively and contingently" (p. 93) when children are entangled in relations with eels, hens, and dead turtles and educators respond with place-responsive pedagogies. Conversely, in their study with young children searching for sustainable relations with turtle eggs in Australia, Elaine Lewis, Caroline Mansfield and Catherine Baudains (2010) foster the purported divide between nature and culture, framing young children's interactions with 'nature' as an empowering act of place-making through environmental stewardship.

1.6.3 Embodiment and Place

Place is experienced by individuals, in part, through embodied encounters with the physical environment (Scollan & Scollan, 2003; Sen & Silverman, 2014). Research into place-making with young children has often focused on the ways in which young children establish an embodied sense of place. Pia Christensen and Margaret O'Brien (2002) argue that children's place-knowledge is a simultaneous construction of the social and physical through their participation in the life of a city. Abigail Hackett (2014) explored place-making with very young children in museums in England, conducting a year-long ethnographic study with eight families to observe the ways children experience place when walking through a museum. Drawing from the same dataset, Hackett (2016) builds a conceptual framework for thinking about young children's embodied movements and place-making in museums by incorporating the phenomenological work of Tim Ingold (2007) and theorizing children as wayfarers. Wayfaring, Hackett (2016) argues, is one way for children's movements to be conceptualized as tacit place-making actions. I take up walking as a mode for generating critical responses to the embodied nature of encounters with place (Springgay & Truman, 2022).

1.6.4 Place and Land

One observable gap in the oft-cited research on place in human geography is the exclusion of the connection between place, land, and land education. One notable exception is the work of Indigenous land theorists and educators (Tuck & McKenzie, 2015; McCoy, Tuck, & McKenzie, 2016) in re-establishing the importance of a land-based conceptualization of place. Land-based education is historically and culturally significant, and there is a rich history of Indigenous scholars who frame education within a land-based orientation (McCoy, Tuck & McKenzie, 2016). Place is inextricably linked to land, and land theorists (Tuck & McKenzie, 2015; McCoy, Tuck, & McKenzie, 2016) argue that the geographical and physical aspects of place and land do not encompass a rigorous enough conceptualization when thinking through a place-based understanding of encounters with the more-than-human world. The meaningfulness of place, Eve Tuck and Marcia McKenzie (2015) suggest, is undertheorized, and underrepresented in the minimal engagement taking place outside of geography.

Briefly, outside of geography and moving conceptions of land and place-making into early childhood studies, Jennifer James (2008) considers the implications of experiences with place-making through mapping the spatialities of land with young children. Yet this research only reinforces a focus on geographic knowledge rather than place-based understanding of land. While some early childhood scholars (Pacini-Ketchabaw & Taylor, 2015; Taylor, 2017) have engaged critically and response-ably (Blaise, Hamm & Iorio, 2017) with Indigenous knowledges that connect land with place, Western early childhood discourses that prioritize land and sustainability (Lewis, Mansfield & Baudains, 2010; McNichol, Davis & O'Brien, 2011) contribute to the gap in research on children's interactions with places that blur the nature/culture divide. Tuck and McKenzie (2015) argue that a place-based conceptualization of land is more than the cartographic possibilities. They argue that there are spiritual and emotional connections forged through human-land relations, and that thinking with human-land relations through the lens of place is a valuable critical reframing.

Heidi McNichol, Julie Davis, and Katherine O'Brien (2011) tie land education to notions of sustainability, which reinforces the dualist conceptualization of nature and culture, where land education is seen as an opportunity for children to assert ownership and responsibility of the land. In their research, the notion of the ecological footprint was introduced to one early learning centre in Australia. The stewardship perspective is contrasted by much of the critical environmental early childhood education scholarship on land, which posits a mutual entanglement of human-land relations, rather than a conceptualization of ownership and responsibility (Taylor, 2017). Jonathan Lynch and Greg Mannion (2016) conversely posit the interactions between young children and land as necessarily entwined, and that for educators, responsive land pedagogies require an active and embodied engagement with land. One key limitation to Lynch and Mannion's (2016) is the absence of children's perspectives on land education.

1.6.5 Place and Presencing

Thinking with the historical multiplicities of the Glenridge Quarry throughout this research was useful for moving beyond a cartographic conception to think with how young children and educators encounter the site through its scale and temporalities, and how other stories exist beyond the site's relations with waste. Fikile Nxumalo's work (2016; 2019a; 2019b) was instrumental in conceptualizing place through practices of presencing, restorying, and witnessing. Restorying practices were a helpful reminder to engage a place and land-based understanding of the Glenridge Quarry to make visible the obscured stories. Presencing opened toward cross-temporal witnessing of the lands, including its history as the traditional territory of the Haudenosaunee, Anishinaabeg, Ojibway and Chippewa peoples (Ontario Federation of Labour Aboriginal Circle, 2017), and its historical and ongoing positions, first as a limestone quarry, then landfill, and currently a public recreation space.

1.7 Methodology

1.7.1 Tracing the ‘Posts’—Post-Foundationalism and Post-Qualitative Inquiry

My methodological orientation and approach to thinking methods were situated within the ‘posts’— post-foundationalism and post-qualitative inquiry—as a way of orienting the ontological and epistemological pre-suppositions. Post-foundationalism has a particular history in reconceptualist thinking in early childhood (Bloch, 2013; Moss, 2014; Moss, 2018), which responds to the inheritances of the positivist tradition in early childhood as firmly rooted in essentialist notions and the limitations inherent to a developmentalist perspective. Post-foundational work is integral to critical reconceptualist work in early childhood studies (Dahlberg, Moss & Pence, 2013; Jackson & Mazzei, 2023; Moss, 2014; Pacini-Ketchabaw & Blaise, 2023; Pacini-Ketchabaw & Taylor, 2015), where the dominant developmentalist perspective is eschewed for philosophical and methodological orientations that illuminate possibilities for pedagogical inquiry with young children which moves beyond foundationalist notions of development. In the context of this study, a post-foundationalist orientation was an epistemological opening toward emergent methodological possibilities which contest and resist developmentalist assumptions of young children’s interactions with place.

Growing from post-structuralism and post-foundational ontologies and epistemologies (Lather, 2013; Lather & St. Pierre, 2013; St. Pierre, 2023), post-qualitative inquiry is an invitation to scholars to develop new methodologies that address the perceived ontological and epistemological limitations of traditionally defined and systematic ways of doing qualitative research (Agee, 2009; Creswell & Poth, 2017; Merriam, 2009). As Elizabeth St. Pierre (2018) describes, post-qualitative inquiry unsettles positivist conceptualizations of methods and methodologies, and instead invites an always relational reckoning with concepts. In their early writings, Patti Lather and Elizabeth St. Pierre (2013) situate the generative possibilities of post-qualitative inquiry as an ontological project; an assertion that humanist conceptions of research and all it entails (i.e. research questions; literature reviews; data; rigour) are ways in which scholars make

feeble attempts to extricate themselves from their work. Hillevi Lenz Taguchi and Elizabeth St. Pierre (2017) posit that decentering the human opens new possibilities for educational research that transgress the divide between theory and practice and move beyond constraining methodologies.

Such 'lines of flight' as Lotta Johansson (2015) claims, act to create new knowledge without the constraints of traditional methodologies. Post-qualitative inquiry was thus a way to engage with uncertainty in ways that do not hinder "the production of different becomings, views, and Knowledge" (Johansson, 2016, p. 463). I oriented my methodological thinking around a post-qualitative stance to establish the pedagogical research as exploratory, to pay attention to, as Johannson (2016, p. 453) suggests, the "not yet seen…making it possible to produce something new."

1.8 Walking Research for Thinking with and Complexifying Place

As an emerging field of inquiry and methodology, walking methodologies represent an extension of post-foundational perspectives which inspired the advent of post-qualitative inquiry, and these methodologies are useful for reconceptualizing research with young children. Walking research has emerged as a field of inquiry in response to the prevalence of discursive ontological and epistemological stances in qualitative research. Springgay and Truman (2018) acknowledge as much, pointing to one key shift in the philosophical underpinnings of social sciences and humanities research. They suggest—in response to the lingering impact of the linguistic turn (Rorty, 1967)—that walking foregrounds, "the importance of the material body in disciplines that have traditionally privileged discursive analysis" (p. 2). Walking methodologies and walking ethnography (Moretti, 2017; Springgay & Truman, 2018) were helpful in conceptualizing how to account for educators and children's ways of moving, knowing, and being together for generating waste pedagogies.

Walking-based research is derived from a long lineage of post-foundational theory (Marttila, 2015), itself a response to foundationalist notions of universality and

objectivity (Carr, 2006). Critical ethnographers have similarly rejected the notion of the objective, neutral observer as researcher (Madison, 2005), and as Cristina Moretti (2017) suggests, walking ethnography provides space for the co-creation of "dynamic, embodied, and at least to a certain extent, improvisational itinerary together" (p. 98). Where post-foundational theorists have frequently relied on a Derridean account of human experience—itself a response to the positivist leanings of modernity—walking methodologies are deeply embedded within the material turn (Springgay & Truman, 2017). An onto-epistemological shift signifies the material turn, moving away from the discursive analyses within what Rorty (1967) named the linguistic turn. The 'material turn' (Lenz Taguchi, 2010) as it relates to research with children and youth builds from the work of multi-disciplinary scholars (Barad, 2003; Barad, 2007; Bennett, 2010), who posit that materials are active and constitutive in "the construction of discourse and reality" (Lenz Taguchi, 2010, p. 12). Inviting perspectives from feminist new materialism into conceptualizing knowing and being within the landscape of the Quarry was useful for centering the subjective materialist interactions that inform how young children and educators encountered the site.

Charlotte Bates and Alex Rhys-Taylor (2017) argue that as a social practice, walking methodologies have enabled research "to be informed, not just by the lives of research participants, but also by the landscapes in which they live" (p. 2). Walking, place and land, thus, are inextricably linked. The history of walking research suggests a multiplicity of forms and research orientations. Early scholarship on walking as a research methodology is situated within human geography and traditional orientations to qualitative research (Creswell & Poth, 2017), including ethnographic approaches (Anderson, 2004; Kusenbach, 2003; Moretti, 2017; Pink, 2008). In these early studies, researchers transposed traditional modes of data collection into walking scenarios, reframing the semi-structured interview as 'talking whilst walking' (Anderson, 2004), audio-visual data for capturing walking tours (Pink, 2008), 'walking interviews' (Evans & Jones, 2011; Lynch & Mannion, 2016), and narrative walking practices (Myers, 2011). More recently, scholarship has contributed new understandings as to the implications of walking research with young children (Hackett, 2014; Hackett, 2016; Nxumalo, 2015;

Nxumalo, 2019a), and it is following such work that my research brought together walking research with a common worlding orientation to place-making and pedagogy.

Conceptually, walking methodologies contend with attuning to the embodied act of place-making (Moretti, 2017; Springgay & Truman, 2017). It follows that research into the pedagogical implications for young children's place-making necessitates inquiry into children and educators' embodied interactions with place. Walking methodologies are a still-emerging field, spearheaded largely by the efforts of Stephanie Springgay and Sarah E. Truman and their global collaborative *WalkingLab* (Springgay & Truman, 2017; Springgay & Truman, 2018; Truman & Springgay, 2016). Thus, as a still-emerging field, the available literature is quite limited in both volume and scope. Given the dearth of research on walking methodologies with young children, there are a multitude of possibilities for addressing the gap in the literature. The crux of walking methodologies as a heavily theoretical orientation to doing research is that walking is positioned as a unique way of knowing (Springgay & Truman, 2018). Walking methodologies are indebted to a post-qualitative, materialist orientation to doing research, because such an orientation pushes walking methodology in directions that move beyond Cartesian conceptions of rationality and the objective knower. Contrasting a post-qualitative orientation with that of research that attempts to mediate researcher positionality (Lamont Hill, 2006; Sloan Morgan, 2014; Snelgrove, Dhamoon & Corntassel, 2014), walking-as-knowing, instead, is always subjective and always relational to spatiality and temporality.

Although Springgay and Truman (2017, 2018) are not the first scholars to address walking as a research methodology, they are among the first to situate walking methodologies within the 'posts'. Engaging with post-foundational orientations to childhood studies requires concomitant research methodologies, and Springgay and Truman (2018) offer a framework for thinking generatively about the possibilities of post-foundational, post-qualitative walking methodologies. The minimal research positioned within childhood studies was indicative of a gap in the available research on walking methodologies with young children and educators in complex landscapes, such as the Glenridge Quarry. Moreover, the research contributes to the existing scholarly

conversations in childhood studies that draw from post-foundational and post-qualitative research orientations to reconceptualize early childhood education.

1.8.1 Walking Methodologies and Place

In their book detailing the results of their global *WalkingLab* research, Springgay and Truman (2018) argue that place is as similarly essential to walking methodologies as an embodied understanding of walking. Springgay and Truman (2017; 2018) build on the work of scholars including Evans and Jones (2011) who, in developing what they call "mobile methods" (p. 850), found that individuals' narratives of place are more richly specific when individuals engage in walking-based activities than when data are gathered through sedentary methods. Pink (2008) focuses on the methodological implications for ethnographers when conducting walking research, using a walking event as a case study and finding that participants were more likely to be attuned to one another, and more readily engaged in making-place during walking research. Misha Myers (2011) turns a critical lens on the perceived novelty of walking methodologies, before articulating the methodological steps for a method she names *way from home* that engages walkers in relational, contextual connection within a localized conception of place.

1.8.2 Walking Methodologies with Children

Lynch and Mannion (2016) undertake an analysis of the methodological implications of walking interviews with early childhood educators, where educators engaged in place-attuned and place-responsive interactions with forests. Their research highlights the possibilities for walking as a mode of inquiry with young children, but their findings are limited due to the focus on teachers. Abigail Hackett's (2014, 2016) research places primacy on children's proclivity for walking in open spaces—museums in this instance—to observe how movement facilitates place-making. The methodological implications for Hackett's work suggest a focus on children's movements as intentional modal ways of knowing and communicating place. More critically aligned with my intentions in this project, Fikile Nxumalo (2019a) points to walking as a component of disrupting settler-colonial logics of separation and binaries (e.g. constructed/natural; nature/culture).

Thinking with the available literature suggests that walking is one crucial aspect to place-making and situates my research as a contribution to a still-emerging body of work on the methodological and pedagogical possibilities for walking research with educators and young children.

1.9 On the Limitations of Methods

I propose a deviation from the traditionally conceived and organized research project, not as an avoidance of rigour, but rather as a means of thinking with the complexities of the Quarry and places like it. Walking is one way through which activating common worlds pedagogies can be made possible, but common worlds pedagogies are, by nature of their conceptual grounding, "always already full of inherited messy connections" (Taylor, 2013, p. 62). As this study was grounded within a reconceptualist, common worlding framework for thinking with waste pedagogies in early childhood education—and although there is much empirical research that has contributed to a vibrant reconceptualist discourse—the field is often criticized for being heavily theoretical, which may have presented some challenges for establishing methodological and conceptual rigour. However, there is one possible argument that may be useful for contending with the rigorous expectations of the scholarly discourse. Lenz Taguchi and St. Pierre (2017) put forth the argument that an orientation to research that decenters the perspective of humans as rational actors makes possible educational research that transgresses the divide between theory and practice, and that doing so moves beyond rationalist or humanist assumptions of complete objectivity. Again, this does not excuse researchers of necessary rigour, but from the outset of the theoretical and conceptual framework it is precisely the subjective experiences of childhood-waste relations and the exploratory, responsive, relational pedagogical disruptions within the unique context of the Glenridge Quarry that were sought. To engage with a rationalist conception of precisely which methods to employ to attend to pedagogies of place in sites that disrupt the nature/culture divide would be an unsuitable methodological orientation for this particular research project.

Here instead I will provide an (always partial) sample of practices I drew from which helped frame our walking excursions: Photography, walking interviews, mapping, sound

recordings, situated propositions, and arts-based provocations and interventions, each of which contributed to how we explore children's relations with waste and place with/in the Glenridge Quarry. During our walks, children, educators, and I frequently engaged in practices of restorying place (Cameron, 2012; Hamm, 2015; Nxumalo, 2019a; 2020) as we walked the trails in the Quarry. Restorying as an experimentation with how children and educators experienced this particular place was a revelatory practice for exploring how the cross-temporal and multi-scalar pasts-presents-futures of the site are deeply entangled within human-Quarry relations that necessarily blur the nature/culture divide.

Pedagogical narration is one specific practice I used which, when enacted within the Glenridge Quarry, offered a way of illuminating the meaning-making possibilities of the space, but also the world beyond its boundaries. In keeping with the spirit of post-qualitative inquiry, I wish to reserve speculation on specific transformative pedagogical outcomes, but instead offer a way forward, pedagogically, through the uncertainty. By that I mean, the research happened, and then it stopped, and after it stopped I do not know what became of the children or their relations with waste and waste landscapes. That is the nature of work with young children, and education in general. Educators and researchers work with children for a brief period of time, some longer than others, and from there, because curriculum and pedagogy are subject-forming (Vintimilla, 2023), we can say with certainty only that things changed, not how things changed. To that end, I am most interested in generating practices for curriculum making and pedagogy which situate education as a collective project which attends to world-making, rather than centering individual children. Veronica Pacini-Ketchabaw, Fikile Nxumalo, Laurie Kocher, Enid Elliot and Alejandra Sanchez (2015) put forward pedagogical narration as a method deeply entangled with the politicized nature of early childhood education. Taking up pedagogical narration, as Mindy Blaise, Catherine Hamm, and Jeanne Marie Iorio (2017) suggest, marks "a shift away from matters of facts by making visible the meaning making of the teacher and the child" (p. 39). Place-making and re-thinking pedagogies are both uniquely contextual, situated within spatial and temporal realities.

1.10 Site and Participants

The complexity of pedagogical relationships—how to navigate power imbalances, and importantly for this project, how to think together—required an initial period of relationship building. As the educators and children were unfamiliar with me, and exploratory, experimental, and emergent pedagogical inquiries, we began walking together long before formal data collection commenced. Data collection took place with educators and children at a not-for-profit childcare centre in St. Catharines, Ontario. The site was chosen for its proximity to the Quarry, the entrance to which is located at the eastern edge of the childcare centres' parking lot. Three educators—two in a preschool classroom, and one in a kindergarten classroom—and 24 children—16 in the preschool classroom, and eight in the kindergarten classroom—participated in the pedagogical work that informed this dissertation. To be clear, in total, consent was obtained from three educators and the parents or guardians of eight children to participate in the research, while all children were welcome to participate in walking together and were not separated from their peers or educators. The pedagogical work began after consent was in place in May, and continued over a period of four months, ending in August. The pedagogical thinking and doing occurred during weekly walks at the Quarry and during weekly meetings with the educators. Some weeks we walked together once, or twice, while as the project drew to a close with the end of summer, we walked more frequently, four or five mornings in some weeks. Educators' and children's contributions to the research were gathered through informal discussions while walking and more intentional meetings for the purpose of generating pedagogical narrations, which took place throughout the duration of the project.

1.11 Ethics

My research took place as one of the subsites, or collaboratories, of Dr. Veronica Pacini-Ketchabaw's multisite SSHRC-funded project entitled 'ReThinking the Rs Through the Arts: Transforming Waste Practices in Early Childhood Education'. The broader project received ethics approval from Western University's Non-Medical Research Ethics Board (NMREB File Number 109353) and my research followed the same established protocols

and ethical considerations. See Appendix A and B for the initial ethics approval and ethics renewal.

1.12 Structure of the Thesis

I have approached this dissertation as the documentation of an emergent and generative project which engaged with interdisciplinary thinking to reimagine the possibilities for early childhood waste pedagogies. Over four months of walking with children and educators, it became apparent that so much had been done, so many different forms of relations had been made visible, that an integrated article-format thesis is the most suitable structure to engage with thinking about waste pedagogies at the Quarry. The structure of an article-based thesis makes space for thinking generatively about multiple pedagogical and theoretical innovations as we encountered the Quarry. Here, in chapter one, I have traced the origins of the project, situating the research, its conceptual underpinnings, and its methodological considerations in a particular time and place. In chapter two, the first article, I develop a conceptual framework I have named *wit(h)ness marks* for exploring early childhood pedagogies as non-innocent entanglements with/in time. Drawing on Bracha Ettinger (2001; 2006) and Louise Boscacci's (2018) concept of wit(h)nessing, I offer wit(h)ness marks as a way of conceptualizing waste as an affective and relational mark on landscapes and the entanglements between childhood, waste, scale, and time. In chapter three, I offer an article which examines young children's multispecies encounters with snails and geese at the Quarry to explore the tensions and ethics of sharing space with non-human others in waste landscapes. Through three vignettes I return to Ettinger and Boscacci's wit(h)nessing, as well as a refrain from Donna Haraway (2016) to explore the possibilities for uncertain, frictional, and indeterminate living and dying well together in landscapes shaped by their relations with waste. The article I place in chapter four builds on existing scholarship on walking methodologies to craft three pedagogical propositions for walking with waste landscapes in times of ecological precarity. I once again return to Ettinger and Bosacci to develop propositions for what I name walking-*wit(h)nessing* as a practice for walking-with children's waste inheritances. Pedagogy is the enactment of a response to particular conditions, and in the fifth chapter, and final article, I detail a response to how we

encountered the Quarry during the summer we walked its pathways. Thinking with common worlding and wit(h)nessing, I argue for recuperative pedagogies in times of global waste acceleration. This chapter offers seed-bombing with young children as an intentional act of collective resistance against the neoliberal logics of shifting individual behaviour. Lastly, chapter six concludes the dissertation by bringing together reflections on the research questions which grounded this study and offers some possible directions for future research.

1.13 Conclusion

In her paper which, for me, cracked open a new world of theoretical possibilities in undertaking this research, Louise Boscacci (2018) suggests, "a bodily encounter with shared earth others—kin, commensal, prey, predator—is always an *encounter-exchange* if we think with the concept and mattering of *wit(h)nessing."* (p. 343). It remains indeterminate how, precisely, waste will continue to make its mark on shared worlds, but for children in the age of the Anthropocene, it matters that educators and researchers turn their attention to their co-becomings.

Interlude

Garbage and the ash keep piling up
A catastrophe that is yours and mine
They say it takes time to become timeless
Time is all I've got this time
Once in a while you stop to notice
Something that's been there from the start

-Margo Price, *Landfill*

Chapter 2

2 Wit(h)ness Marks: Reconceptualizing Waste Relations as Non-Innocent Entanglements With/In Time

Abstract

Horologists rely on witness marks to tell the story of what came before. In this paper I reframe witnessing practices, drawing from a post-qualitative inquiry on transforming early childhood waste pedagogies as well as Ettinger (2001) and Boscacci's (2018) concept of wit(h)nessing to offer a conceptual (re)theorization of children's non-innocent entanglements with/in time that I call wit(h)ness marks. I explore some examples of wit(h)ness marks that emerged while walking with children at the Glenridge Quarry Naturalization site in St. Catharines, Ontario. The Quarry is a complex site of multiple historicities: traditional Indigenous territory; former rock quarry; former municipal landfill; and now a naturalization site for public use. Between February and August 2019, a group of children, educators and I embarked on weekly walks with/in the Quarry. The many stories of the Quarry are evident in the material remnants with which children engaged during our walking excursions, and the entanglements of histories, presences, and futures require new ways of thinking pedagogically about time and place. In this paper I develop a tentative theorization of how wit(h)ness marks point to our entangled and implicated relations with the site's past, presences and futurities. Boscacci writes that wit(h)nessing "renders any *a-bodied* encounter explicitly relational: it is an encounter-*exchange*" (p. 345). Wit(h)ness marks thus remind us that our pedagogical work is non-innocent—we disrupt the land and foliage; we hear snail shells crunch under our feet with every step—and that our presence at the Quarry does not exist outside of an encounter-*exchange*. Attuning to our wit(h)ness marks may be one way of crafting differently response-able pedagogical dispositions when attending to children's relations with time in complex landscapes.

2.1 Prologue: On Witness Marks and Indeterminacy for Uncertain Futures

Before I develop the conceptual focal point of this paper, I want to trace a minor, but consequential moment of paying attention to what Monique Rooney (2020) names the "queerly intermedial" (pp. 157-158) which activated the conditions for difference, and the possibilities therein for reimagining child/waste/land relations. My intention in sharing what follows is to map what Lotta Johansson (2016) names rhizomatic involution and follow one particular line of flight to foreground a connection between amateur horology, the environmental humanities and early childhood studies. I do so to make clear its salience in framing a nascent research project on thinking the entanglements between the global waste crisis, childhood, and time. In 2017, the producers behind This American Life and Serial released a 7-chapter podcast entitled *S-Town*, which focused on John B. McLemore, an amateur horologist in Bibb County, Alabama. In the opening moments of chapter one, host Brian Reed offers the following prologue:

When an antique clock breaks, a clock that's been telling time for 200 or 300 years, fixing it can be a real puzzle. An old clock like that was handmade by someone. It might tick away the time with a pendulum, with a spring, with a pulley system. It might have bells that are supposed to strike the hour, or a bird that's meant to pop out and cuckoo at you. There can be hundreds of tiny, individual pieces, each of which needs to interact with the others precisely.

To make the job even trickier, you often can't tell what's been done to a clock over hundreds of years. Maybe there's damage that was never fixed, or fixed badly. Sometimes, entire portions of the original clockwork are missing, but you can't know for sure because there are rarely diagrams of what the clock's supposed to look like. A clock that old doesn't come with a manual.

So instead, the few people left in the world who know how to do this kind of thing rely on what are often called witness marks to guide their way. A witness mark could be a small dent, a hole that once held a screw. These are actual impressions, and outlines, and discolorations left inside the clock of pieces that might have once been there. They're clues to what was in the clockmaker's mind when he first created the thing.

I'm told fixing an old clock can be maddening. You're constantly wondering if you've just spent hours going down a path that will likely take you nowhere, and all you've got are these vague witness marks, which might not even mean what you think they mean. So at every moment along the way, you have to decide if you're wasting your time or not.

(Reed, 2017)

The indeterminacy of witness marks is ever-present throughout *S-Town*, both in the literal sense—as McLemore describes the sinuous work of reading such marks as always an act of interpretation in horology—but also as affective bodily encounters, as in when Reed struggles to shed light on the tattooing and piercing rituals that mark John B's body and bring him into queer community with others. Witness marks lack a fixed origin or definition, but their utility spans disparate disciplines. The concept has been taken up in occupant kinematics (McGowan, Fisher, & Lucas, 2008), dismemberment crime investigations (Saville, Hainsworth, & Rutty, 2007), and for calibrating observation practices in failure analysis (Stevenson, 2014). Perhaps fittingly, I first came to know of witness marks through *S-Town's* intricate posthumous excavation of John B's life and his concern with climate change and resource scarcity, engaging my own process of rhizomatic thinking (Pacini-Ketchabaw, Nxumalo, Kocher, Elliot & Sanchez, 2015) to read their metaphoric potential through my emerging project on childhood in blasted landscapes[4] (Tsing, 2014) in the descriptions of his clockmaking practices. It is with indeterminacy in mind that I want to enter into thinking about multi-scalar and temporal witnessing practices with children and early childhood educators that attune to the anthropogenic impact of the global waste crisis as witnessing particular forms of *marks*.

For horologists, witness marks are tracings of past doings, spectres that, however unclear, impart upon their observers some evidence of what has been done, and thus, act as wayfinders that impact future doings. Witness marks can be read as the material effects of particular people with particular knowledges in particular times and places, and these material effects may invite uncertainty even as they compel a response. There is a similar spectral quality and impetus to respond to living and being in relation with waste in former landfills, a hauntological sensing (Derrida, 2010; Doeland, 2020) that reminds us that engaging with uncertain knowledges is not a neutral, or ahistorical proposition. As I listened to *S-Town*—which was released as I was beginning the work of conceptualizing

[4]I have written more extensively elsewhere about walking-with blasted landscapes (see: Jobb, 2023).

the Blasted Landscapes Collaboratory, which Vanessa Wintoneak and I have written of elsewhere (Wintoneak & Jobb, 2022)—witness marks were an opening through which the educators and children and I might begin to understand our relations with waste as intricate and imprecise lacings of human impact, scale, and time. I offer this prologue as a starting point for composing knotty assemblages of waste knowledge(s), for (re)composing witness marks through the potentialities of not just their poetics (Szilvasy, 2018; Woods, 2022), but their material presences, and for (re)figuring the relationality between childhood and waste as one example of the necessity of being *with* the marks of anthropogenic impact in a more-than-human world.

2.2 Introduction

This paper is centred upon a move toward new conceptual starting points for seeing waste differently, for witnessing in ways that resist the impulse to distance ourselves from waste flows (Gille, 2010; Hird, 2013; 2021), and in doing so, attuning to questions of impact, scale, and temporalities when re-composing human-waste relations in the context of the global waste crisis. I am drawn to questions concerning what other modes of collective witnessing might be possible for considering waste and its impact as particular kinds of *marks* on everyday landscapes. As I will argue, engaging the multi-temporal presence and effects of waste as a kind of mark enables a new form of witnessing, a process of coming to terms with being implicated in what is a rapidly-advancing timeline of anthropogenic harms without collapsing neoliberal managerial logics into the scale, cause, or solution to the crisis. To do so, I bend the concept of witness marks to propose a conceptual and pedagogical starting point that I have named *wit(h)ness marks*, a neologism that emerged from a project on reimagining children's relations with waste in a former landfill, now public recreation space. I draw on Louise Boscacci (2018) and Bracha L. Ettinger's (2001; 2006) concept of wit(h)nessing to articulate waste as wit(h)ness marks for paying attention to the complex affective and relational human-waste entanglements with and in times and places shaped by environmental degradation. The generative pedagogical possibilities for thinking with these entanglements enable an attunement to the ways in which wit(h)ness marks may point to our enmeshed and implicated relations with the often-obscured past, uncertain presences and speculative

futurities of landscapes shaped by relations with waste.

After tracing the conceptual moves from witness/ing marks to wit(h)nessing to wit(h)ness marks I will explore some examples of wit(h)ness marks that emerged in a post-qualitative walking-based pedagogical inquiry which focused on generating waste pedagogies with children and educators in southern Ontario, Canada. The empirical work from which I have developed wit(h)ness marks took place in the context of what I have called the *Blasted Landscapes* collaboratory, a collaboratory site in the Transforming Waste Practices project, one of two projects enfolded within the larger Climate Action Childhood Network. For four months between May and August, a group of children, educators and I embarked on weekly walks with/in the Glenridge Quarry Naturalization Site, a post-landfill recreation site atop the Niagara Escarpment in what is currently known as St. Catharines, Ontario. The historical traces of the site's past as a landfill are evident in the material remnants with which children engaged during our walking excursions, and the entanglements of histories, presences, and futures require new ways of orienting pedagogically around children's relations with time and place in waste landscapes.

How have waste and its temporalities shaped how we understand our uncertain collective accountabilities when accumulation and disposal practices are a central aspect of day-to-day life? In her recent book documenting Canada's role in the worsening global waste crisis, Myra J. Hird (2021) describes the Anthropocene as "an epoch of waste practices" (p. 168), wherein the function of everyday waste management is so routinized that it is ensnared in "neoliberal capitalist governmentality" (p. 34). It is increasingly apparent that the managerial logics that underpin the structures Hird refers to as waste flows, or what Zsuzsa Gille (2010; 2022) names "waste regimes" are, for now, intertwined with and upheld by multi-scalar webs of socio-cultural and capital forces. In Canada alone the waste management industry employs over 39,000 labourers, while local governments enjoy $2,900,000,000 in revenue (2018 figures; Statistics Canada, 2021). Waste, in this sense, has re-ordered human and non-human life, and both the origins and scale of the crisis reflect the complex ways it figures into how we live. Furthermore, the ontological properties of waste itself are a continuum of contested terminology, reflecting the myriad

ways waste comes into being. Beyond the residential waste most of us are intimately familiar with, waste emerges as a byproduct of large-scale industrial and agricultural practices (e.g., extraction industries; factory farming), is discarded as biomedical waste from healthcare facilities, and produced by non-residential commercial enterprises, to name a few. Although, as many have pointed out (Hird, 2021; Liboiron and Lepawsky, 2022), there is a significant imbalance in the origins and perpetrators of waste—the most recent figures indicate that the Canadian oil sands alone accounted for 645 million tonnes of solid or semi-solid waste in 2008 (Statistics Canada, 2012), while comparatively, residential sources produced 35.6 million tonnes of solid waste in 2018 (Environment and Climate Change Canada, 2022). Moreover, attending to the waste crisis is a pressing social justice issue, as Ingrid R. G. Waldron's (2018) work with Black and Indigenous communities in Canada has shown, whereby the effects of waste and other forms of environmental degradation are compounding factors in systems of oppression in settler-colonial states.

Given the landscape upon which this research took place, in the context of this paper I use waste to refer to what is most commonly filtered through and managed as residential, or municipal solid waste. By which I mean the accumulation of "residential, industrial, institutional, commercial, municipal, and construction and demolition waste" that is resultant from the consuming and discarding practices that are a byproduct of everyday citizen life (Hoornweg, Bhada-Tata, & Kennedy, 2015, p. 119). Admittedly, this is a contested framing of waste that elides what others in discard studies have named a "scalar mismatch" (Liboiron & Lepawsky, 2022), wherein citizens are characterized not as the origin point for waste, but as a link between industry and disposal for "objects that have been designed to be wasted" (p. 40). However, waste management structures typically separate industrial, commercial, and institutional (ICI) waste, and municipal solid waste from other origin points (for example, hazardous waste byproducts resulting from large-scale mining processes are separately managed) and the former landfill we walked with previously processed ICI and municipal solid waste.[5] The broader point of scalar

[5]https://www.ontario.ca/page/niagara-glenridge-quarry-landfill-service-area

incongruence is an important one, reflecting entrenched power structures, and yet, if, as Françoise Vergès (2019) puts it in starker terms, “capitalism is waste” and its “necessary destruction knows no borders. (p. 8), a much-warranted skepticism that capitalism will solve the problem it started ought to exist. Temporarily setting aside the question of origin points, the scale of the waste crisis is such that it is no longer desirable or possible to live in ways that mask or diminish its effects on the wellbeing of humans and non-human Others. Landfills, the manner in which municipal solid waste is most frequently handled and managed, are re-shaping topography from within and beyond their operational and post-closure lifespan. The now-closed Fresh Kills landfill—once the world’s largest landfill, rumoured to be visible from space (Scappetone, 2013)—is just one example of an increasing trend in converting post-closure landfill sites to public recreation spaces, meaning we leisure in waste landscapes alongside the knowledge that proximity to waste is recognized as a long-term negative health determinant (Xu, Due, Dong, Nai, Liu, and Huang, 2018). We are bearing witness to a time in which a future with waste portends what Veronica Pacini-Ketchabaw and Kathleen Kummen (2016) call the “temporal legacies young children inherit and inhabit” (p. 432). For those of us working in critical early childhood studies, encountering waste and its intersecting marks on the world are of pressing pedagogical importance.

2.3 Marks

Temporal marks, both ethereal and tangible, are all around us, examples of which might include photographs and journals that document or mark the passing of social and calendrical time, or high-water marks that indicate historical water levels for tracking flood data. Tracing the flow of information on climate change and its temporalities, which she names *petro-time*, Heather Davis (2023) writes that, “to mark this temporal dimension, the public is often given sequences of numbers about levels of carbon dioxide and methane, the hottest years on record, ocean warming and ice melt. But this type of abstraction is often difficult to understand, much less feel” (p. 56). In his genealogical work on lines, Tim Ingold (2015; 2016) describes certain forms of marks as signifiers (e.g., marks on musical scores are graphic representations of their corresponding notes; punctuation marks signify and emphasize particular elements in writing). What is

common across what it means to live in relation to the many disparate forms of marks is that there exists a meeting point, a moment where a mark is produced and observed or experienced. The yellow line which marks the lanes and divides the road visible from my apartment window exists independent of my viewing it, yet there is a response when we meet. Writing of climate change as an inscriptive force upon the world, Nathaniel Otjen (2019) delineates this meeting point as requiring a co-relational "*performing action* and a *receiving material*" (p. 48). In the case of the road marking, its presence, or its inscription on the world, performs an action that demands my reception and response to what it communicates. In this instance, there is a common legibility, a clarity of understanding around how to react to the presence of this particular mark, and yet, the challenge is that the presence of a mark is not a guarantee of its legibility to the observer. Claudio Pescatore and Claire Mays (2008) have noted the challenge of drafting markers that communicate across timescales the presence of hazardous waste for future comprehension. Merixtell Ramírez-I-Ollé's (2019) epistemographical research has shown that the rings that mark the inside of a tree can be used to affirm and reconstruct climate histories, while simultaneously insisting upon a stance of uncertainty given the shifting nature of scientific knowledges, opening to a response grounded in situated knowledges (Haraway, 1988). What I am ultimately suggesting is that to encounter waste as an anthropogenic mark is an invitation to read and respond.

Here, I wish to conceptualize waste as an inscriptive presence, as a form of marks on environmentally degraded landscapes, for two connected reasons. First, to signify waste as a material presence and record of impact over time, and second, to invite the (never neutral, always-already implicated as a co-producer in global waste flows) observer of marks to think with waste as marks as an orienting concept, as marks to which, like the clockmaker, we may not immediately understand, but are nonetheless called to respond. When I refer to waste—and the effects of waste on the accompanying landscapes that are produced for its accumulation and management—as marks, I am speaking to the ways in which its presence renders itself readable. The inscriptive impact of landfills, and the waste they contain (Reno, 2016) are such that, for most, they are one of the more familiar signifiers of waste and its place in contemporary life. The way I intend to articulate waste as marks is to offer some small metric for reading the presence of waste as records of

impact over time. There are reasons, and structures in place to remain at a distance from the ways in which waste has marked the world. The utility in reading waste-as-marks, even in their indeterminacy, is to counter what Myra Hird (2021) has identified as "an unintended (and often unacknowledged) fallout of capitalism, we have developed sophisticated technologies to hide our discards: waste is buried, burned, gasified, thrown into the ocean, and otherwise kept out of sight and out of mind" (p. 28). In fact, it is likely that upon encountering waste in the quantities required to confront the scale of the problem, many of us would be uncertain how to respond. Inherent to how I am seeking to trouble human-waste relations is the question of how to embrace (il)legibility while still being in a position of needing to respond to the crisis at hand.

2.4 Witnessing

Witnessing is grounded in the situated materialities of times and places, and I ought to detail some of the particularities of where this research took place before I go further. The Quarry (as I will refer to it from hereon) is a complex site of multiple historicities, marked in different ways by human impact. The site is located on the traditional territory of the Aniishinaabeg, Haudenausaunee, Ojibway, and Chippewa peoples, nestled into the Niagara escarpment in what is currently known as St. Catharines, Ontario, Canada. The lands were in use as a limestone quarry between 1957 and 1972 before its conversion to a municipal landfill, which was operational between 1976 and 2001, and then 'naturalized' into what is now a post-landfill site for public use. During the summer we walked with the Quarry, construction crews were ever-present, working on decommissioning the gas wells that previously vented excess methane from the infilled quarter-century of waste that lay beneath the trails we walked. From this abridged history I hope to impart some of the scale of human intervention required to produce and maintain the Quarry as a "usable" space. Additionally, I want to draw attention to the way in which years of limestone mining and the ongoing presence of waste at the Quarry reflect the site's entanglement with the logics of extractivism inherent to settler-colonialism (Szeman & Wenzel, 2021). While the Quarry's multiple historicities foreclose certain ways of encountering the landscape, encountering the Quarry with this tension in mind is one way of (re)orienting our witnessing practices around a non-linear conception of time that

might attend to a multiplicity of accountabilities.

How might we engage practices of witnessing that attend to the scale and temporalities of landscapes produced in relations with waste? As I have argued elsewhere (Jobb, 2023) figuring particular places as blasted landscapes (Tsing, 2014) is one way, requiring first that we witness their state of blastedness, and attend to the messy, speculative work across multiple temporalities. Artist and scholar Jenny Odell (2021) speaks to looking upon the infrastructural architectures of waste as witnessing across and between timelines, in that "they are already monuments; that is, they are monuments of a time (now) when the world careened toward total environmental irresponsibility, when more and more was borrowed against a disappearing future and we all knew it" (p. 42). Perhaps it is the longstanding association with witnessing as a practice of objectivity that demands a careful reconsideration of what witnessing might otherwise be, but for me, the central delimiting tension to witnessing is the perceived absence of relationality. Certainly, there are scholars who have expanded the potentialities of witnessing to dispel the myth of objectivity. Building on Michelle Murphy's (2017) figure of the immodest witness—itself built upon Donna Haraway's modest witness—Ruth Fletcher (2020) argues that feminist witnessing practices are concerned with worlding beyond the self, witnessing the "reproduction of life itself" (p. 125) through complex "connections between objects across borders" (p. 134). To bring this back to waste, it is that transgression of human/non-human borders that may aid in reconceptualizing witnessing practices. The endurance and scale of waste can be understood as a relationship grounded in reproduction, as Marco Armiero (2021) suggests. I propose a different mode of witnessing is possible that, in the context of human-waste relations, can attend to intra-subjectivity, bringing the one who witnesses in closer relation with the subject of the witnessing to open to a mutual co-production.

It is admittedly an odd proposition to see waste differently. This, I would argue, is for two reasons, both of which speak to disconnection from the broader structures that exist for managing waste. First, how neatly our quotidian encounters with waste are enfolded within what Cynthia Enloe (2011) names mundane matters, how their daily performance appears so seemingly natural and absent of relationality. Second, how, for many of us,

when pressed to consider waste, the affective response is one of disgust. Writing of relations with everyday food waste, Gordon Waitt and Catherine Phillips (2016) pinpoint disgust as potential leverage for shifting domestic behaviour. Similarly, Josh Reno (2016) describes disgust as a prevalent affective response by labourers at landfills whose daily lives are entangled with waste. While both examples are honest and understandable affective reactions to waste, I remain troubled by the locus of disgust remaining at the level of the individual. Individuals cleaning rotting vegetables out of their refrigerators experience disgust. Individuals labouring in landfills experience disgust. It is the possibilities for refiguring the collective quotidian witnessing as practices grounded in affect and relationality I am perhaps most interested in. I follow scholars from childhood studies and early childhood education who have separately taken up Donna Haraway's figure of the mutated modest witness to show to how disrupting the construct of the neutral observer of early childhood education might enable educators to witness situated, ethical relationality between children, educators, and the more-than-human world. For Fikile Nxumalo (2016; 2021), witnessing and testifying-witnessing are put to work in generating decolonial child-forest relations and for contesting anti-Blackness in child-water relations. For Mindy Blaise, Catherine Hamm, and Jeanne Marie Iorio (2017), witnessing activates the 'lively stories' of early childhood relationality with common worlds. Sophie Hadfield-Hill and Cristina Zara (2020) position children as what they call geologic agents, witnesses to and participants in all the complexities of a world in ecological crisis. Across each of these examples of witnessing as a practice for research with young children is a turn away from normative and extractive modes of being with the world, and a gesture toward relationality, an attunement to living *with* the more-than-human world.

2.5 Wit(h)nessing for Witnessing Otherwise

Since 2016, American poet Allyson Paty has nurtured a project that bears witness to a form of relationality that centres, rather than obfuscates, her participation and implication

in the global waste flow, a relationship many would prefer to ignore. In daily Instagram[6] posts, Paty has photographed each piece of compostable, recyclable, or otherwise discarded waste she produces in a day. Writing of her practice in The Baffler, Paty rejects the neoliberal discourse of managing waste and shifting individual habits as meaningful efforts in reducing global waste flows. For Paty, the project is one of a cumulative noticing which, as of June 2024, stands at over 7000 posts. Of the intention behind her project, she states, "I am trying to see my waste" (2021, p. 52). On a minor scale, we might understand Paty's documentation as an ongoing attunement to what it means to insist upon nearness to, rather than distance from, waste. I view this as a kind of witnessing which echoes (in a Haraway-ian sense) a *being*-with, or *staying*-with (Haraway, 2016), or simply, an encounter that requires a state of *with*-ness.

First emerging from feminist psychoanalytic theory, wit(h)nessing was developed by Bracha Ettinger (2001; 2006) as a practice in co-poiesis, a "witnessing while resonating with an Other in a trans-subjective encounter-event" (2006, p. 220.) For Ettinger, this experience of trans-subjective co-composition rejects the construct of a neutral observer, insisting upon a being-and-becoming-*with* in the labour of witnessing. Louise Boscacci (2018) builds on Ettinger's framework to offer wit(h)nessing as a proposition for attuning otherwise to human and more-than-human co-relations in the Anthropocene. Following Ettinger and Boscacci, wit(h)nessing has been utilized to (re)figure life with climate change (Verlie, 2022), microbes (Brives, Rest, & Sariola, 2021), and researcher positionality in transdisciplinary multispecies fieldwork (Marr et al., 2022). Where Boscacci extends Ettinger's word-concept of wit(h)nessing to emphasize the "affect and more-than-visual sensing and mattering in our humanimal encounters (p. 343), I demarcate the neologistic wit(h)ness marks from witness marks (and thus from wit(h)nessing) as a way of attuning to the ethical tensions of life in what Anna Tsing has named 'blasted landscapes' (2014). In the same way horologists rely on witness marks to tell the story of what came before, of what lies before them in the moment, and to gesture toward what might come next, I offer wit(h)ness marks as a conceptual tool, grounded in

[6]Paty documents her waste on Instagram at https://www.instagram.com/trash_days/

material encounters with the more-than-human world, for engaging with the implicatedness and non-innocence of our relations with waste, and landscapes marked by its presence.

2.5.1 Wit(h)ness Marks as Affective and Relational

Working in a project that focuses on activating speculative, experimental pedagogies for alternative futures, I want to highlight affect and relationality as two defining features of wit(h)nessing for Boscacci (2018), who writes that, as a practice, wit(h)nessing "renders any *a-bodied* encounter explicitly relational: it is an encounter-*exchange*". In characterizing wit(h)nessing as an encounter-exchange, Boscacci is arguing that wit(h)nessing is an affective and relational practice contingent on "*co-poiesis—co-making*" wherein "there is no I without a non-I" (p. 345). In our walks with young children, it was this affective and relational becoming-with between child-educator-researcher-Quarry that I wanted to remain attuned to in the practice of witnessing waste as particular marks. I conceptualize wit(h)ness marks as a coming into being with the material and affective changes—the noticeable markings, tracings, cuttings, rubbings, and other do-*ings*—that point to the occurrence or presence of a relational encounter, the practice of bearing witness to anthropogenic harms that spark a reckoning with what has been done in the name of human exceptionalism. Some of the marks existed before we began walking with the Quarry, such as the clay-bottomed borrow-pit pond—a byproduct of the Quarry's prior use as a limestone quarry. Other marks emerged with our arrival and grew larger with each passing week—such as the points of erosion that revealed the landscaping fabric beneath the trails as we walked throughout the summer. Regardless of their scale or origin, it was through engaging the marks as affective and relational modes of wit(h)nessing that we worked through our own sense of being implicated in trajectories of waste in places like the Quarry.

2.5.2 Affective Wit(h)ness Marks

Attuning to the temporalities and scale of waste, as we did during our walks, *should* invoke affective responses that resonate through our continued encounters. To tease this

further I turn to Brian Massumi (2015) for whom, "in every shift of attention, there is an interruption, a momentary cut in the mode of onward deployment of life" (p. 53). Recasting waste as wit(h)ness marks is to encounter a kind of cut, an inscriptive incision on our everyday sensing of the world toward which we must focus and respond. Kathleen Stewart (2011) names this mode of being atmospheric attunement, a form of sensorial worlding undertaken in order to "figure their significance" (p. 452). Enacting affective dispositions flatten distinctions that separate humans and non-human Others to make our relations with waste more legible to ourselves and others.

2.5.3 Relational Wit(h)ness Marks

Central to how wit(h)nessing is distinguished from witnessing and how I make the move from witness marks to wit(h)ness marks is Boscacci's argument that we are always "*already in encounter-exchange*" (p. 346). This matters for thinking through how we might reconceptualize co-constitutive waste relations. Scholars thinking with common worlding pedagogies within early childhood studies have argued for an expansive understanding of living relationally with the world to situate children as deeply embedded in co-becoming relations with more-than-human Others (Common Worlds Research Collective, 2020; Taylor & Giugni, 2012; Taylor, 2020). Like Sarah Bell, Lesley Instone, and Kathleen Mee (2018) have written, we enter into witnessing as bounded within relationality with the more-than-human world *because* we are affected by that which we are witnessing. In the context of our walking practices with young children, our pedagogical encounters are messy and entangled with the ongoing pasts, presences, and futurities of the Quarry. Activating wit(h)ness marks in our walking with/in the Quarry meant engaging in affective, relational, situated waste pedagogies that made visible complex and non-innocent *encounter-exchanges* between children, educators, and the waste which co-composes our common worlds.

2.6 Attuning to Wit(h)ness Marks for Encounters with Waste

In the examples that follow I am paying attention to the multi-temporal *encounter-exchanges* that occur in child-educator-researcher waste relations to help clarify what I

mean by wit(h)ness marks. Using GIMP, an open-source photo manipulation program,[7] I created three composite images from overlaid photographs from our walks with the Quarry as a means of bringing a sense of being-with multiple timescales into conversation with each other. These images were not meant to imply contrast, but instead to point to the ways in which the marks our encounters with waste produced or contributed to during our walks with/in the Quarry are in relation with the existing trajectory of waste-as-marks on the land, air, and water at this particular landscape.

In the first image (see: figure 1) I have overlaid two kinds of tramplings—one focused on the ridged remnants of the treads of an excavator, carved into the mud, witnessed over the course of the excavation of the gas wells, and the other a flattened pathway the children wore into the earth as a shortcut to take while we made our way into the Quarry each day.

[7] https://www.gimp.org

Figure 2 Wit(h)ness Mark 1—Pathways

Next, I have overlaid two images that bear witness to the Quarry's present-day relations with waste (see: figure 2). I began with a photograph of the trail of waste discarded by park users and ensnared in the bramble and tall grass that lined the pathway into the Quarry. This growing pile of plastic grocery bags, beverage cups and fast-food packaging, and the plastic-wrap packaging from roofing materials were an immediate introduction to the site and its ongoing history with waste. The second photograph shows discarded piping from the removal of the gas flares, dumped in the tall grass by the construction crew.

Figure 3 Wit(h)ness Mark 2—Meeting Waste

The last composite (see figure 3) shows a collection of snails we encountered in the trampled grass at the foot of a hill—some living, some empty and bleached shells—overlaid with an image of one of the children sifting through a pile of upturned waste, a discovery at one of the sites of the excavated gas valves. The child holds a floppy disk, a discarded relic from the early days of computing.

Figure 4 Wit(h)ness Mark 3—Past(s) and Present(s)

There are two interrelated commonalities across these examples I have highlighted that help to clarify what I am arguing for in conceptualizing wit(h)ness marks as uncertain and multi-scalar dialogues. First, that wit(h)ness marks are affective dialogues across time, and second, wit(h)ness marks invite a relational being-with waste as they traverse queer temporalities. For example, attending to the multiple forms of tramplings as tangible marks was an opening for children to begin to witness their presence at the Quarry in relation *with* other, concurrent anthropogenic efforts to manage and maintain its current state. Interestingly, the piping (see figure 2) drew a more amplified response than the waste along the trail, echoing Tim Edensor (2005), who has argued that

industrial debris more readily appears out of place, while objects we regularly encounter (even waste) become unnoticed, seen as "part of the way that things just are, beyond critical appraisal" (p. 312). Naming and noticing our wit(h)ness marks also made possible cross-temporal and multispecies dialogues, as was the case in stumbling upon the pile of floppy discs, made visible by the excavation of gas valves, which disrupted the landscape enough to uncover marks of the prior generations' e-waste, but also rests in an area of the Quarry where snails live and die. The children were drawn to the newly revealed waste, and their affective responses ranged from upset by the presence of waste, to curiosity at unfamiliar artefacts, to concern for the snails and their living with waste. Beyond individual responses, this has interesting implications for the question of scale as Max Liboiron and Josh Lepawsky (2022) note, given the incongruence between industrial waste resulting from electronics manufacturing far outweighs post-consumer waste when discarding electronics. Therein reveals the challenge, where one is compelled to respond in spite of the incongruence of scale that exists in this kind of coming-into-relation. Like witness marks that inspired this concept, in spite of our uncertainty around how to respond, wit(h)ness marks are nonetheless an invitation to witness and engage differently with waste.

2.7 Non-innocent Entanglements: Responding to Wit(h)ness Marks for Co-composing Waste Futures

The examples I have offered that emerged from our walking-with the Quarry are illustrative of the ways in which we commune with waste across time. Wit(h)ness marks are a continual reminder that our relations with waste are non-innocent. In the context of this project, we disrupt the land and foliage; we walk past scattered waste as we traipse down the pathway into the Quarry; we step over discarded piping that reminds us of the history of waste underfoot; we hear the crunch of snail shells under our feet with every step, we discover the e-waste of prior generations while taking photographs and videos and voice notes and field notes with what will become future e-waste. Mirroring these is the fact that our walks took place alongside anthropogenic shifts in the shadow of past anthropogenic shifts, and prior to what will surely be future anthropogenic shifts to the

lands, air, and water at the Quarry. While I wish to be careful not to equate the footsteps of educators and children with the markings left by construction equipment and the Quarry's history of extraction and waste, which sits amidst the larger problematic of scale when comparing industrial to consumer waste, following Boscacci (2018), our presence at the Quarry *is* constitutive of an encounter-*exchange*. Our collective subjectivities change and are changed by our walking practices with the Quarry, whose past, present, and future is imbricated in broader structures of ongoing anthropocentric impact. Being explicit about noticing and naming our wit(h)ness marks and considering how we might respond reminds us that we are implicated in the pasts, presences, and futurity of spaces like the Quarry in our non-innocent relations with particular places in particular times.

Also important is that attuning and responding to wit(h)ness marks is collective work, particularly when reckoning with how to live in relation with crises that can feel insurmountable. Thinking with Jenny Odell (2023), there exists the possibility for coming together amidst the morbidity of a dying planet, but that also contained within that coming together is the power to resist. She writes that "the present cannot and should not be borne alone. Grief, too, can teach you new forms of subjecthood. I think of a kind of double-ness, a mutuality with the power to witness and not turn away." (p. 201). Odell is not alone in identifying the need for relationality in making sense of grieving in the face of environmental degradation. In writing on the effects of accelerating climate change as a shared experience of mourning between human and non-human others, Ashlee Cunsolo Willox (2012) argues for an attunement to the ethical and political value of environmental grief as a transformation of subjectivities. I see a collective naming and responding to wit(h)ness marks as being important for two reasons. First, it serves to disrupt discourses of techno-fixes which centre individual habits and fail to account for the incongruence of scale at the heart of the global waste crisis, while grounding the effects of the global waste crisis in its material impact on the shared lifeworlds of human and more-than-human Others. Second, it opens to a refiguring or transformation of subjectivities via what Ettinger (2006) calls "differentiation in co-emergence" (p. 218). This is ultimately a pedagogical proposition, one that calls for becoming different together in relation with waste.

Environmental and ecological concerns are of pressing and existential urgency. I have offered wit(h)ness marks as a concept grounded in, but not limited to, the particular knowledges that emerged in dialogue with particular experiences that have shaped my pedagogical thinking in early childhood education. However, it is my hope that there are continued multi/interdisciplinary possibilities for engaging wit(h)ness marks within and beyond the boundaries of early childhood education. In the context of this particular project, I have attempted to show how attuning to our wit(h)ness marks is one way of crafting differently response-able pedagogical dispositions when attending to children's non-innocent relations with time and place in complex landscapes shaped by relations with waste. However, children are not the only implicated parties, and waste is not the only anthropogenic harm etching itself onto water, air, and land, and thus, wit(h)ness marks must not be limited to marks attributable to the presence of children and waste. Within what is colonially known as Canada, we might similarly understand the tailings ponds (and their leakages) that are the result of large-scale crude bitumen extraction in the Athabasca Oil Sands Region, or the increasing prevalence and scale of climate-induced wildfires as the production of wit(h)ness marks that re-orient our lives. What is common across these examples is the inability to extricate human and more-than-human dependency and mutual co-production. Reading wit(h)ness marks as inscriptives that reflect our current way(s) of living bring into view the two dissonant timelines of the Anthropocene that Clare Colebrook (2017) describes, where "species and geology are now coarticulated; we look at the earth—now—as if, in our future absence, we will be readable as having been." (p. 6). As I have described them, wit(h)ness marks are a testimony to seeing our co-relations with waste across timescales, and to bear witness in this way is to be *with* and *of* the ongoing anthropogenic harms.

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Interlude

And you know when it's all gone, something carries on
And it's not morbid at all just that nature's had enough of you
When my blood stops, someone else's will not
When my head rolls off, someone else's will turn
You can mark my words, I'll make changes to earth
While I'm alive, I'll make tiny changes to earth

-Frightened Rabbit, *Heads Roll Off*

Chapter 3

3 Multispecies Wit(h)nessing with Children and Animals: Living and Dying Well Together

Abstract

The contours of human and more-than-human co-existence are of mutual concern in the context of the global waste crisis, opening to questions for early childhood education on living and dying well together that are grounded in relational ethics. This paper attends to how and why the lifeworlds of children and animals come to intersect in waste landscapes as a testament to the multiscalar (e.g., geological time scales; epochal time scales) complexity of human and non-human entanglement in global waste flows and as a pedagogical starting point for children's relations with life and death in the Anthropocene. To do so, I draw on Louise Boscacci (2018) and Donna Haraway (2016; 2018) to show how wit(h)nessing can help attune early childhood pedagogies toward living and dying well with others in waste landscapes. Taking waste as one of the urgent anthropogenic crises impacting childhood in the 21st century, this paper explores the possibilities in children's fleeting encounters with multispecies life and death in a former landfill as moments for uncertain, frictional, and indeterminate pedagogical experimentation with the dispositions required to craft alternative futures.

3.1 Introduction

This paper explores the entangled common worlds of children and animals in environmentally degraded landscapes as generative meeting spaces for rethinking ethical accountabilities alongside more-than-human Others. Moreover, it activates a connection between a refrain from Donna Haraway (2016) and Louise Boscacci's (2018) word-concept *wit(h)nessing* to ask what pedagogical dispositions we might put to work in early childhood education to grapple with some of the ethical questions surrounding how to

live and die *well* together.[8] Young children's multispecies encounters are affective meeting places, sites of complex worldings (Nxumalo, 2016), and sites for shared vulnerabilities (Taylor & Pacini-Ketchabaw, 2015), and here I situate these encounters as worlding with more-than-human life and death in waste landscapes. I draw on what I characterize as fleeting encounters with multispecies life and death between preschool and school-aged children, their educators, snails and geese at a former landfill, now naturalization site in southern Ontario, Canada to counter child-centred pedagogies which reinforce uneven human/non-human binaries. Instead, this paper highlights three small moments from a walking based post-qualitative inquiry to show the possibilities for wit(h)nessing in ways that enact fleeting, relational ethics that attend to the uncertainties, frictions, and indeterminacies of living and dying well with more-than-human Others in landscapes co-constituted by relations with waste.

The research that informs this paper took place at the Glenridge Quarry Naturalization Site, a unique landscape on the traditional territory of the Aniishinaabeg, Haudenausaunee, Ojibway, and Chippewa peoples in what is currently known as St. Catharines, Ontario, Canada. It is important to read waste landscapes through Canada's ongoing history of colonialism. Operational as a limestone quarry between 1957 and 1972, the lands were converted for use as a municipal landfill between 1976 and 2001, and then underwent a post-closure 'naturalization' process, opening as a recreation site in 2004 after the coordinated efforts of a citizen-led environmental activist group. Landfill conversions are increasingly prevalent, such that sites for recreation and leisure now rest atop decades of waste, while the consequences of such nearness to waste for both human and animal health and wellbeing point to their potential harms (Green, Boughey, and Diaz, 2014; Xu, Due, Dong, Nai, Liu, and Huang, 2018). Given the history of this particular place as a former landfill, the multispecies encounters I focus on occurred in a landscape affected by specific forms of waste, and I use the term throughout to refer to

[8]To be clear from the outset, the death was unidirectional and limited to our non-human companions. No children died during the duration of this project. They will die someday.

what is most commonly known as municipal solid waste.[9] The ongoing presence and impact of waste at the Quarry was made evident as our walks coincided with an infrastructural project which decommissioned the existing gas ventilation system, and our paths frequently brought us in close proximity to the removal processes of the valves and gas wells which previously jutted from the hillside.[10] The scale of the construction project and the venting process it sought to obscure were apparent upon entering the Quarry as labourers relocated its replacement to a more conspicuous location beyond the trails at the site's eastern boundary. It is with this transitionary period for the Quarry in mind that this paper takes up Boscacci's proposition of wit(h)nessing co-relational encounter-*exchanges* on a "planet in flux" (p. 346) as a framework for thinking with children's living and dying well with multispecies Others in co-constitutive waste relations. More than that, I show how researchers, educators, and children enacted early childhood pedagogies that engage questions of living and dying in waste landscapes beyond scientific determinism, and instead as questions of living and dying well with others grounded in emergent and situated ethical co-relations with shared existential concerns.

The Quarry (as it came to be known by the children and educators) is one of many examples of the mutation of post-closure landfills - sites that are since converted into public spaces and parks that are read more legibly as 'natural', but where in fact a tremendous amount of human intervention is required to maintain their post-capacity life as a recreation and leisure space (Hird, Lougheed, Rowe, & Kuyvenhoven, 2014; O'Hare, 2021; Vaverková & Koda, 2023). There is a sense of absurdity to the realization that our walking practices occurred atop a quarter century of buried waste, where its immediate material presence is obscured and its long-term effects cast uncertainty over coming to terms with the scope of how fully life and waste are enmeshed. Yet, it also

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[9]My aim in this paper is not to reconstruct or undo existing categories or origins of waste, yet I also recognize the scalar discrepancy between industrial and post-consumer waste. See: Hird, 2021, and Liboiron & Lepawsky, 2022 as just some of the examples of scholarship on the scalar complexity of the global waste crisis.

[10]See: Jobb (2023) for a more in-depth exploration of children's encounters with gas wells and valves.

opens to rich pedagogical potential for taking on waste as a significant concern for childhood in the 21st century and engaging the indeterminacy of life and death in landscapes like the Quarry. Walking with post-closure landfills amplifies affective responses for those of us who seek to understand how we might counter the anthropocentric inscriptions onto lands, air, and water that have led to our common co-inheritance of ruins (Edensor, 2005). By this I mean, now that there is some collective acknowledgement of what JP King calls the "sensorially absurd" logics that undergird the existence of spaces like the Quarry (2015, p. 64), how might we go about experimenting with and activating the conditions for future living and dying in ways that refuse their grasp? Beyond the absurdity of escalating ecological crises there is also plenty of despair (Bauman, 2015), and, perhaps with good reason, little cause to hope for a resolution to the scalar incongruencies (Liboiron & Lepawsky, 2022) between individual waste and that which is ensnared in capitalism's waste flows. With allusions to death rituals, Rebecca Altman (2014) writes of the difficulty of interrogating "how we came to believe that certain things we bury could remain outside the cycle of life, or that they would stay where we put them" (p. 86). Altman conceives of landfills as a sort of burial site, not for forgetting, but rather for grappling with how and why burying waste expresses a denial of death that inevitably comes to matter. That the growing temporal problem of plastic waste will endure, while all living things—including children—will meet a certain biological end is enough to provoke an understandable sense of futility. Conversely, through their artistic endeavours, scholars and artists like Pinar Yoldas (2020), who creates post-human life forms from discarded plastics, and Jenifer Wightman (2018), who paints with mud and microbes from toxic landfills, respectively illustrate the potential for a playful, lively attunement to the ways in which life, death and waste come to matter together in the creation of something new. The possibilities for (re)composing multispecies relations with waste, I argue, is a transgression of the separation between human/more-than-human/waste, a *with*-ness that erodes distinct and binary categories in favour of interdependence. Thinking closely with Boscacci (2018) and Haraway (2016), I take the intersections of waste, childhood, and animals as co-productive agents and work their contours via encounters with a snail and geese to emphasize the possibilities for

wit(h)nessing as a practice of living and dying well with more-than-human Others in fleeting encounters.

3.2 Wit(h)nessing Life and Death in the Anthropocene: Living Well with Others

How matters of life and death are tended to in the Anthropocene is often a question of proximity, by which I mean not only physical proximity (though that helps) but an affective and relational attachment, a witnessing borne of closeness to, or being-*with* the shared experience of living and dying on a damaged planet (Nelson, 2020; Rose, 2013). For Anna Tsing (2014), this is a problematic of subjectivity, wherein "degraded ("blasted") landscapes produce our livelihoods" (p. 87). This suggests more than a question of proximity, but that it is through our common affective relations with waste that we come to know ourselves and others. Threaded throughout how I have come to conceptualize the children's encounters with snails and geese in waste landscapes is Louise Boscacci's (2018) work on wit(h)nessing. Elsewhere, in what I view as a companion paper (Jobb, in preparation), I have built on Boscacci's arguments for refiguring human and more-than-human co-poiesis to develop the neologistic concept of wit(h)ness marks as, in part, a locus of inquiry for attuning to living with waste across timescales. In this paper I return to the concept in its original form to insist upon a nearness to the indeterminacies of multispecies co-existence with waste. Working within the environmental humanities, Boscacci borrows from feminist psychoanalysis via Bracha L. Ettinger (2001; 2006) to frame multispecies meetings as trans-subjective connections between "*I+non-I*" (p. 345), a form of witnessing that refuses the artifice of scientific objectivity. Specific to this project, I am drawn to wit(h)nessing as a useful conceptual and pedagogical practice for disrupting human/more-than-human separation and for tending to multispecies relationality in ways that make visible what Boscacci names "an encounter-*exchange*" (p. 345). Wit(h)nessing makes possible a sense of becoming-together. Children and the more-than-human Others with whom they share a common world are not separate from a form of subjecthood that comes into being, in part, due to the production, accumulation, and management of global waste. Furthermore,

if children's subjectivities are, for now, unavoidably co-emergent with animals and waste, it matters a great deal that we turn our attention toward the possibilities for living and dying well. As Céline Leboeuf (2021) argues, "we owe it to all beings living today the conditions to flourish" (p. 285).

The inescapable ways in which waste is now intricately laced through our lives and deaths points to the small openings for resisting the impulse to tether the waste crisis to individual failings (see: Liboiron & Lepawsky, 2022 for an in-depth analysis of the chasm between individual and systems of waste). Instead, it is in response to the messy, uncertain co-poiesis of animals, children, and waste that I aim to interrogate early childhood studies alongside a question posed by Boscacci, where she asks, "what might wit(h)nessing generate for feeling-thinking, making, and doing practices of the contemporary environmental humanities?" (2018, p. 345). There is an urgency in the swell of multidisciplinary scholarship that attunes and responds to the myriad ways in which shared life and death in the Anthropocene are produced. As just one example, plastic waste and its ubiquity has given rise to both grave concern and uncertainty as to how broadly it continues to live in the world with humans and animals. Chris Jordan's (2010) photographic and video documentation work illustrates the deadly co-mingling of plastics and the albatross population of Midway Atoll, while broadening the scope, there is heightened global awareness over the accumulation of microplastics within child and adult bodies in unknown quantities and outcomes (Mohamed Nor, Kooi, Diepens, & Koelmans, 2021). Moreover, what are the specific concerns that highlight the ways in which children's lives are already imbricated in webs of living and dying in the Anthropocene? What does it mean to live and die *well* together? For Haraway (2016; 2018), in what has become a familiar invocation for critical scholars, living and dying well is an act of *staying with the trouble*, a refusal of Western onto-epistemologies and their propensity for rapid techno-fixes that further entrench logics of dominance and mastery over the non-human world. In this sense, landscapes like the Quarry are always-already entangled in ongoing multiscalar relations with waste and logics of extraction that are easily reduced to systems and structures larger than our capacity to respond. There is a *with*-ness inherent to both Boscacci and Haraway's speculative work that is useful for attuning to the small moments of life and death in waste landscapes—a thinking-*with*,

being-*with*, becoming-*with*, living-*with*, dying-*with*—in spite of and embracing the uncertainty that grounds these knotted feminist composting knowledges in a relational do-*ing*.

Many scholars have explored life and death amidst the myriad anthropogenic crises which shape human and more-than-human co-existence. Anthropocene assemblages are thus a useful conceptual starting point for contesting life and death as more than depoliticized and static biological beginnings and endings, stripped of their surrounding social-political-cultural contexts. This is particularly salient for attuning to how childhood(s) in waste landscapes are shaped in settler-colonial states such as Canada. Elizabeth Povinelli's work on geontologies is useful here, which she conceives as an anticolonial framework to analyze the governances of power over life and nonlife emerging from late liberalism. For Povinelli, the categories *bios* (life) and *geos* (nonlife) represent a false binary, worth collapsing (Povinelli, 2016; Povinelli, Coleman, & Yusoff, 2017). Moving Povinelli's framework into early childhood studies, Emily Ashton (2022) figures Anthropocene childhoods through geontologies as a means of disrupting the biosocial child (life) at the centre of early childhood education as something distinct from the objects of knowledge (nonlife) at the centre of pedagogical inquiry, instead arguing that life and non-life are "mutually co-constitutive" (p. 67). Echoing Povinelli's excavation of living and dying under the logics of settler-colonial states, Kim TallBear (2017) disrupts what she names the life/notlife binary while also critiquing the failures of non-Indigenous thinkers to account for Indigenous onto-epistemologies, which long precede new materialist arguments for the animacy of non-humans. For many in the environmental humanities, attending to multispecies ethnographies is an ongoing kin-making project, narrating ongoing histories of birth and extinction together that intersect with waste in times of environmental degradation (Van Dooren, 2014a; 2019; Van Dooren, Kirksey, & Münster, 2016; Van Dooren, Rose, & Chrulew, 2017). From these scholars and their work with more-than-human Others in an age of mass-death, I take kinship practices as inspiration for how relational ethics may be enacted in young children's multispecies encounters.

Waste and its impact on human and more-than-human co-existence is an incursion that spans indeterminate temporalities to open to urgent questions of how to live and die well with materials that will outlive us. Heather Davis (2015; 2022) examines the lifespan of plastic as an urgent waste matter, one that endures in spite of multispecies death, and in ways that disproportionately affect racialized people. Broadly, what I am pointing toward is a desire to disrupt the cleave in temporalities and ontologies in former landfills like the Quarry to insist upon human and more-than-human co-mattering in ways that have yet to be determined but nonetheless orient toward flourishing as we learn to live and die with waste. I read a similar sentiment through Myra Hird's framing of landfills as "ubiquitous places of forgetting" (2013, p. 107) Likewise, Rebecca Altman (2014) laments over the logics of separation that undergird our reliance upon them as a mode for waste disposal, speculating that, "perhaps it is our refusal to look forward, as if our actions would have no consequence to some remote time or place, as if the future would never arrive" (p. 86). It is the removal of our *selves* from the equation that requires continual interrogation. Similarly, I read this line of thinking as a form of grappling with cross-temporal ethical accountabilities through Joanna Zylinska's (2014; 2015) work on what she calls minimal ethics. Zylinska's formulation of ethics is instructive "as a way of living a good life when life itself is declared to be under a unique threat" (2014, p. 11), but also in how clearly she articulates ethics as an engagement with post-Anthropocentric[11] responsibilities. How then might we tend to the ethics of living and dying well together through moves toward non-hierarchical relations between young children and animals? Other co-relational subjectivities are possible. Another world *is* possible.

3.2.1 Common Worlding

I also want to clearly position this research in dialogue with an existing trajectory of critical early childhood scholarship that disrupts the divide between human/non-human and has argued for children's multispecies encounters as sites for generative emplaced, relational ethics (Taylor, 2013; Taylor & Pacini-Ketchabaw, 2018). I draw from critical early childhood scholarship emerging from and after the work of reconceptualist scholars

[11]Post-Anthropocentric as in logics, not post-Anthropocene as in the epoch.

(e.g., Canella, 2005; Dahlberg, Moss, & Pence, 2013; Pacini-Ketchabaw, 2010) who, for decades, have named and contested the dominant discourse of development in order to counter hegemonic knowledge regimes in early childhood. I situate this work as an enactment of common worlding ethos (Taylor & Giugni, 2012), an interdisciplinary feminist collective project which has transformed early childhood studies to attend to the conditions for research which engages the 'posts'—e.g., research that attends to the possibilities for crafting post-foundational, post-developmental pedagogies. The transgressive work of scholars within the Common Worlds Research Collective has expanded the boundaries of what is possible to think (and who it is possible to think alongside) in early childhood education, with particular attunement to feminist new materialism and post-human ethico-onto-epistemologies (Barad, 2007) for refiguring children's ethical co-relations with the more-than-human world.

One enduring through-line in much of the scholarship on common worlding points toward questions of what it means to live well with others in early childhood in pursuit of co-relational flourishing (Hodgins, Kummen, & Merewether, 2022; Vintimilla, 2020; Vintimilla & Pacini-Ketchabaw, 2020). The endurance of such questions points to the complexity of generating pedagogies that are grounded in situated, responsive ethical attunement to shared multispecies concerns without collapsing into relativism, and work toward decentering of the developmental child in multispecies encounters (Pacini-Ketchabaw, Taylor, & Blaise, 2016). Attuning to living and dying well together makes a decentering move in common worlding pedagogies in the direction of Latourian (2004) 'matters of concern'. Angela Molloy Murphy (2018) thinks with Haraway to challenge nature/culture divides and to frame child-squirrel encounters as kin-making. Narda Nelson names death a "dance partner" (2020, p. 640) in her work on children's encounters with dead rats, in a move that disrupts discourses of childhood innocence in early childhood multispecies Anthropocene relations. The presence and how children and educators encounter death is a reminder of the discomfort of living and dying in the world together, while ethics are part of how we make collective decisions over what constitutes living (and dying) well.

3.3 Relational Multispecies Ethics

I have framed wit(h)nessing as an affective and relational attuning to understanding children's being and becoming as an always-already being and becoming-*with* more-than-human Others. For me, it is thinking through relational multispecies ethics that gives shape to how and why this project attends to the intricacies of both Boscacci and Haraway's provocations in children's common world encounters. For Thom Van Dooren (2014b; 2019), relational multispecies ethics are obligations for care that begin by recognizing co-constitutive worldings with more-than-human Others. Similarly, critical researchers within early childhood education have offered relational multispecies ethics as a counter-effort against extractive practices that position more-than-human Others as objects to learn from, rather than beings in their own right that children learn and become-*with* (Taylor, 2020a; Weldemariam, 2020). Affrica Taylor (2020b) uses children's common world encounters with rabbits to show how early childhood education is well-situated to attend to children's inheritances and non-innocent relations with anthropogenic harms. The intersecting lives (and deaths) of children and animals are made all the more complex when considering the ways in which waste operates as an ongoing existential threat. I draw inspiration from Fikile Nxumalo's (2018) research on bee-child worldings, wherein children's relational becoming-with is intricately entangled with the ongoing threat to bees. Similarly, I take up waste as a threat to worlding well (Blaise & Hamm, 2022) with snails and geese to activate wit(h)nessing as an orientation for the often messy and imprecise work of living and dying well together.

3.4 Fleeting Moments for Wit(h)nessing

In this section I share three vignettes taken from our ongoing pedagogical narrations to illustrate the ways we engaged these and other small moments to consider our presence at the Quarry in relation with the many non-human Others who live and die there. These fleeting moments which, in their entirety, span just a few minutes over the course of multiple mornings spent walking with the Quarry, are inspired by what Affrica Taylor calls minor stories (2020b). These moments, and my descriptions of them, are purposefully small in scope to attend to the possibilities for fleeting moments that disrupt

the boundaries between children/animals/waste to attune to wit(h)nessing practices. In each of these vignettes there is an ethical consideration to make that highlights the possibilities for de-centering the developmental child at the heart of early childhood education in ways that point instead to our co-relational entanglements as we live and die in sites like the Quarry. Although these moments occurred across separate visits, I have ordered them in a way that traces one of our frequent walking routes. to share the proximity with which we walked alongside the many lives and deaths at the Quarry.

3.4.1 Uncertain Living: The Snail in the Bottle

In the summer months it is warm and humid, and there are very few shaded spaces at the Quarry. One morning we stop near the butterfly meadow, where we often break for water and a short rest under the wooden pavilion. Some children sit at the picnic benches to cool off while others run to the edge of the meadow where the maintained grass ends and they run into the knee-high tall grass. We often encounter waste discarded in the tall grass, mostly food containers and wrappings, but on this morning a child finds a broken beer bottle and brings it to our attention. The children express concern for the safety of others who walk here at the Quarry and suggest we put the bottle in the garbage can, until we notice a snail crawling up and out across the sharp edge (see figure 5).

Sensing a moment to pause and consider our ethical accountabilities to intersecting lives and concerns in the Quarry, before we make a decision I invite the children to think together about how to respond and who might be impacted by our decision. A child suggests that the bottle is the snail's home, while another wonders if the snail is at risk of injury from the glass and suggests we pluck the snail from the bottle and move it to the grass. On this, our first meeting with the snail we decide not to move it, but instead move the bottle to a more visible area so others can be aware of its presence and avoid injury. We plan to revisit the meadow on our next walk and discuss what to do next.

On our second visit we notice the snail still inside the mouth of the bottle (see figure 6). The children suggest that the snail likes the bottle, but are still concerned for others who might be injured by the bottle. Still uncertain as to whether we should make a decision on

the snail's behalf, we decide to leave the bottle where we placed it during our first walk and revisit for a third time.

We return on a third day to find the bottle is gone. A decision has been made in our absense, by whom we cannot be certain. Another visitor to the park? A municipal employee tending to the landscaping?

Figure 5 Meeting the Snail in the Bottle

Figure 6 Returning to the Snail in the Bottle

From the moment we first encountered the snail our inquiries revealed intersecting uncertainties on how to respond. *Do we move the snail? Is the snail safe? Do we let the snail be? Are others safe if we let it be? What happened to the snail in between our second and third visits? In what ways are we accountable to others who may be injured if we leave the bottle?* The ethical commitment at the heart of how our movements intersected with the snail's movements highlight the possibilities for relational encounters that reject anthropocentric assumptions grounded in human exceptionalism on what is best for the Other, while also grappling with the uncertainty of ethics in what Zylinska (2014; 2015) frames as a distinctly human problematic. That relational multispecies ethics are practices that point toward co-flourishing did not make the ethical decisions easier, and it is the process of implicating ourselves as co-subjects, being-*with* the blurred lines between human and animal in what Zsuzsa Gille and Josh Lepawsky (2022) frame as uncertainties in waste regimes. In a move that troubles the sometimes extractive logics that early childhood education upholds, the focus here moves away from what facts individual children can learn and instead points to the uncertainty of making decisions about what constitutes living well together. Wit(h)nessing in this instance made it possible to attune to the trans-subjectivities that characterize relational multispecies ethics, where children come to understand themselves as part of complex webs of relations and intersecting responsibilities to the world beyond themselves.

3.4.2 Frictional Living Well with Geese

We have witnessed the presence of new life as tadpoles and catfish appear. The clay-bottom borrow pit pond is home to frogs and catfish and sometimes we witness a heron perched on a fallen tree whose branches jut out from the surface of the water. In the reeds along the edge of the pond there are ducks, but most frequently we encounter geese.

Most days the geese are content to let us rest by the water. They swim near us, not too close, alone or in small groupings, before turning around and swimming away. However, this morning as we approached the water's edge we noticed the geese moving as a flock more quickly than usual. As they drew nearer to the shore, we were hesitant, unsure of

how to respond until it became clear they were continuing to advance toward us, exiting the water in a clear indication that our presence was not welcome on this day. We oblige and backed away.

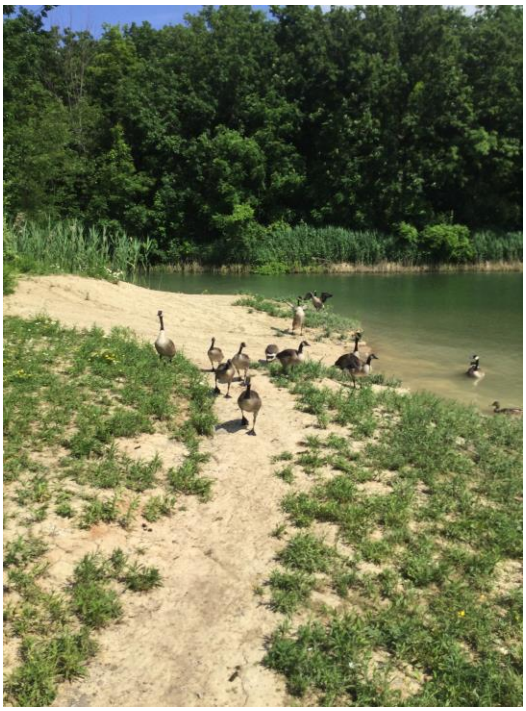

Figure 7 Backing Away from Geese

Life and death in and around the pond itself are attributable to the complex frictions between labour and capital, extractive forces upon the world. This body of water, as we have come to learn, is known as a borrow pit pond, and is the result of the Quarry's history as a site for limestone extraction, wherein the effect of long-term mining processes is an absense in the earth, a space that once held something which makes way for the gradual emergence of a new body of water. Waste, too, has affected the water and land surrounding it at the Quarry via leachate (Murray & Reynolds, 1997) and we often encounter a city parks employee monitoring groundwater quality. Despite its intricate histories with extraction and contaminants, it also sustains life and makes co-relating to non-human Others possible in encounters with geese. We have sat on the bank of the pond many times without intrusion from the geese, and yet, in this fleeting moment, our wit(h)nessing practices are responsive to the sometimes-uneasy realities of being-with

multispecies others. There is a friction to which we must respond. How then might frictional encounters with life animate the possibilities for non-dominant relations with animals? What might we learn about living and dying well with animals that do not need or want us around? For Anna Tsing (2005; 2017) frictions are co-productive forces, intersections between the living and non-living—humans, animals, landscapes all colliding in messy, weedy (reedy, in the case of geese and the pond) relations. In this encounter with geese, we attune to frictions to activate an ethic that is responsive without expectation of a longer-term relationship, cultivating an orientation that points toward collective well-being, a relationality that relies on (some) distance to constitute living well together.

3.4.3 The Goose in the Grass and Indeterminate Anthropocene Death

The movements of butterflies, bees, birds, and frogs, among others, mostly living, intersect with ours, but we have also met dead snakes, mice, and our footsteps have contributed to the death of countless snails in our travels. One morning, just to the left of the narrow path that cuts along the western edge of the borrow pit pond, the children notice a dead goose in the grass. The children wonder how it died. Lisa and I resist offering a response, waiting to hear the children's theories, letting the indeterminate cause hang unanswered. "Maybe it was a mean, old goose, and the other geese were tired of it," suggests Luna. "Maybe someone who hates birds came and fought it" offers Leo. Over weeks we return to the dead goose, stopping to witness its slow decomposition in the grass until little else is left but feathers.

Figure 8 Dead Goose in Grass

There is an irony to encountering death in landscapes like the Quarry, which only live on as usable spaces for recreation because of the endurance of the waste below. Our walks are replete with multispecies encounters, though most are with still-living Others. In this instance I draw a connection between goose death and the indeterminacy of waste's lifescale in places like the Quarry. The goose, as the vignette describes, was mostly gone in a matter of weeks, all that remained was the remnants of feathers left by scavengers, while we walked alongside inorganic waste ensnared in the tall grass scattered across all corners of the Quarry for the entirety of our summer together. Thinking with Rebecca Altman (2014) and her work on landfills as burial plots, there is a troubling indeterminacy that emerges in sites like the Quarry, and the human effort required to produce sites like the Quarry is a second form of burial, one that obscures how life and death are experienced within its bounds. We know little of how long some forms of waste

will endure, but we know it is likely to outlive those of us alive today. How we respond to wit(h)nessing death(s) for which we cannot accurately locate a cause is akin to wit(h)nessing the presence of waste. In both instances we cannot yet determine how to live and die well. For Myra Hird (2012), knowing waste is a practice of trying to make the indeterminate legible. Amidst the indeterminate accountabilities in child-waste-goose relations, perhaps returning to the goose as a respectful walking-with the Anthropocene's dead is a practice of wit(h)nessing that refuses its logics of disposability and forgetting.

3.5 Conclusion

I have shared how children and educators engaged Louise Boscacci's (2018) concept of wit(h)nessing and Donna Haraway's (2016) call to live and die well together as pedagogical orientations in fleeting encounters with more-than-human Others during our walks with a former landfill. I offered three fleeting moments from a walking-based project at the Quarry which showed how practices of wit(h)nessing can be activated to attune to the uncertainties, frictions, and indeterminacies of living and dying well in ways that enact relational multispecies ethics with snails and geese. Early childhood education is uniquely positioned to consider how enacting particular pedagogical dispositions is an act of subject formation that is in generative dialogue with the question of living and dying well together. I contend that, through wit(h)nessing, Boscacci offers early childhood education a powerful pedagogical orientation precisely because of the ways it opens to considering how to live and become different in concert with a multiplicity of subjectivities. As Cristina Delgado Vintimilla and Veronica Pacini-Ketchabaw (2020) write, "pedagogy is the way we open up possibilities for otherwise subjectivities and modes of relation" (p. 632). The slow violence(s) in landscapes shaped by waste (Davies, 2022) have a way of obscuring the possibilities for different forms of multispecies relations, ones grounded in ethics of care and reciprocity and tenderness, even in their messy uncertainties. My intention in this paper has been to attend to waste landscapes as sites of co-constitutive becoming-*with* in children's multispecies encounters. Amidst the global waste crisis, we can be certain that for the time being, children and animals' lives and deaths form in and around and with waste landscapes. My arguments for wit(h)nessing how we might live and die well together are not propositions that reinscribe

neoliberal discourses of individual wellbeing and self-care, but a deeply critical call for educators and children to think and experiment together alongside more-than-human Others in ways that respond otherwise to Anthropocene inheritances.

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Interlude

Making moves, making motions, flowing like an ocean
The walking will continue, we know that we will bring you
The times that you have waited, more anticipated
Be gone but not for long because the feet will stay strong

-A Tribe Called Quest, *Footprints*

Chapter 4

4 Walking-wit(h)nessing: Propositions for Walking with Waste Landscapes in Early Childhood Education

Abstract

This paper takes walking-based research in early childhood education as a propositional space, one grounded in reconsidering witnessing as a practice attuned to co-emergence in waste landscapes. I draw from Bracha Ettinger's (2001) and Louise Boscacci's (2018) word-concept *wit(h)nessing* to stake out some possibilities for *walking-wit(h)nessing* as an affective, relational practice for pedagogical responses to child-waste subjectivities in the ongoing global waste crisis. In doing so, I am careful to frame walking alongside waste landscapes as an invitational move toward resisting passive observation, one that refuses to extricate children, educators, and researchers from living-and-becoming with waste. I conclude by offering three propositions for walking-wit(h)nessing waste landscapes that open toward walking practices that embrace the tensions of waste and human/more-than-human enmeshment for enacting pedagogies that confront and counter status quo waste logics of invisibility, the problematics of scale, and solvability.

4.1 Introduction

People are related by affinities
for privacy. People dig holes for things
they don't want.[12]

Let me pick up a broom and sweep
nothing under the rug. Let me sweep it all
into the light. Let me do it. Let there be time.
Let there be light.[13]

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[12]Except from Adam Dickinson's poem, *The Quarry.*

[13]Excerpt from Diane Gilliam Fisher's poem, *Deed.*

We build neighbourhoods over burial sites for waste now; for many families and children, the common movements between homes and parks and schools and shopping malls that comprise our intersecting and interdependent lives occur atop decommissioned landfills. The long-term effects of this particular configuration of life in the 21st century are uncertain at best, but for which there is emerging evidence and mounting activism to indicate that living in such close proximity to waste is an undesirable and inhospitable condition for flourishing. Globally, those tasked with managing what Myra J. Hird names 'waste flows' (2021) have been slow to sound the alarm or alter the course. Moves to offer an alternative are entangled within overlapping struggles against the logics of neoliberal efficiency, the cyclical consumption and discard of late-stage capitalism, and racial inequities and injustice (Liboiron & Lepawsky, 2022; Reno & Halvorson, 2021). Landscapes that once served to house waste are increasingly repurposed in ways that attempt to obscure their past, but in recent years environmental scholars have pointed to the complex socio-ethico-political ecologies of life with waste, particularly in relation to landfills (Hoag, Bertoni & Bubandt, 2018; O'Hare, 2021). As one example, in 2018, a class action lawsuit against the Orleans Parish School District was settled in favour of former students at Robert R. Moton Elementary School in the Desire Area neighbourhood in New Orleans, Louisiana. The since-closed school had been constructed on the contaminated infilled landscape[14] overtop the Agriculture Street Landfill in a historically Black area of the city (Cannon, 2021). While its enforcement is unlikely, the judgement awards $1,000 per year of attendance to plaintiffs who once attended the school as children, many of whom now, unsurprisingly, report ill health. Elsewhere—amidst a long campaign that can be read as the greenwashing of a landfill—Singapore[15] touts the biodiversity and potential for multispecies co-habitation overtop the offshore Semakau Landfill, while human and more-than-human waste relations within the city-state are being reshaped by unsustainable urbanization and displacement (Chan, 2016;

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[14]https://www.washingtonpost.com/climate-environment/2022/04/01/new-orleans-gordon-plaza-epa/ In a 2022 Washington Post investigation, environmental justice journalist Darryl Fears cites an EPA report detailing a soil analysis that revealed 149 toxic contaminants, including 49 potential carcinogens.

[15]https://www.towardszerowaste.gov.sg/files/zero_waste_masterplan.pdf

Connolly & Muzaini, 2022). Globally, this contrast between the inadequate and reactionary structural responses to the production and accumulation and management of waste and how marginalized communities bear the brunt of the ensuing environmental degradation and life with toxicity is illustrative, as Anna Lowenhaupt Tsing (2014) reminds us, that "not all blasted landscapes are lively" (p. 89).

Overlooked in the uncertainty around how to meaningfully address the waste crisis is the scale by which waste and its intersections with human and more-than-human mobilities actively and unevenly refigure childhood(s) and how researchers and educators might craft pedagogical responses that critically interrogate waste inheritances. What conceptual orientations are required for reimagining children's relations with waste in the world to come? What pedagogical practices might be useful for attuning and responding to co-constitutive relations with waste? The research that informs this paper is grounded in months of walking with a group of early childhood educators and children at the Glenridge Quarry Naturalization site in what is currently known as St. Catharines, Ontario, Canada. The Quarry, as it came to be known by our group, was one of the sites within the Climate Action Childhood Network, a global network of critical childhood scholars organized in collaboratories—experimental sites for generating in situ climate and waste pedagogies. The work of the Blasted Landscapes collaboratory—a term and concept I borrow from Tsing (2014, p. 90), who argues that such landscapes are configured through "radical disturbances"—focused on the possibilities for re-imagining children's relations with waste. The Quarry—like its contemporaries, the North Maple Regional Park in Vaughan, Ontario, or Freshkills Park in New York City, or Frédéric-Back Park in Montreal to name just three examples from North America alone—is an example of a growing response wherein landfill sites that once operated as collection zones for municipal solid waste have, post-closure, since been converted into spaces for recreation and leisure. I have written extensively elsewhere (see: Wintoneak & Jobb, 2022; Jobb, 2023) about the complexities of the Quarry's past, present, and future, and how our walking collaboratory engaged its temporalities and trajectories as an invitation for reconceptualizing children's encounters with waste. And so, though it merits this introductory mention to situate the work within a particular geographical context for readers, my focus is less about the Quarry and instead a response to the conditions met at

the Quarry and sites like it. As others within waste and discard studies have written (e.g., Liboiron & Lepawsky, 2022; Reno, 2018), what constitutes waste and how we might understand it in relation to human and more-than-human livelihoods is the focus of ongoing debate. Due to the particular landscape this research emerged from, I am largely speaking to waste as a broad social concern through the lens of walking alongside landscapes reshaped by the presence and endurance of municipal solid waste. That is to say, this paper can be read through a desire to take up waste in one of its more broadly familiar forms as a far-reaching concern for research in early childhood education, one which requires reimagining the pedagogical practices and dispositions through which educators and researchers might respond. I suggest, by way of practices of attunement and witnessing waste differently, that walking alongside waste landscapes with children acts as a propositional gesture to think or do otherwise.

In this paper I weave reflections on walking-based pedagogical research in early childhood education generated within the Blasted Landscapes collaboratory into dialogue with the environmental humanities, and waste and discard studies in a still-emerging and interdisciplinary theoretical and empirical space. I first trace the emergence of waste landscapes as a problematic for early childhood education to attend to through Louise Boscacci (2018) and Bracha Ettinger's (2001; 2006) word-concept *wit(h)nessing* as an orientation for learning how to witness childhood waste relations differently in the context of the global waste crisis. Next, I situate my thinking alongside existing walking scholarship across the uncertainty of how educators and researchers might turn to walking practices for (re)thinking children's relations with waste. I then build on existing walking scholarship by returning to the environmental humanities and wit(h)nessing to offer a pedagogical orientation I name walking-wit(h)nessing as an affective, relational, and trans-subjective practice for researching with children in waste landscapes. Lastly, this paper concludes with an offering of three propositions for enacting walking-wit(h)nessing in pedagogical research with children as an exploratory, experimental practice for confronting and contesting waste logics of invisibility, scalar incongruence, and solvability. In doing so, I engage a propositional sensibility through uncertainty, not as a practice of deconstruction without aim, or a stifling of pedagogical thought, but one which activates possible responses to the conditions of living with/in waste landscapes.

4.2 Wit(h)nessing Waste Landscapes

I am writing toward the emergent possibilities for different forms of witnessing as practices of awareness around the scale and scope of environmental devastation. In the age of the Anthropocene, I am interested in the possibilities of walking as a witnessing practice which might impel an attunement to being-and-becoming-with on the part of the *anthropos* in question, without collapsing into logics of individual guilt and responsibility. Here I want to explore some of the ways in which humans and waste and land are entangled in the co-production of new forms of subjecthood, particularly as cross-temporal relationships that matter for Anthropocene childhoods (Pacini-Ketchabaw & Kummen, 2016; Sheldon, 2016). In the shadow of a global waste crisis, contemporary childhoods are made by and through pastpresent relationships with lands refigured by the expanding presence of waste. By both voluntary and involuntary means, as Catherine De Almeida (2021) describes, our collective proximity to and relations with waste can be read a form of citizen-making. For young children, we might understand emergent waste subjectivities through what Erica Burman (2022) names ‘found childhood’. For Burman, found childhood is a practice for activating child-as-method, and for witnessing childhood positionalities which she locates within existing constellations of socio-material relationships, such as the entanglements between child-waste-land. During a time in which landfill capacity and proximity to children’s daily mobilities are intersecting concerns (Hird, 2013; O’Hare, 2021) what might attuning to their meeting points offer for pedagogical thought? Living alongside ecological degradation and precarity is not a neutral or innocent condition, and the forms by which waste landscapes manifest as constitutive presences are experienced unevenly. Putting witnessing to work can help disrupt fixed and static notions of subject formation, as Fikile Nxumalo’s (2020) work on the possibilities for decolonial childhood subjectivities shows us. Nxumalo offers testifying-witnessing as a practice grounded in new materialism and Black feminism for engaging the intersections between childhood, anti-Blackness and environmental degradation in children’s place-relations. In Canada, where I write from, Myra J. Hird and Alexander Zahara (2017) recount the impact of a three-month landfill fire on children’s health and well-being in Iqaluit, while in southern Ontario, De Almeida

argues for “a new kind of commons” (p. 30) to frame the possibilities for refiguring shared relationality and responsibilities with and to waste landscapes in former landfills-turned-recreation sites. This is perhaps exemplary of the tensions of living with waste, and it opens to questions of how we might witness the technicities of power, proximity, and for whom communing with waste is obscured, and for whom it is a daily confrontation. Thinking with Anna Tsing (2014), I consider this a dual blastedness, whereby at once, as pollutants reshape lands, waters and air, being-and-becoming alongside waste actively and unevenly refigures what it means to be human in relation with particular places at this particular time. This establishes waste and waste landscapes as affective and constitutive presences, as agentic forces in 21st century childhood subjectivities, yet, there are barriers to witnessing both the presence and impact of waste in blasted landscapes.

By design, landfills, and what becomes of them, particularly post-closure, are largely hidden from public view, where, as Joshua O. Reno (2016) suggests, “the ideal landfill not only hides our waste from us, but is itself hidden elsewhere” (p. 6). In the context of a broader waste ecosystem, the routinized flow of waste in early childhood settings as parsed through quotidian encounters works to quickly demarcate children as separate from waste, a link in the chain that moves waste elsewhere. Broken toys are removed from the classroom, destined for the landfill, unwanted or forgotten artistic works are folded and dropped into the recycling bin. Part of this desire to obscure waste’s destination is rooted in uncertainty. How do we explain to children the world they are meeting? Rebecca Altman (2014) imagines waste burial as “our attempt to arrest time, or to deny its perpetual creep” (p. 86). Avoidance is perhaps an understandably easier justification when trying to grapple with the scale of the waste crisis and the vast and efficient mechanisms in place to obscure that scale.

However, visibility is often a question of power in waste relations—when and where waste is encountered, and even how it is perceived in relation to its spatialities is further ensnared in power asymmetries, with marginalized communities living in closer proximity to, and bearing the negative effects of life with landfills (Hird, 2022; Liboiron, 2021). Lucy Bell (2019) similarly points to the disparate impact and inequitable power

relations which produce waste subjectivities grounded in what is at once a voluntary separation between consumer and waste, and the involuntary recipients of the discard material. What is consumed and hidden through waste management practices by the Global North is lived alongside in the Global South, as increasingly, countries like Canada shift the burden of waste out of country, out of sight (Hird, 2021). Yet, power relations are not static, they can be unsettled, and while Gay Hawkins (2006) describes prevailing cultural attitudes toward waste as acting upon an ethos of "disposability, distance, and denial" (p. 16), this, too, is not a foregone conclusion. To bring this back to early childhood education, imagine some of the ordinary ways children encounter waste—diapers, litter at the park, broken plastic toys, uneaten food scraped into the compost or discard bin—and how these encounters are always-already grounded in relationships with materials and practices designed to be moved along and away, their next destination obscured. The potentialities for witnessing practices that bring the intersecting relationships between children, waste, and land into closer view, and how they might enable pedagogical intentions are not always apparent. How then might witnessing gesture toward unsettling forms of waste relations which Catherine Alexander and Patrick O'Hare (2023) describe as reinscribing "technologies of unknowing" (p. 432)? For early childhood educators and researchers, pedagogical and curricular movements that exaggerate logics of scale and excess and visibility (e.g., MacAlpine & Pacini-Ketchabaw, 2022) invite a refiguring of child-waste relations as a presence with which we are all implicated.

After grounding children's subject formation as always-already in relation with waste landscapes and waste flows which aim to obscure those relationships, what conceptual tools might be useful for reimagining witnessing practices in everyday waste encounters? Witnessing has been taken up in early childhood education in ways that trouble dominant narratives of child-centred environmental education and reject binary nature-culture dualisms and in ways that disrupt objectivity and notions of hierarchical human exceptionalism to presence shared relationality (Nxumalo, 2016; Blaise, Hamm, & Iorio, 2017). Despite these and other critical scholars working to unsettle connotations of witnessing as an objective process, I remain concerned about the presuppositions, or the possibility to take up witnessing as though one can remove oneself from existing socio-

ethico-political entanglements to provide an objective assessment on the state of things. As I have previously suggested (Jobb, in preparation), wit(h)nessing is one possible (re)framing—a conceptual and analytic gesture toward seeing the entanglements within children's mobilities in landscapes reshaped by waste as producing always-already co-emergent human and non-human actors grounded in relationality. Here, I offer wit(h)nessing to be taken up alongside walking as an active practice that *does* relationality differently. By this I mean I am interested in putting concepts to work in divergence from status quo logics to respond to what I sense as an emerging quality of living with-ness in human-waste-land relations, particularly given the nearness to which many of us find ourselves living alongside waste. To do so, I think with Louise Boscacci (2018) who invites feminist psychoanalysis into the environmental humanities via Bracha Ettinger's (2001; 2006) work on wit(h)nessing.

In Ettinger's original conception, wit(h)nessing is a co-poietic emergence, where "both the pre subject (I) and the m/Other (partial-subject, non-I) are transformed in different but related ways" (2006, p. 220). Following Boscacci, I bring wit(h)nessing into early childhood studies as a way of attending to the "*encounter-exchange*" (p. 343), or the shared trans-formation that shifts beyond human-human relationality and attends to the possibilities of engaging waste as a co-constitutive presence for subject formation in a more-than-human world. In thinking waste pedagogies, this, for me, is useful as a conceptual move toward how educators and researchers might activate an art of noticing (Tsing, 2010) that attends to questions of whom and what we become alongside. Wit(h)nessing, as Boscacci writes, offers a "modality of being present in whole-bodied attunement and attention in encountering" (p. 346) that makes visible the trans-subjective possibilities for reframing child-waste-land relationality. Veera Kinnunen (2017) draws similarly on Ettinger's work to disrupt the borders between human-food-waste, analyzing food composting relations through their co-poiesis, situating the practice as a "corporeal contact zone in which ethical relations with waste emerge" (p. 66). Figuratively, Donna Haraway (2016) reminds us that sympoietic practices of becoming-with alongside more-than-human kin mean that "we require each other in unexpected collaborations and combinations, in hot compost piles" (p. 4). This, too, can be understood as a form of with-ness. I bring this into early childhood education as an affective disposition to enable

noticing through which relations we are made, through which relations we are sustained or degraded, and how we might figure these relations differently, with an eye toward flourishing. By moving to rethink waste relationships between children, educators, and waste as a presence with whom they walk alongside in landscapes affected by waste, I am interested in attuning to the small and large ways children and educators both transform and are transformed by their co-existent encounters with waste. Still, my sense is that more is needed to activate and recompose wit(h)nessing, I am interested in bridging affect and materiality through walking practices and conditions which presence moments of contact or encounters with waste.

4.3 Walking with Waste: Early Childhood Mobilities in Waste Landscapes

The bounds of walking-based research have expanded to counter the figure of the solitary walker on a path to individual enlightenment, resituating collective walking as a mode of inquiry, a critical methodology, and social pedagogy (Hernández-Cabal, 2023; Lasczik, Roussell, & Cutter-Mackenzie Knowles, 2021; Springgay & Truman, 2018; Springgay & Truman, 2019). Here, I follow arguments that read walking through the ‘posts’—e.g., poststructuralism, postfoundationalism, and posthumanism—to attend to walking as speculative worlding practices for unsettling Cartesian dualisms in refusal of the binaried separation between people, place, and things. In my thinking elsewhere on the possibilities for walking research with children I have drawn inspiration from scholars whose cumulative work on walking-*with* (e.g., Malone, 2019; Springgay & Truman, 2018; Sundberg, 2014) has shaped collective endeavours into walking alongside waste landscapes as movements that emphasize children’s relational being and becoming-with in common worlds (Rooney, 2019; Wintoneak & Blaise, 2022). As a disposition which engages geopolitical complexities, walking-with emerged from Juanita Sundberg’s (2014) theorizing with Zapatista teachings. Sundberg argues for walking-with as a counter to individualist colonial logics, grounded in material practices of reciprocity, but also in generative decolonial critique of posthuman theorizations which reproduce Western onto-ethico-epistomelogies. Karen Malone (2019) invites the practice into early

childhood studies in her work with Kazakh children walking and living alongside landscapes shaped by an ongoing history of nuclear waste and radiation. Elsewhere, in their work with *WalkingLab*, Stephanie Springgay and Sarah E. Truman (2018) frame walking-with, in part, as practices that open to onto-epistemologies foregrounding intimacy via proximity and visibility. In conceptualizing research with children walking alongside waste landscapes, I take up walking-with as a pedagogical proposition, as a practice for disrupting the shroud of distance that constitutes status quo waste logics, bringing into closer view what is knowable, and how profoundly our lives intersect with waste.

Why might it be necessary to think walking, waste, and childhood as related concerns, and what material and conceptual moves are made possible by their interweaving? I am working toward propositions for practices and pedagogical dispositions that pick up Boscacci's invitation to wit(h)ness, to call educators and children into affective and relational attunement to these co-productive relationships with worlds beyond the human. I begin from a premise where, as Karen Malone (2019) writes, "our walking bears witness to the Anthropocene" (p. 162). Malone draws inspiration from Donna Haraway to figure childhood and the historicities of blasted landscapes as sympoietic forces - made with and alongside one another. I enter into walking-with waste landscapes as a co-poietic noticing of generative relationality. I mean this in a double-sense, as an acknowledgement of being called to respond to always-present relationality by nature of being in the world alongside waste, while also attending to the ongoing generation of waste, to our shared futures we are collectively making.

Generative relationality is also an invitation to be affected and attune differently through encounters with waste landscapes. I recall moments from my months of walking with children and educators at the Glenridge Quarry to share an example of what this may look like in practice. The summer we spent walking with the Quarry intersected with an infrastructural project to decommission the existing gas valves.[16] The upturned earth left by the removal of the valves brought educators and children into close proximity with

[16]Jobb, 2023, for thinking with proximity

now-uncovered waste, as metres-deep holes revealed layered plastic bags, soda bottles, and paper enmeshed with soil and plantlife. While the landfill contents that remained beneath this particular waste landscape predate any of the children in the project, they responded with curiosity to the now re-presenced waste, its composition, and its familiarity to waste products they regularly encounter. In his work on walking with ruins, Tim Edensor (2007; 2016) argues that confronting degradation—waste, industrial ruins—is a provocation for the senses, one through which proximity violates a sense of the ordinary and for which all manner of responses are possible. Walking alongside the valve project made it possible to move in proximity and bear witness to the cross-temporal waste stories present at this former landfill. The children's affective response to its presence enabled storying a different understanding of waste relations, one which grounded the previously unseen waste in familiarity and interrelationality, a sense of with-ness coming into view through our walking practices.

4.4 Walking-wit(h)nessing

In tracing the interdisciplinary contours of walking and waste and witnessing practices, I am in search of generative frictions, moments where composting concepts rub up against status quo logics of dominion and separation and open to worlding otherwise in landscapes transformed by waste. I propose what I am calling walking-wit(h)nessing as one possible frictive composting practice. For Jennifer Mae Hamilton and Astrida Neimanis (2018) "composting explicitly values and deliberately repurposes extant matters—namely feminism—in the search for different kinds of worlds" (p. 505). For those of us working to reimagine early childhood education, composting knowledge practices begin with situated responses to particular conditions. Catherine Hamm (2015) writes of the possibilities for walking alongside place as an invitation to rethink our pedagogical commitments and tell different stories which orient toward unsettling colonial logics. From her work I am reminded that naming the conditions of the worlds we stand for is a starting point for responding to the complexities of current worlds.

Here, I articulate affect, relationality, and trans-subjectivity as three commonalities between walking and wit(h)nessing to situate walking-wit(h)nessing as an intentional and

critical orientation for encountering waste landscapes. I read these concepts through walking research with children to develop new pedagogical orientations partially in response to flânerie as a figuration and practice that has shaped understanding of public mobilities. The image of the flâneur has become a lasting and contentious presence in the history of walking scholarship. Inspired by Baudelaire's poetry, Walter Benjamin's urban pedestrian has been taken up widely by those looking to position the walker as an aimless and leisurely observer, a reader of the city and society. However, the flâneur has been critiqued in feminist new materialist and posthuman theorizations as a romanticized wanderer, unbound from socio-political life and situated as separate from more-than-human relationality (Springgay & Truman, 2018; Taylor & Ulmer, 2020). Similarly, as Claudia Castañeda (2002) reminds us, children and childhood are often figured as 'not-yet', constructed as innocent and incomplete and existing outside of the social fabric, particularly pertaining to matters of concern such as environmental degradation and climate change. Throughout this paper I am drawing on interdisciplinary scholarship to reach beyond the human to refuse a construction of children grounded in detachment from the world(s) they are produced within. Instead, I take up walking-wit(h)nessing as an opening to walking practices which create conditions for recognizing how children are always-already affected by material waste presences in the world.

I want to start by conceptualizing walking-wit(h)nessing as a propositional form of movement that emerges from affective and relational being-with waste as a cross-temporal concern. By this I mean children born today enter into being in uncertain and ecologically precarious worlds already profoundly imbricated in past-present-future waste landscapes. Often, walking is theorized through embodiment, attuning to notions of being and sensing in the world, however, this elides co-presences, which move witnessing beyond the detached observer and into a-bodied relationality (Boscacci, 2018). Springgay and Truman (2018) similarly interrogate the limitations of embodiment, arguing that it is an insufficient theoretical framing for walking, pointing to the unevenly situated ways bodies move and sense in relation with place and the more-than-human world, and that it too frequently rests upon humanist conceptions of the bounded sensing self. Relationality helps draw us closer to interconnectedness, and toward understanding ourselves in relation to more-than-human kinships (Van Dooren & Chruluw, 2022). I am

interested in crafting walking-wit(h)nessing as orientations for walking that, as Kimberly Powell (2019), drawing on Judith Butler's theory of precarity writes, are "affective and constitutive of multiple temporalities" (p. 194), but also multiple subjectivities; how do we live well alongside the non-human actors with which we make worlds? I depart from walking as solely an embodied practice, and instead embrace affect and relationality as a means of making visible the intricacies of mutually constitutive child-waste subjectivities, and what might happen if educators and researchers attend to the possibilities for quotidian waste relations. This, for me, is a question of porosity—what kinds of relations are we willing to open to, and what practices are required to bring these relations forward?

Returning to my conceptual groundings, for Ettinger (2006), the question of porosity is what constitutes wit(h)nessing as a trans-subjective practice, while Boscacci (2018) helps move beyond psychoanalysis and the self to situate emergent subjectivities in relation *with* the more-than-human world. I view walking-wit(h)nessing as one possibility for unsettling the perceived border between child and wasteworld and noticing mutually co-productive relations. Walking-wit(h)nessing thus asks us to consider what worlds we are already in relation with, what are we forming and formed by, and how do our edges blur together? What queer kinships are possible? My attempts to give this concept some shape, while also resisting defining its limits is a call to attune to walking through practices which engage affect and relationality and open to what transgressions of the self their inseparability might produce. I am interested in crafting orientations for emergent mobilities that refigure how we might know ourselves and others as human and non-human co-conspirators, and how we might come to change and be changed by others. By this I mean becoming-together in relation with waste is also a practice of becoming-differently, even if the form is still unknown. I jump back to Ettinger, for whom subjectivities require the trans prefix as an insistence on trans-formation, an invitation to cross borders, and to notice the ways the "transgressive encounter between I and non-I" (p. 218) opens space for co-poietic subjectivities. Springgay and Truman (2018) similarly excavate trans history to argue for queering walking practices, which maps onto recent arguments from childhood studies that childhood can be understood through queer temporalities and subjectivities (Dyer, 2019). Next, I turn to walking-wit(h)nessing as an

orientation for walking which refuses borders between human and more-than-human landscapes and eschews linearity and predictability, for resisting foreclosed and separate ontologies to open to other forms of trans-subjective figurations while remaining grounded in particular pedagogical commitments.

4.5 On Propositions for Walking-wit(h)nessing in Waste Landscapes: Disrupting Logics of Invisibility, Scalar Incongruence, and Solvability

In their work on affect as world-making, Lauren Berlant and Kathleen Stewart (2019) write that, “most people seem to be in the middle of something they somehow ended up in. What’s happening’s provocations propel us and drag on us.” (p. 41). I read this as an invocation for a different form of paying attention, one that moves against apathy to propose an alternative. For those of us tasked with educating young children, this requires that we locate ourselves and our pedagogical propositions within generative critique that responds to particular conditions (Vintimilla, 2023). If what we are currently in the middle of is thinking through the complexity of childhood in waste landscapes, where might we be heading? What worlds are possible? I want to take up walking-wit(h)nessing as a portal into making visible human-waste relationships that are as-yet-unknown, but which resist the status quo. For Rosi Braidotti (2022), activating ethical attunement to the vital materialism of human and non-human interconnectedness is a practice of posthuman worldmaking, one which “engages but also breaks productively with the present” (p. 155). Thinking with this offering from Braidotti - whose work on affirmative ethics traces the knotted relationship between critique and creation - is helpful for mapping out an ethical direction for engaging with multi-temporal ethical accountabilities to waste, but also for orienting walking-wit(h)nessing as a speculative gesture that breaks from status quo despite uncertainty. Far from a relativist practice, or aimless wandering, walking-wit(h)nessing refuses linearity to instead engage with propositional lines of flight (Johansson, 2016) that bring forward situated responses. It is through the particularities of walking with waste landscapes that walking-wit(h)nessing engages waste as a matter of

increasing concern (in the Latourian sense) to stake out new directions for pedagogical research with the places and spaces of early childhood.

As a methodological space for thinking and doing otherwise, Sarah E. Truman and Stephanie Springgay (2016) contend that, “walking holds open a set of dynamics, or technicities of activation that propel us forward to another dynamic movement.” Similarly, on walking, Lesley Instone (2015) writes that, “each step poses the possibility of an alternative” (p. 138), yet I am cautious of embracing open-endedness and its history in early childhood education. Instead, I take this as an invitation to ground propositions for walking-wit(h)nessing as offerings that move against always-partial waste logics. From critical early childhood scholars (Land, Delgado Vintimilla, Pacini-Ketchabaw & Angus, 2022) I am reminded that pedagogical thinking in our work with children and educators is a distinctly propositional practice, but that pedagogy must proffer an alternative to status quo logics and narratives in early childhood education. For this reason, I am focused on offering propositions for taking up walking-wit(h)nessing as public pedagogy in ways that contend with intersecting logics observable in both early childhood education and waste studies as a means of transgressing their boundaries. First, the language of visibility has a long history in early childhood education, it is a rich inheritance from the municipal preschools of Reggio Emilia. Children’s artwork is made visible, children’s voices and interests are made heard and visible, represented in curricular choices. Yet, the material-discursive ways in which visibility functions through status quo logics of inclusion and exclusion most frequently centres upon making visible that which is palatable. Waste, in this way, is rendered invisible, quickly separated and moved elsewhere largely through waste flow technicities (Hird, 2013). Second, in what might be interpreted as a move to innocence, children are frequently located as outside of the scope and scale of the waste crisis. I argue that there is an important distinction between *living with* and *responsible for*, which distorts how closely children’s lives are enmeshed with waste. Lastly, in following the problematic of scale, critical environmental early childhood scholars have offered alternatives to sustainability discourses to counter logics of neoliberal efficiency and recognize that the problem will not be solved at home. I see this as an invitation to rethink education practices which centre individual responsibility as a move toward redressing the harms of the waste crisis

and a reminder of, as Liboiron and Lepawsky (2022) show, the discrepancy between household waste and that produced by industry, agriculture, and commerce.

These three propositions operate from a premise which locates children (and educators and researchers) as entangled participants in global waste flows, while also resisting the construct of the sovereign waste subject. Human-waste trans-subjectivities mean that we are inextricably implicated in and contributors to the production of socio-cultural-material discourses, where this copoietic framing requires understanding ourselves as not removed from, but as perhaps unwitting participants in the perpetuation of status quo waste logics. Moreover, these propositions cannot be an exhaustive list. They are instead a response to situated concerns, a minor gesture toward difference, a frustrated beginning-in-the-middle (Koro-Ljungberg, Tesar, Hargraves, Sandoval & Wells, 2020) of child-waste-place relations that offer some tentative possibilities for walking-wit(h)nessing waste landscapes. We have the capacity to resist in small ways. Take mine or invent your own.

4.5.1 See Y/Our Waste: Move Against Invisibility

Walk your former local landfill! There is a good chance one exists. It is currently probably beneath a park or a shopping mall or perhaps your house is built atop it. This is not a trash walk, do not pick up waste and do not move it elsewhere, this is embracing proximity and repetition and presencing obscured waste histories as a way of moving against invisibility. I am thinking about London, Ontario, Canada, where, like many cities, there is a self-guided audio tour[17] which makes visible often-untold stories of the history of the city. Here is an idea: Research former landfills with children and walk to it and tell another story, tell a waste story. Tell a collective story of pollution and extraction and colonialism and all the things they/you/we want to hide. Leave a placard for other walkers to find and continue the story. Activate walking-wit(h)nessing as a means of rendering the impulse to hide our waste as a blip in time, a temporary non-solution.

[17]https://www.hearherelondon.org

4.5.2 Amplify the Problematics of Scale

Walk en masse against waste! Engage walking pedagogies and research in waste landscapes as a study of amplification, attuning to exaggeration. Engage walking-wit(h)nessing as collective action against waste as a problem. Walkers concerned with waste and the scalar incongruence between waste produced in households and commercial, industrial and agricultural waste can and should take inspiration from other forms of collective mobilization that agitate against crises of scale. For example, *Take Back the Night* walks are feminist global events against gendered violence and sexual harassment (Barnes, 2023). *Critical Mass* is a cycling-based social protest movement (Carlsson, 2002) celebrating collective cycling action against sprawling urbanization and landscapes designed for single-occupant transportation. Here is an idea: Take plastic as one of the preeminent avatars for the escalating waste crisis—its ubiquity, its durability (and its subsequent uncertain lifespan), and its mounting accumulation—and gather one child per year as a stand-in for every year that plastic will endure. The rate at which plastic waste lives on in its various forms is unclear, in part due to the fact that the true lifespan of plastic, as a relatively new synthetic product, has yet to be observed. With estimates ranging from 20-500 years, for illustrative and symbolic purposes we can split the difference to put us at 240 years. Gather 240 people and walk against plastic. Even this fails to account for the discrepancies of scale. In tonnage, the scalar mismatch is staggering; biennial figures from 2002-2020 in Canada alone show landfills received 97,389,689 tonnes of municipal solid waste, while industrial, commercial, and institutional waste accounts for 155,443,962 tonnes.[18] Maybe children should recycle more.

[18]https://www150.statcan.gc.ca/t1/tbl1/en/tv.action?pid=3810003201&cubeTimeFrame.startYear=2002&cubeTimeFrame.endYear=2020&referencePeriods=20020101%2C20200101

4.5.3 Resist Solvability

Move alongside and against the discourses of individualism and solvability! We ought to maintain a skepticism about the three Rs, and dominant discourses for too long have reduced the scope of the waste crisis as a problem to be solved by the consumer (Merewether et al., 2023). Taking inspiration from artist and poet Allyson Paty's longstanding waste documentation project, practice noticing while resisting the urge to solve the problem. Since 2016, Paty has photographed each piece of waste she produces and shares it to the internet, describing a desire to make waste visible, while acknowledging that, "it's insufficient to say that "people" cause pollution. Or that "people," just a heap of individuals, can solve it. But it is exactly such a collective that the wasted items bind together." (2021, p. 57). Here is an idea: I want to wrestle the concept of a waste walk away from business efficiency[19] and reconstitute it as a walk against solving the waste crisis. Gather yourselves, gather your children, gather your waste. String it up. Forget the parade of lights, parade your waste. During the early days of the COVID-19 pandemic, a teddy bear walk was created in Mill Hill, London, beginning when one resident affixed 25 teddy bears along a walking path to invoke joy in local socially distanced children. Growing into a collective community project, the walk soon featured 350 teddies. Regrettably, as the organizers noted in a letter[20] to children, the bears were ripped down and destroyed by unknown vandals. If the presence of teddy bears can provoke such agitation, imagine what energies might be channeled into action through a waste walk.

4.6 Conclusion

This paper offers three propositions for walking research as public pedagogy that attend to the interlacing of childhood and existent relationships with waste that seek to at once render it a problem to be made invisible, located as an individual concern, and solvable.

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[19]In business, a waste walk is described as a strategy for identifying and reducing practices that waste opportunities to increase efficiency and value.

[20]https://teddybearwalk.wordpress.com

The ways in which waste has reshaped our common worlds goes deeper than what is immediately observable in quotidian encounters with everyday landscapes. Put simply, at a time where we are running out of storage options, waste leaks across its artificial boundaries and we are becoming who we are in relation *with* its spread. Walking-wit(h)nessing, I suggest, in its emergence and non-linearity is a practice that opens to think otherwise and experiment with situated responses to children's waste inheritances, one which refuses to separate humans from waste, instead, attuning to the ways in which waste continues to produce our shared subjectivities as a co-constitutive actor.

And so other ways of knowing and being alongside waste are required. I have offered walking-wit(h)nessing as a useful propositional gesture in walking alongside waste landscapes for two interrelated reasons. First, it thinks with Louise Boscacci (2018) in attuning to what she names as transconnections between human and non-humans. When researchers and educators draw attention to children's co-poeitic existence with other forms of life—and as Olli Pyythinen (2023) reminds us, the life of waste—we open to collective relationality as a generative mode for response. Second, putting propositions for walking-wit(h)nessing to work is also a refusal to take matters of concern in isolation, instead, attending to these propositions as a method for tracing the interlacing of what Springgay and Truman (2018) name (in)tensions. It thus becomes impossible to read a response to invisibility, scale, and solvability as separate concerns. Walking-wit(h)nessing as a propositional practice acts as a reminder that pedagogical choices engage with uncertainty in waste landscapes and their ensuant complexities.

I also want to be clear in situating walking-wit(h)nessing as a practice that moves against what Alexis Shotwell (2016) calls purity discourses. These propositions are not a call for reinscribing logics of dominion to triumph over waste, and they do not emerge from certainty. Nor are they intended to universalize, moralize, or romanticize walking in waste landscapes, they are instead possible affective and relational responses to how particular conditions produce contemporary childhood subjectivities, and ones which are agitated by what Boscacci (2018) frames as the possibility of "powerful impingement" (p. 346). It is a risk to be affected by waste, and yet waste is just one particular form of blastedness that has (re)shaped the places and spaces of early childhood. How then might

educators and researchers build upon these tentative moves and engage walking-wit(h)nessing as an invitation to contest myriad anthropogenic harms—from waste, to climate change, to deforestation, to pipelines? Walking-wit(h)nessing is a partial response to the question of how we might refigure early childhood waste relationships by making visible relations which are intended to be obscured.

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Interlude

Give what you can: to keep, to comfort this
Plain fear you can't extinguish or dismiss

-The Weakerthans, *(Past Due)*

Chapter 5

5 Seed-Bombing as Recuperative Pedagogies for Blasted Landscapes: Activating Wit(h)nessing in Early Childhood Education

Abstract

The practice of seed-bombing, or guerilla gardening, has its roots in radical environmental activism. As a community-generated response to ecological degradation and capitalist ruins by way of development and gentrification of city spaces, seed-bombing as it is commonly practiced involves the subversive dispersal of seeds in an attempt to beautify, or reclaim spaces otherwise perceived as unsightly or damaged. In this paper I think with common worlding and Louise Boscacci's (2018) word-concept wit(h)nessing to explore the possibilities for seed-bombing with young children as a practice of enacting recuperative pedagogies in landscapes shaped, in part, by the ongoing global waste crisis. I draw on moments from practice in a walking-based, post-qualitative inquiry with young children at a former quarry and landfill to explore recuperative pedagogies through the culminating pedagogical gesture. I suggest seed-bombing as an act of thinking and doing recuperation in blasted landscapes, one not limited to a singular event, but a cross-temporal attunement to children's waste relations with particular futures in mind.

5.1 Introduction

This paper takes waste landscapes and their proliferation as an inheritance for children in the Anthropocene and a matter of pedagogical concern for early childhood education. In particular, I focus on the pedagogical responses made possible when encountering decommissioned and converted landfills, a phenomenon Matt Barlow (2023) has described as the "production of urban natures" (p. 11). I share from a four-month, walking-based, post-qualitative inquiry with children and educators at a former quarry

and landfill, now public recreation space in what is currently known as St. Catharines, Ontario. I think with common worlding pedagogies and Louise Boscacci's (2018) word-concept wit(h)nessing to suggest recuperation as a pedagogical orientation from which educators might contest anthropocentrism and begin to reimagine young children's relationality with landscapes shaped by histories of extraction and waste. I conclude by sharing moments from practice which activate seed-bombing with children as an intentional pedagogical decision to enact recuperative orientations, grounded by practices of attending to the life of landfills, gathering, and dispersal for (re)imagining early childhood education in waste landscapes.

The empirical work this paper draws on was part of the Transforming Waste Practices project, one of two under the broader Climate Action Childhood Network.[21] CAN was a global project which brought together early childhood scholars, artists, educators, and children working in collaboratories as sites for pedagogical and curricular experimentation in response to the climate and waste crises. My contribution to the project, the Blasted Landscapes collaboratory, took place at the Glenridge Quarry Naturalization Site - a space I have written about extensively in the context of its intersections with childhood in southern Ontario and the pedagogical possibilities for walking with waste landscapes (see: Jobb, 2023; Wintoneak & Jobb, 2022). Framing the place we walked with as a blasted landscape, a term I borrow from Anna Lowenhaupt Tsing (2014), has been instructive for contextualizing the co-constitutive scalar and temporal complexities of children and childhoods in this waste landscape, and for locating ourselves amidst its temporalities. By this I mean that life - including childhood - unfolds alongside the scale and endurance of a collective uncertainty on how to respond to the global accumulation of waste and how it has reshaped landscapes in the 21st century. Tsing draws on her anthropological work on the matsutake mushroom and its resilience and capacity for growth in the aftermath of the Hiroshima bombing to illustrate how "some, though not all, forms of disturbance can be life-giving" (2014, p. 88). For Tsing, and others (see: Kirksey, Shapiro & Brodine, 2013), attuning to the blasted state of

[21]https://www.climateactionchildhood.net

degraded and damaged landscapes is not merely descriptive, nor are such sites fixed in time. Instead, to witness blastedness is an invitation for those who encounter such sites to attend to their ghostly and cross-temporal entanglements, to look toward new configurations for life *with* the ruins (Tsing, Swanson, Gan & Bubandt, 2017), and to ask - what forms of life are present here, and what forms might yet flourish here? The blasted landscapes concept has taken up elsewhere in critical childhood studies, most notably by Karen Malone (2019), whose work on walking-with children in Kazakhstan traces the porous borders between child-land-radiation and their meeting points. It is this sense of being-and-becoming-with (Haraway, 2016; Somerville, 2020), a co-and-sympoietic noticing in landscapes blasted by waste which animates this particular inquiry to ask different questions for pedagogical work with young children. In early childhood education, which has been critiqued for its narrow preoccupation with logics of growth and development, what other concepts might we think with to co-compose other worlds (Land & Frankowski, 2022), and what practices for flourishing might we turn toward? What other modes of growth are possible, here?

To build toward a response to these questions, it is useful to first explore some of the histories of the Glenridge Quarry Naturalization Site, and how these lands, like other former landfills, come to intersect with childhood waste relations. Briefly, here, I will offer an abridged and incomplete timeline of the site in reverse chronology to establish some context for the particularities of place, and why this project happened when and where it did. The Quarry, as I will refer to it throughout this paper, opened to the public as a recreation and leisure site in 2004, a municipal and regional response to pressing ecological concerns raised by community-led activists, organizing under the long-running Glenridge Landfill Citizens Committee.[22] Subjectively speaking, the site's trails and their views, opportunities to encounter its non-human inhabitants, and a connection point to the Bruce Trail are some of its inviting qualities, yet walking in this place occurs overtop a quarter-century of buried waste. As waste accumulates and when landfills reach their

[22]https://niagaraatlarge.com/2019/07/23/celebrating-an-environmental-success-story-in-niagara/#:~:text=The%20Glenridge%20Landfill%20Citizens'%20Committee,by%20the%20City%20of%20St.

capacity, municipalities are left to determine how to manage or re-develop lands now occupied by materials with indeterminate effects and lifespans (Hird, 2013a; Hird, 2016). In most instances, waste materials remain in place, where post-closure protocol and care includes a capping system, meaning a barrier layer is created between the waste and the site's post-closure land use (Townsend et al., 2015). The site underwent a dramatic (re)construction after the decommissioning and closure of the Glenridge Quarry Landfill, which accepted industrial, commercial, and institutional waste (ICI) and municipal solid waste (MSW) from 1976-2001. The site was selected as a landfill after the region took over the land from St. Catharines Crushed Stone Ltd., which previously operated a limestone quarry from 1957-1972. In spite of the intervening years, evidence of extraction and waste histories remain visible, including a gas ventilation system which, most relevant to this paper, was an active construction site during the summer we walked with the Quarry. Some histories are less visible. Aside from a faded placard at the site's entrance, there is little published material available regarding the site and its history and significance to the Haudenosaunee, Anishinaabeg, Ojibway and Chippewa peoples on whose traditional lands the site rests. I share this always-partial history, in part, to situate the Quarry and spaces like it amidst extraction and waste as a constitutive element of ongoing settler colonialism (Bacon, 2019; Liboiron, 2021; Potter, 2021; Whyte, 2018). Moreover, attuning to the obscured lives of landfills (Hird, 2013b; O'Hare, 2021) is a gesture toward the possibilities for children and educators learning how to live with the conditions of a waste crisis which demand a pedagogical response to what is an increasingly prevalent form of commons.

5.2 Common Worlding in Waste Landscapes: Wit(h)nessing Anthropocene Inheritances

Here I want to trace some of the conceptual underpinnings of the pedagogical inquiry in order to map out possible generative forms of thought for educators and researchers working to reimagine child-waste relationality. With interdisciplinarity in mind, I am interested in bridging early childhood education and the environmental humanities to articulate the intersections between common worlding and Louise Boscacci's concept

wit(h)nessing. I do so to conceptualize pedagogy, and specifically early childhood education as a worlding project, one through which wit(h)nessing makes it possible for children, educators, and more-than-human Others to co-compose a commons attentive to the complexities of waste landscapes.

First theorized by Affrica Taylor and Miriam Giugni (2012) in their interdisciplinary feminist early childhood research, common worlding draws on Bruno Latour's (2004; 2014) notion of hybridized nature-cultures which resist human separation and supremacy. The concept has grown through the Common Worlds Research Collective, a global network of scholars who work to reconceptualize early childhood through feminist and anticolonial perspectives on children's relations with the more-than-human world.[23] For Taylor and Giugni, common worlding proposes a framework for thinking childhood relationality beyond anthropocentrism to explore other possible configurations for "learning how to live well together and flourish with difference" (p. 109). Relevant to this inquiry, common worlding has been taken up by researchers in childhood studies and early childhood education working with interdisciplinarity in mind, weaving together perspectives from posthumanism, feminist new materialism, and the environmental humanities to expand the possibilities for post-foundational and post-developmental pedagogies (Hodgins, 2019; Pacini-Ketchabaw & Blaise, 2023). I have written elsewhere (Jobb, 2023) on common worlding in walking research with young children in waste landscapes, and here I return to it as a conceptual and pedagogical orientation for theorizing waste pedagogies in response to shared waste worlds. I situate the inquiry and our culminating pedagogical gesture as worlding practices for two interrelated reasons. First, to resist enduring binary waste myths of dirt and purity (Eitel, 2021; Liboiron & Lepawsky, 2022) and argue for waste pedagogies which instead attune to the ways in which children's lives are already in relation with waste. Second, to continue pushing against discourses of childhood innocence which work to separate and de-politicize childhood, in spite of children's existing relations with, as Affrica Taylor (2017) notes "entangled inheritances and trajectories" (p. 72). To be present in the world today is to

[23]https://www.commonworlds.net

live with waste as a co-constitutive presence. To take waste seriously as a shared worldly inheritance necessarily includes children as those in the position to be inheriting uncertain waste futures.

How we attend to common worlding with waste matters, and here I suggest wit(h)nessing as one possibility. Louise Boscacci (2018) describes wit(h)nessing as an affective, relational and co-poietic mode for how we might understand subjectivity differently. That is, we are made in relation with and to one another, where to witness subjectivities beyond the self is to recognize that "there is no I without a non-I" (p. 343). Building on Bracha L. Ettinger's (2001; 2006) work in feminist psychoanalysis and seeing its utility for the environmental humanities, Boscacci argues that wit(h)nessing is constituted by an *encounter-exchange* between humans and non-human Others. We change and are changed through our relations with the world around us. In conceptualizing child-waste relations in landscapes like the Quarry, wit(h)nessing became immensely useful for transgressing extractive modes of education to turn toward reciprocal and recuperative relations and practices for being-and-walking-with place. Recently, witnessing and wit(h)nessing have been taken up in early childhood education, where scholars have drawn from Black and Indigenous feminisms, ecologies, and geographies to unsettle objective and Anthropocentric modes of doing environmental and place-attuned education. Fikile Nxumalo (2020a; 2020b) has written on testifying-witnessing as a practice for refiguring childhood place-stories in the Anthropocene, grounded in Black feminisms for noticing and resisting anti-Blackness. Writing from South Africa, Theresa Magdalen Giorza (2021) offers b(e)aring wit(h)ness as a practice emerging from her work with a community preschool. For Giorza, attuning to the sense of intra-active relationality offers a mode for reimagining child-park relations in colonial spaces, inviting with-ness into dialogue with Black and Indigenous geographies as orientations for worlding. I situate testifying-witnessing and b(e)aring wit(h)ness alongside wit(h)nessing as a useful demarcation from witnessing, practices which resist the figure of the passive, neutral, objective onlooker, and instead turn toward our active co-becomings, our worlding-with in more-than-human worlds.

Etymologically and conceptually, I see a significant connection between commoning and wit(h)nessing. Common/ing is rooted in the Latin prefix *com*, meaning *with* and *together*, which, in the context of this pedagogical inquiry is a reminder of the centrality of more-than-human relationality, or an attunement to the sense of with-ness in shared common worlding. The seed-bombing practices we enacted emerged as a generative response to a summer spent walking-with the Quarry, noticing the collision points between the histories of waste and our presence as co-constitutive inscriptive presences. Scholars and educators working with common worlding pedagogies do so to resist the anthropocentric and extractive logics which position children as learning *about* the world, instead recognizing children as always-already entangled in complex relationality, learning *with* the world (Common Worlds Research Collective, 2020; Taylor, 2020; Taylor, Zakharova & Cullen, 2021).

5.3 On the Radical Potentialities of Seed-Bombing

Looking to histories of community-generated radical activism provides an alternative mode for exploring and understanding child-plant-place relations, but there is a tension I would like to acknowledge first in the linguistic inheritances woven through the practices I am writing toward. I admit some hesitance due to the reality that, for many children, historically and contemporarily, bombing is not an abstraction or a subversive and provocative metaphor, but an ongoing presence and threat to life. While the practice of seed-bombing predates the name, their rise in social awareness is most often attributed to activist Liz Christy and the formation of the Green Guerrillas in New York City in 1973 (Gralińska-Toborek, 2021). Christy and her community collaborators cleared and reclaimed a vacant lot at the intersection of Bowery and East Houston Street in Manhattan, where it remains today. This guerrilla garden marked the beginning of their activism, through which they crafted and dispersed their makeshift seed bombs - or *green-aides,* as further evidence of their attempt to playfully subvert militaristic language. In a thoughtful critique, Gina Badger (2010) describes the name as “a mutation of militarism” (p. 133), grappling with its origins in the language of war, while ultimately arguing for seed-bombing to be understood as a reclamation or reorientation of both

space and terminology. It is in this spirit that I follow seed-bombing and the origins of its name as a feminist reclamation project, one which gestures toward less violent futures.

For many early childhood educators, encounters with seeds and plantlife takes place in the context of gardening with children as a familiar yearly project. In a recent systematic review of environmental education practices in early childhood education, Nicole Ardoin and Alison Bowers (2020) categorize gardening as an exemplar of *time in nature*, a pedagogical practice observed in 76% of the available literature. However, as an educative practice gardening is frequently coded in a child-centred, developmental context, with research often centering on measured learning outcomes or health indicators for individual children, and limited space afforded to the socio-ethico-political worlds it may make visible. At times, the intersections between gardening and food production and environmental justice have been explored in the context of early childhood education. For example, Jenny Ritchie (2015) has written about gardening practices with children as pedagogies of place, which intersect with food justice, sustainability, and embedding Māori cultural teachings in Aotearoa New Zealand early childhood education. Elsewhere, Monica Green and Iris Duhn (2015) have examined children's encounters with gardening as human and more-than-human intra-action, drawing attention toward the complex meeting places between children and the "life forces of a food garden" (p. 69). Thinking with waste landscapes, and what forms of flourishing might be possible within them, I am interested in the possibilities for encounters with plantlife beyond human sustenance. Here, I want to examine seed-bombing as a minor gesture beyond the human and beyond particular measurable outcomes. Calling back to Louise Boscacci (2018), it is my sense that decentering the child as a recipient or beneficiary constitutes a form of recuperative *encounter-exchange,* one which activates different affective responses and ways of living with plants, soil, and land in waste landscapes.

Perhaps in part due to what I ascribe to a hesitant, or even conservative undertone to Canadian early childhood education, pedagogical work inspired by radical activism is often relegated to its more critical corners of scholarship, and thus, requires more attention. Cristina Delgado Vintimilla (2020) describes the meeting point between a politics of niceness and "nostalgic imaginaries and myths that sustain our being-with-

others" (p. 182) as a form of relationality operating in ways which foreclose the potential for thinking otherwise. Working those tensions between what is and what is yet-to-be requires unsettling the taken-for-granted and status quo assumptions of early childhood education, a field which thrives on tidy narratives. Borrowing from Natasha Myers (2017), I am writing toward seed-bombing as a practice for making visible "plant/people involutions" (p. 4) in landscapes produced through relations with waste. Part of my intention in sharing seed-bombing as a practice for common worlding is to invite educators to start with small gestures which might begin to slowly reorient pedagogical dispositions and practices. Writing from their experiences in post-secondary settings, Aoife K. Pitts et al. (2022) have argued for the metaphoric potential of the seed-bomb, drawing on Black and Indigenous radical ecologies in pursuit of abolitionist education. Artist and scholar Tina Carlisi (2016) frames seed-bombing as an example of "poetic micro-actions" (p. 1) which invite a radical relationality with degraded landscapes through her community-based arts and guerrilla gardening campaign in Montreal. Thinking with the possibilities for seed-based ecological awareness in Australian cities, Alexandra Crosby and Ilaria Vanni (2023) describe their approach to seed-bombing as "planty design activism" which decentres the human and reorients attention toward Indigenous ecologies for plant flourishing. Similarly, I position our seed-bombing as a departure from child-centred pedagogies. Instead, I suggest that guerrilla gardening, or seed-bombing practices open toward a socio-ethico-political reimagining of children's affective relations with seeds, plantlife, and place in waste landscapes like the Quarry.

5.4 Recuperation for Wit(h)nessing Common Worlds

Part of the intention behind the Transforming Waste Practices project was to undertake a critical re-examination of the 3Rs of waste - recycle, reduce, reuse. In early childhood settings, the 3Rs are a memorable slogan to adopt, but in practice operate in ways which have been criticized for absolving producers of responsibility for discard materials, shifting the problem and the solution of the waste crisis to the level of the individual (Merewether et al., 2023; Pacini-Ketchabaw & Blaise, 2023). Similarly, environmental early childhood education has been criticized for its enduring commitment to anthropocentrism (Taylor, 2017). Drawing on their work in a plastics collaboratory,

Veronica Pacini-Ketchabaw and Kelly-Ann McAlpine think with the concept of excess and plastic as queer kin, no longer separable from human and more-than-human co-existence, to refigure children's relations with waste (MacAlpine & Pacini-Ketchabaw, 2022; Pacini-Ketchabaw & MacAlpine, 2022). I am sensitive to the importance of activating critique, which, thinking with Rosi Braidotti (2012), is made possible through the proposal of an alternative. In experimenting with moving generative critique into action, what might be possible when unsettling waste relations through recuperation as a collective pedagogical orientation, one which disrupts anthropocentric and moralizing arguments for waste relations, resists easy-to-digest solutions, and instead moves toward relational and responsive ethical engagement with shared waste worlds? Recuperation has a long history across different disciplines, from Deborah Bird Rose's (2004) work on decolonial attunements to country, to Donna Haraway's (2016) call to "redo ways of living and dying attuned to still possible finite flourishing, still possible recuperation" (p. 10). An undercurrent of feminist care ethics flows through recuperative orientations to human and more-than-human relationality, something Maria Puig de la Bellacasa (2017) makes clear as she situates feminist reclamation projects as "recuperating previously neglected grounds" (p. 11). Yet, the notion of recuperation itself is complex and contested. For example, in working with children and educators how might we take care in attending to recuperative pedagogies in ways that do not reinscribe human supremacy, or collapse into idealized or romanticized fictions about a past state of being? This matters for how we might approach waste landscapes like the Quarry, where it is possible to be seduced by the myth of a return to unspoiled nature. The promise of becoming natural again is in the name - *naturalization site.* Eve Tuck, Marcia McKenzie and Kate McCoy (2014) are critical of modes of environmental education which treat this form of recuperation as a product of the settler imaginary, and a humanist gesture toward the legitimation of colonial logics. Recuperation as a practice for common worlding requires active resistance against rescuing or maintaining the project of settler colonialism, and so care must be taken to enact recuperation as intentional movements toward disrupting what David Lloyd and Patrick Wolfe (2015) name its logics of dispossession and dominance. In conceptualizing child-waste landscape relations through recuperative pedagogies, I return to common worlding and wit(h)nessing as a reminder that we are

collectively implicated in, and response-able toward shared worlds, and that worlds are made and remade, not restored.

How then might educators and researchers make pedagogical decisions which attune to children's worldly entanglements, particularly in waste landscapes? Recognizing the limitations of child-centred pedagogies, some critical scholars in recent years have turned to interdisciplinary theorizing to help move beyond the anthropocentric gaze in early childhood studies and reorient pedagogical thought. As Affrica Taylor (2020) has written, the discursive centering of sustainability which undergirds much of Western environmental education frequently reinforces an anthropocentric saviour narrative and positions humans as separate from and responsible for fixing a damaged earth, rather than as always-already in deeply entangled relationality with more-than-human worlds. Tonya Rooney, Mindy Blaise, and Felicity Royds (2021) think with care ethics to develop the concept of 'weathering-with pedagogies' to ground children's weather relations and educators' pedagogical responses in complex and shared socio-ethico-political more-than-human worlds. Fikile Nxumalo (2019) thinks with decolonial orientations to place to refigure Indigenous presences and unsettle children's relationality with rotting tree hollows, remnants of histories of colonial extraction in British Columbian forests. While these examples are not explicitly grounded in the concept of recuperation, I read it through the kind of deep pedagogical work happening when researchers take up common worlding pedagogies as practices of refiguring child-world relations in their commitment to "encounter our difference" (Taylor & Giugni, 2012, p. 113). Beyond early childhood, Donna Haraway (2016) writes of recuperation in the context of living and dying without the promise of survival, as practices which tend to non-innocent kinships nonetheless tethered in sympoietic world-making. Recuperative pedagogies are thus not committed to beautification, beauty is too vain a pursuit, too grounded in romantic myths of nature's purity. Nor do they intend to 'set things right again' via repair, though, as a conceptual kin of recuperation, repair has a long history as feminist care practices (Crosby & Stein, 2020). By bridging the conceptual connections between common worlding, wit(h)nessing, and recuperation, I am trying to offer new frameworks for being affected by shared relationality. If waste relations are understood as co-poietic entanglements, in what ways might we be differently accountable, or in different relation with plantlife in

blasted landscapes? From wit(h)nessing emerges pedagogical thought because of the coming into awareness of a duty of reciprocity in co-and-sympoietic relationality with waste landscapes and the possible production of new forms of being together in the encounter-exchange.

In this project our pedagogical thinking and doing oriented around recuperation as a disposition for encountering waste landscapes distinct from sustainability—as a pedagogical orientation committed to decentering the individual and responding to the Quarry with recuperative ethical commitments. Again, I look to Deborah Bird Rose and Donna Haraway to situate seed-bombing as recuperative work, as a practice of wit(h)nessing children's common worlds, and as a generative relational gesture which might create different forms of living together. From Rose (2004), who frames witnessing as "promoting remembrance" (p. 30) and whose work was always in dialogue *with*—thinking *with* kin, being *with* place—I am reminded that recuperation is a response to witnessing differently, to looking beyond the self in recognition of our being-and-becoming-with places and non-human Others. And from Donna Haraway, who invites a reconsidering of sowing seeds as terraforming, as the creation of new ways of being human with plants and earthly matter, I am reminded that, in alignment with Boscacci's wit(h)nessing, worlding is a trans-subjective shift. Haraway sees this as a making-together of different futures on a degraded planet, suggesting that "sympoesis is a carrier bag for ongoingness, a yoke for becoming-with, for staying with the trouble of inheriting the damages and achievements of colonial and postcolonial naturalcultural histories in telling the tale of still possible recuperation." (2016, p. 125).

5.5 Recuperative Pedagogies for Ecologically Damaged Landscapes

In this section I share moments from practice to illustrate the thinking and doing from our seed-bombing which concluded the four-month walking inquiry. I weave together thinking on wit(h)nessing, common worlding, and recuperation as orienting concepts for attuning to the Quarry as a waste landscape and grappling with our accountabilities to a place we spent commoning with. The inquiry emerged in collaboration with three

educators and eight children from one preschool, and one kindergarten classroom whose parents or guardians provided consent for their children's participation in the inquiry, while in total 24 children took part at various times as members of the classrooms. Broadly, the inquiry was focused on generating conceptual and pedagogical possibilities for reimagining children's relations with waste landscapes, which meant that much of our time was spent thinking and talking about waste and its temporalities at the Quarry. After reaching capacity, engineered landfills require ongoing maintenance, even upon conversion for post-waste collection land use, including systems for gas capture and leachate containment (Reno, 2016). The summer we walked with the Quarry coincided with a municipal infrastructure project wherein the existing gas ventilation system[24] was replaced with a passive gas collection system. This meant that we walked alongside an active construction site[25] as labourers extracted the gas vents which previously dotted the hillside and spaces just off the trails. As the summer continued and our inquiry was winding down, it was the presence of construction vehicles and their impact on the lands which provoked affective and relational responses from the children, and together we planned to create and disperse seed bombs.

[24]http://www.igrs.ca/PDF/Glenridge.pdf

[25]I have written elsewhere (Jobb, 2022) on the pedagogical possibilities of walking-with the Quarry as an active construction site

Figure 9 Walking with Trampled Grass

5.5.1 The Life of Landfills

At the centre of the Quarry is the summit overlook, a large hill with intersecting trails that wind around its perimeter and curve up and around its slopes. It is here where we walk in closest proximity to the Quarry's waste holdings. It is here where, upon closure, barriers and infilling and landscaping fabric and plantlife meet to separate the park's visitors from the waste below. It is here where labourers drive excavators through the tall grass throughout the summer, where their treads roll across the landscape and leave flattened grass behind and where their extraction of gas wells reveal layers of waste embedded in the soil.

At the northern edge of the Quarry there is a large, clay-bottomed, borrow-pit pond. Borrow-pits refer to the space remaining when materials (e.g., soil; limestone; gravel) have been excavated and extracted for usage elsewhere, and when such landscapes are excavated for human use the resulting pit can become a body of water by way of natural

runoff or intentional water management. In sites like the Quarry where waste is present, leachate runoff remains an ongoing environmental concern requiring ongoing monitoring and intervention, but in its capacity to sustain life, spaces like the pond are a meeting point from where we might orient toward the radical relationality between humans, waste, and non-human Others (Hird, 2013b; Hird & Yusoff, 2016). Many of our walks included a detour to the sandy bank of the pond to walk alongside frogs, ducks, and geese—dead and alive (Jobb, in press)—who make their homes in and around the water. While much of the reedy or elevated shoreline which borders the pond creates a distance between walkers and water, the sandy bank is an open space where children and educators could gather and pull clay from the shallow water where the pond meets the shore.

The possibilities for responding to histories of extraction and ongoing damage to these lands came into view through our encounters with the pond and clay and the flattened foliage. What modes of living here might we bring into dialogue with one another as we work the concepts of common worlding, wit(h)nessing, and recuperation in this blasted landscape? From early in our inquiry, as we traced multispecies life and death across the Quarry, as we witnessed new life in the pond and extinction on the summit, the children were drawn to the clay, forming it into balls to throw back into the pond, or leaving small sculptures on the bank. In spaces like the Quarry, the life of materials like clay are always in co-relation. Between the clay pulled from the pond and the clay used in constructing a barrier system between the waste below and trails above, its life takes multiple forms. Our encounters with clay reveal a tension, where pulling it from the water for our own desires intersect with histories of extraction, and yet, here, clay and seeds and waste are co-poietic materials in children's common worlds. Thinking with clay as an extracted material, Pacini-Ketchabaw et al., write that "ecologies of practice are always emergent" (2017, p. 65). How then might we attend to the tensions this accountability to enact recuperative pedagogies while acknowledging that our pedagogies are already ensnared in the overlap of waste flows and capitalist extraction and discourses of childhood premised upon "anything goes" (Pacini-Ketchabaw & Blaise, 2023, p. 120)?

Figure 10 Encountering Clay

5.5.2 Gathering

Figure 11 Creating Seed Bombs

The materials we gathered to compose our seed-bombs were easy to source, and we established two parameters around their creation and dispersal. First, the materials we used to assemble the seed bombs were gathered from the Quarry - the clay was collected from the shallow bed of the pond, while ‘seeds’ were collected from dead plants and grasses which had been damaged by construction equipment. The children left the marked trail, into the areas damaged by the construction vehicles, returning with what they called ‘seeds’ stripped from flattened and dead plants, like the panicles from Canada Wild Rye and Indian grass, and the prickly burrs from dried thistle, to name a few. Second, our seed bombs were dispersed throughout these same areas, as the decision to create seed bombs came in response to walking alongside plantlife flattened and pulled

from the earth by the treads of construction vehicles working to decommission the gas valves. From Vanessa Clark (2019, p. 127) I am reminded that gathering "creates small conditions" to guide ethical decision making in how and what to gather. I frame these parameters for gathering as wit(h)nessing practices, attuning to the particularities of the Quarry as a blasted landscape where, again, recuperative orientations are not committed to restoration to a mythical 'before', but gesture toward the possibilities for flourishing in different formations. Nor are recuperative orientations unaware of the impact of our pedagogical interventions. These parameters are instead an ethical grappling with the non-innocence of our presence at the Quarry, while remaining attuned to our co-becomings and co-makings. They show our moves to minimize our impact on the continued degradation of the land, and to think with anti-colonial orientations which acknowledge the existing non-human presences when working with the possibility of future life at the Quarry.

5.5.3 Dispersing

Over a two-day process in the final week of August before the kindergarten children returned to school, we assembled our seed bombs. On the first morning, after a walk to the Quarry to gather our materials, we returned to the childcare centre and worked together, adding water, or clay where necessary to thin or thicken the seed bombs and pressing seeds into the middle and rolling them into balls. We dried them on a tray overnight and when I returned the following morning for our final walk together, we gathered the seed-bombs and carried them to the summit overlook. Here, stepping off the trails we had walked together for four months, the children hurtled the seed bombs into the most recent expanse created in the wake of innumerable anthropogenic harms on these lands. When the last seed bomb had been thrown, we walked back to the centre, and our working and thinking together on this project concluded. In a project which worked to decentre the individual child and disrupt anthropocentric logics at the heart of early childhood education, I situate the dispersing of seed-bombs as a launching away from the child and toward our degraded common worlds as an enactment of recuperation toward shared matter(s) of concern. A small moment in a series of small, but carefully

considered moments spent thinking with recuperation as an attunement to more-than-human flourishing in waste landscapes.

Figure 12 Dispersing Seed Bombs

Figure 13 Dispersing Seed Bombs

5.6 Conclusion

Where I end is the significance of the uncertain and tentative gestures that undergirds much of common worlding pedagogies, and which provoke questions of how we might live well together, while we can, in whatever ways we can. For me, wit(h)nessing as a practice for common worlding is an attunement toward being affected by our shared ruins, and thinking with recuperation is an ethical consideration of shared co-becomings across multiple timescales—child, waste, land, and more-than-human Others. Returning to Haraway "what and whom the Anthropocene collects in its refurbished netbag might prove potent for living in the ruins and even for modest terran recuperation" (2016, p. 47).

What future waste relations might seed-bombing make possible? One conceit of early childhood education is that educators and researchers tend to work and think closely with

children for only a short while, and so the question is unanswerable with any certainty. This indeterminacy is apt for seed-bombing as a pedagogical practice for walking waste landscapes. New modes for flourishing in waste landscapes are contingent upon entangled and uncertain conditions, yet it mattered that we enacted recuperative orientations for refiguring child-waste-landscape relations. Optimistically, perhaps our seed bombs contributed to new life and growth in a damaged ecosystem. Our seed-bombing represented a conclusion of the Blasted Landscapes project, a pedagogical gesture to respond to the affective meeting points between childhood in waste landscapes and the possibilities for shared relationality therein. In this sense the conclusion of our inquiry left open other possible beginnings that neither I, nor the children and their educators were around for long enough to see come to fruition. For now, what seems certain is the common worlds to come will include waste as a co-constitutive presence, worlds made and remade in relation with inherited blasted landscapes.

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Interlude

Well, I'm here and you're here and it's true
There's a whole lot of walking to do

-Ted Leo & The Pharmacists, *Walking to Do*

Chapter 6

6 Conclusion

This quiet anger at myself and others like me, carrying on our mundane but affected lives, this refusal to give up even in daunting circumstances, this joy, delimits a way to live in the midst of the blasted world. (Shotwell, 2016, p. 200)

6.1 Introduction

The four articles which comprise this dissertation follow a four-month post-qualitative inquiry with children and early childhood educators at the Glenridge Quarry Naturalization Site in what is currently known as St. Catharines, Ontario. The articles offer important contributions toward conceptual and pedagogical directions for walking-based research in waste landscapes in early childhood education. In chapter two, my first article, I attended to waste as a cross-temporal figure, but also a multi-scalar material presence, an affective and relational mark upon the places and spaces of Anthropocene childhood(s). I conceptualized a neologism—*wit(h)ness marks*—as a theoretical and empirical starting point for orienting waste pedagogies and trace its emergence across three examples of child-waste-world relationality. In chapter three, I moved beyond the individual child at the centre of early childhood education, looking to encounters with geese and snails to open to questions of what it means to live and die well together as shared multispecies concerns in waste landscapes. Chapter four offered timely directions for walking research in landscapes produced by relations with waste and develops a concept—*walking-wit(h)nessing*—and three propositions for activating walking-wit(h)nessing waste in early childhood education. Lastly, chapter five documented the conclusion of the pedagogical inquiry, where children and educators developed seed bombs from clay and seeds sourced from the Quarry as a move toward recuperative orientations for rethinking environmental early childhood education. Here, in this concluding chapter, I will address the two overarching questions which framed this exploratory and emergent inquiry and describe four key contributions which build upon the existing literature. I end with possible future directions for early childhood

pedagogical inquiry and walking with children in waste landscapes.

6.2 Orienting Questions and their Rhizomatic Ways

In the introductory chapter I framed the inquiry and my processes and practices through the language of post-foundationalism and post-qualitative inquiry. In this section I respond to the orienting questions while making an ethical insistence for more, for honouring the generative pedagogical work that began with these questions, but which begat more, and different questions, and more and different ways of thinking and doing inquiry with children and educators. This ethical insistence emerged from engaging with the literature beyond early childhood education, finding new language and new orientations for inquiry which articulate alternatives to the positivist, humanist, and essentialist groundings of developmental early childhood research. By this I mean that an interdisciplinary, post-qualitative orientation followed from attuning to the scale and temporalities of walking-with children in waste landscapes, and the lines of inquiry I became most interested in following would be constrained by positivist methodologies. As Elizabeth St. Pierre (2021) writes, qualitative research as traditionally conceived can "over-determine thought and practice, closing off what *might be* thought and done in favor of doing, thinking, finding, and representing *what is*, what exists" (p. 164). Throughout the dissertation I have described experimental modes of inquiry as a move toward expanding the bounds of how educators and researchers might think the entanglements between childhood and waste. I see this project as a shift which opens to emergent (re)theorizing on questions of scale, time, more-than-human relationality, and how walking might be a conduit for such thought. And so here, I return as a reminder that post-qualitative inquiry is a rhizomatic practice (Brown, McKesson, Robinson & Jackson, 2021), a co-poietic orientation for thinking-with the ethics of being and becoming alongside complex common worlds during a global waste crisis. Walking-with children and educators opened to uncountable questions; here I return to the two overarching lines of inquiry which anchored the project, and from which the project departed in meaningful ways.

1. What nature/culture narratives are embedded within the Glenridge Quarry

Naturalization Site? What are the possibilities for restorying the Quarry with young children through walking-based methods?

As I wrote in the introductory chapter, reconceptualist scholarship in early childhood education has worked to disrupt Cartesian dualisms—e.g., body/mind; nature/culture—which reinforce colonial hierarchies (Taylor, 2011; Nxumalo 2019a). One intention for this project was to disrupt the separation and hierarchization of childhood and waste, instead conceptualizing their entanglements as a form of emplaced, situated, and implicated relationality. As Erica Burman (2012) and Lydia Martens (2018) have described, childhood has long been discursively constructed in relation with binaried conceptions of purity and cleanliness, as set apart from waste. Relatedly, interdisciplinary scholars such as Alexis Shotwell (2016) have argued against the myth of purity, reminding me that escaping contamination is impossible in our interrelated waste worlds. In early childhood education, Alex Berry, Cristina Delgado Vintimilla, and Veronica Pacini-Ketchabaw (2020) have similarly intervened in discourses of purity emerging from child-river-plastics encounters, arguing that, "toxic collaborations constitute this place" (p. 280). As the project unfolded, the visibility of waste and its impact on the landscape helped give shape to how we might disrupt nature/culture and child/waste binaries. As the construction continued[26] and we walked-with the layers of uncovered waste, the key narrative which emerged was the relational logics educators could presence through proximity and insisting upon nearness, a *with*-ness, rather than separation from waste. I view this as a necessary (re)orienting for how educators and researchers understand children's co-constitutive waste relations. This attunement to different stories, and different conceptions of how childhood and waste intersect offered generative directions for how educators and researchers might take up these relations pedagogically.

Further, how might walking-with waste landscapes generate restorying practices which work to contest what I view as an intersection of shared ambivalence and political

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[26]See: Jobb, 2023 for a more in-depth analysis of walking-with the Quarry as an active construction site

neutralization of post-closure landfills and their conversion into recreation sites? In the plainest of terms, Anthropocene landscapes are weird (Turnbull, Platt, & Searle, 2022), and how this weirdness intersects with the geographies of childhood is, at present, under-theorized. How might we make sense of childhood(s) lived atop or adjacent to former landfills? How might we begin to make this knowledge visible, to invite other stories for other possible futures? My sense is that both the scope and scale to which waste and human life intersect has been rendered nearly incomprehensible, while the neoliberal managerial logics which underpin what Myra Hird (2021) names waste flows are effective at preserving a sense of arms-length distance and containment from waste. A different logic is needed, a different story of waste is needed. I suggest that engaging practices which restory waste landscapes is one possible minor pedagogical movement, a Baradian (2007) agential cut that interrupts what is perceived to be in the creation of what could otherwise be. Scholars from waste and discard studies remind me that the hiding of landfills is by design (Hird, 2017; O'Hare, 2021). While a plethora of research exists on landfills and the environmental monitoring required to try to contain their ill effects on health and well-being, it has only been recently that waste studies and discard studies have begun to ask different questions—questions about waste and its impact on shared worlds, and what other waste-worlds might be possible? To that end, (re)storying the Quarry became an important practice during our walking, one which made it possible to practice other ways of witnessing this particular time and place.

Here, I want to share a brief anecdote, a moment from practice which illustrates how place names become a part of the stories we tell about the places in which we gather, and what restorying might make visible and open toward. In a co-authored article (Wintoneak & Jobb, 2022), I wrote briefly about the significance of place names, and how one might view the Quarry as a named place through what Robin Wall Kimmerer (2017) describes as language which suppresses places and stories. The Quarry was a familiar part of the children and educators' lives, a place where prior to my involvement with the centre and our walking inquiry they walked frequently. In the area of the site the map names the Children's Science and Nature Zone there are large painted metal sculptures, designed to represent weather phenomena—lightning, waves, rainbows. It is from one of these sculptures that, for the children and educators, 'The Rainbow Park' became a descriptor

and a name for this place, one I learned on our first walk together. The rainbow sculpture was both a landmark by which the children could situate themselves—its coloured arches rising from its meadowed surroundings—but also a name which seemed to obscure the histories and presences of this landscape. As we continued to walk, sharing stories, including stories of the site's history as a landfill and Quarry, the educators and I noticed a gradual shift in how the children referred to this place. Slowly, as stories of waste and limestone were shared, as waste was uncovered and encountered through the gas valve decommissioning, the Rainbow Park gave way to linguistic signposts and restorying which began orient us more closely around the site's history of extraction and waste. The children began to speak of *the Dump*, or *the Landfill*, or, most frequently, *the Quarry*—names for this place which afforded a presence to obscured histories. I point to this one example of restorying to articulate that it mattered that we walked here, at this former landfill, at this particular point in time, and that it was restorying practices which contributed to the emergence of particular pedagogical decisions.

2. What are the possibilities for early childhood educators developing situated, responsive pedagogies of place at the Glenridge Quarry Naturalization Site?

In my introductory chapter I wrote of how this inquiry at the Quarry begins from, but also departs from a place-based understanding of how much of environmental early childhood education is framed. As I have tried to make clear throughout the dissertation, as the project emerged, I became more interested in place as a germinative concept than in maintaining disciplinary or conceptual boundaries. Place may have been a starting point, but, thinking alongside Fikile Nxumalo (2019b), presencing required taking the Quarry and its past(s), present(s), and uncertain future(s) as an invitation to rethink the concepts necessary to respond to childhood in waste landscapes. That is to say that yes, presencing and restorying the Quarry opened to situated, responsive place pedagogies, but that the inquiry also required more than place stories, more than place pedagogies.

Again, here, I will look to a moment from practice which both responds to the question of place pedagogies and opens to what the inquiry became when we complexified place to invite more into our thinking and doing. In chapter one, where I introduced the concept of

wit(h)ness marks and provided three examples of waste-child-landscape interrelationality to illustrate the concept, I drew upon encounters with snails and uncovered waste as one of the examples. Snails were a constant presence in the park, a more-than-human companion through whose company we explored complex child-waste-landscape relations. An early encounter with snails was a shared realization that they congregated in tightly packed groups, and often in spaces adjacent to, or even in the way of shared paths. One of our familiar walking routes through the Quarry brought us around the north side of the hill, where the children enjoyed the challenge of the steep trail to its summit. We were often met by a cluster of snails at the foot of this particular trail and these encounters invited both an immediate ethical complexity to our walking practices, and also a situated pedagogical provocation—how might we respond to the matters of concern in front of us? To whom and what are we accountable when we walk in this place? The children's concern varied, some appeared unbothered by the crunching of snail shells underfoot, treading ahead and over the snails, while others tried to step tenderly through the grass, avoiding the snails where possible, others still suggested we leave the snails be and seek another route. I share this not to suggest that we ever came to a correct decision, but rather to offer it as a further disruption of the nature/culture divide and discourses of childhood innocence. Our shared child-educator-snail movements and place relations were not innocent, our walking killed countless snails, but that we slowed to attune to concerns beyond the self which dominates much of early childhood research points to the possibilities for generating situated, responsive place pedagogies.

Beyond the possibilities for disrupting nature/culture narratives, restorying practices, and pedagogies of place, which opened to witnessing child-waste relations differently, I am left wondering how to respond to the rest? How to encapsulate both the questions this project attempted to answer and write toward the rhizomatic questions that emerged across four months of walking and thinking together? How to enact and make visible the rhizomatic potentialities for post-qualitative inquiry in early childhood education? How does one speak to an inquiry grounded in commitments and accountabilities to early childhood education, while also looking beyond to open to dialogues and collaborations with the environmental humanities, with children's geographies, with waste and discard studies? To that end, I want to highlight four key arguments this dissertation makes for

why it matters that researchers and educators and children witness waste differently, continue attuning to waste as a co-constitutive presence in early childhood education, and how walking-based inquiry helps make such an attunement possible.

6.2.1 Following a Rhizomatic Inquiry

After responding to the two orienting questions, I want to gesture toward making room for the conceptual and pedagogical possibilities when children, educators, and I began to witness waste and its presence(s) differently. Here, I will trace four contributions the dissertation makes to interdisciplinary research on children and childhood. To begin, as the four articles make clear, Louise Boscacci's (2018) word-concept wit(h)nessing looms large over what became possible when children, educators, and I began to conceptualize waste, and our presence at the Quarry as forms of marks. First originating from Bracha L. Ettinger's (2001) work in feminist psychoanalysis, Boscacci introduced wit(h)nessing to the environmental humanities to draw attention to the co-poietic being-and-becoming more-than-human others that constitutes life in the Anthropocene. Boscacci's framing of wit(h)nessing as an *encounter-exchange* resonated through the ways I began to notice child-waste-quarry relations. The first contribution this dissertation makes is the neologism *wit(h)ness marks*, a conceptual (re)theorization for children's entangled relations with time, scale, waste, and landscapes. I began to understand an emergent sense of togetherness-*with,* being-and-becoming-*with,* walking-*with,* living-*with* as affective and relational noticings through which child-waste relations might be conceptualized differently. I contend that wit(h)ness marks offer a conceptual and pedagogical starting point for attending to children's Anthropocene relations, specifically by noticing and naming the co-poietic anthropogenic harms as a form of mark. Locating wit(h)ness marks as the focal point of pedagogical inquiry accomplishes two aims. First, it follows arguments from common worlding research to situate the child as not separate from, but within worldly relations, in all their complexity, including across scale and temporalities. Second, it establishes waste as a co-constitutive presence for contemporary childhoods, an inextricable relationality when taken in the context of global waste flows (Hird, 2021).

Waste is not the only co-constitutive presence in early childhood, and the second contribution I make in the dissertation concerns the co-emergence of childhood subjectivities alongside more-than-human Others and waste. In recent years, researchers have worked to divert, or decenter the individual, developing child at the locus of early childhood education and childhood studies (Land, Vintimilla, Pacini-Ketchabaw, & Angus, 2022; Nxumalo & Vintimilla, 2020; Spyrou, 2017). In part to call attention to the limitations of developmental discourse and its overrepresentation throughout much of contemporary early childhood research, a decentering also invites a presencing of newly articulated ethical and political commitments, ones which enable a move beyond the field's dominant humanist orientations. To that end, as we walked with the Quarry and its more-than-human inhabitants, it became clear that multispecies inquiry was at least part of the story of child-waste-landscape encounters. Children's multispecies relations have a long history in common worlding scholarship, and I build on this body of research by returning to Boscacci's wit(h)nessing as a conceptual and pedagogical orientation for thinking the existential entanglements of childhood, waste, and more-than-human Others. I read wit(h)nessing through children's fleeting encounters with snails and geese, which I describe through their frictions, their uncertainties, and their indeterminacies. At the heart of this multispecies inquiry is a Haraway-ian ethical question of what it means to live and die well together. Activating children's entangled encounters with waste and more-than-human Others as pedagogical practices of being-and-becoming and living-and-dying-with the global waste crisis requires understanding—as Cristina Delgado Vintimilla and Veronica Pacini-Ketchabaw (2020) offer—pedagogy as a practice of subject-formation. I contend that inviting wit(h)nessing into pedagogical inquiry offers important conceptual directions for understanding children's waste and multispecies relations as co-poietic encounters with life and death in waste landscapes.

Walking as a mode of critical inquiry has emerged in recent years to foreground ethical, response-able attunements to place (Springgay & Truman, 2018). The third contribution this dissertation makes are conceptual and propositional directions which build upon existing walking scholarship. As an orienting practice for this inquiry, I became interested in exploring the possibilities for walking-based inquiry as practice for disrupting the separation of waste and childhood by insisting upon proximity. Of

particular interest was how walking might make visible and contest waste logics I articulate as invisibility, scalar incongruence, and solvability. Drawing again on Boscacci's concept wit(h)nessing and inspired by Juanita Sundberg's (2014) walking-with as a decolonial orientation to place, I trace what I call *walking-wit(h)nessing* as a relational, affective, and trans-subjective concept for reimagining children's relations with waste landscapes. I also take up walking-wit(h)nessing as a propositional gesture to incite the creation of exploratory and emergent practices for understanding human-waste subjectivities. I suggest that propositional thinking is a reminder and an invitation to other scholars and educators to activate walking practices with children in ways that propel pedagogical thinking and curriculum making toward the yet-to-be-known.

Here, as I articulate the final contribution this dissertation makes, I want to be careful to not provoke a sense of literalism, to not offer something replicable but instead insist upon returning to the situatedness of this inquiry. Pedagogical inquiry requires that educators and researchers do something, that we bring concepts and practices into dialogue with one another intending to create ideas and practices which bridge temporalities. By this I mean pedagogy is a labouring that responds to past(s) and present(s) while also generating speculative educational gestures for what is yet to be. Cristina Delgado Vintimilla (2023) describes this as working to "cultivate conditions for other possible futures" (p. 19). I have been careful throughout to avoid being prescriptive in terms of how educators and researchers might activate and mobilize waste pedagogies, moving away from repetitious and extractive modes of learning. The Common Worlds Research Collective (2020) describes this as a necessary shift "from learning about the world in order to act upon it, to learning to become with the world around us" (p. 2). This aligns with this dissertation's insistence on attuning to the possibilities for wit(h)nessing as a conceptual and pedagogical orientation for reconceptualizing children's waste relations as a being-and-becoming-with 21st century waste worlds. To that end, the thinking and doing which emerged over the course of these four months is deeply responsive to the particularities of the Quarry as a waste landscape at this moment in time. The Quarry holds other, multi-temporal stories, including those yet to come. Our pedagogical work culminated in a responsive and relational decision to make and disperse seed bombs from gathered materials, bringing together early childhood education with a long history of

radical environmental activism. Thinking with recuperative pedagogies is a rejection of extractive, colonial logics, while seed-bombing offers a tentative gesture I frame as an enactment of recuperative wit(h)nessing other possible futures.

6.3 Future Directions: Walking and Thinking Toward the World(s) to Come

Before concluding I will offer some ideas for future directions for continued walking inquiry, and for pedagogical inquiry which takes up an expansive understanding of blasted landscapes in early childhood education.

6.3.1 Future Directions for Walking Inquiry

Walking practices have been instructive for emergent, responsive, and relational modes of inquiry, particularly for place-attuned scholarship. To that end, I offer two suggestions for future walking inquiry with young children. First, continued research is needed on walking-with environments and locales which expand the boundaries of children's common worlds to create the conditions for conceptual and empirical foci for critical environmental childhood studies and early childhood education. Framing the Quarry as a waste landscape throughout the dissertation was an intentional decision toward disrupting purity discourses which co-constitute contemporary childhood, and it was thinking-and-walking-with which enabled educators and researchers to unsettle these material-discursive figurations. What are the possibilities for walking alongside yet-to-be-explored co-constitutive presences when working with common worlding as an orientation for thinking children's worldly relations? Second, in chapter four I pointed to the importance of walking as a form of collective mobilization. Much of the existing scholarship on walking has embraced its potentialities for creating the conditions for a more politically engaged collective consciousness (e.g., Springgay & Truman, 2018), yet is more heavily weighted toward adult walkers. As with purity discourses, constructions of childhood as a politically neutral time of innocence remain prevalent, despite the more critical factions contesting these figurations. Walking with children can be similarly politically engaged, but more work is required in early childhood studies on how walking might be activated

as a pedagogical practice which points toward children as engaged political actors shaping shared futures.

6.3.2 Future Directions for Pedagogical Inquiry in Blasted Landscapes

While the concept emerged from child-waste relations, I describe wit(h)ness marks as inscriptive presences, ones which can be taken up in dialogue with a multitude of anthropogenic harms. In the conclusion to chapter one I pointed toward other possibilities for which wit(h)ness marks might be a useful mode of analysis and pedagogical thinking. Where I write from, in what is currently known as Canada, for example, how might educators working in landscapes (re)shaped by the extractive environmental degradation of the oil and gas industry invite wit(h)ness marks into their pedagogical thinking? Thinking with Anna Tsing (2014), whose concept blasted landscapes also figures heavily throughout this inquiry, what other forms of blastedness might be of concern for 21st century childhoods? More expansive analysis of the shape and scale of early childhood blasted landscapes are needed to take up wit(h)ness marks in other formations. Separately, beyond early childhood education, there may exist interdisciplinary possibilities (e.g., in discard and waste studies, in the environmental humanities) for putting wit(h)ness marks to work.

6.4 Conclusion

The common worlds of early childhood in the age of the Anthropocene unfold in complex webs of human and more-than-human relationality. Throughout this dissertation I have established waste as a co-constitutive presence for 21st century childhood(s), one for which it is no longer feasible to ignore or work to separate children from. I want to return to the problematic of scale as a commonality threaded throughout the preceding articles, bolstered by critiques from discard and waste studies on logics of consumer responsibility for solving the global waste crisis. And so here, to conclude, it is with other possible futures in mind that I will return to the question of scale as a remaining rhizomatic tendril for collective concern. Waste as a multi-scalar concern remains central to why I suggest the co-emergence of childhood subjectivities alongside the global waste

crisis should continue to matter for pedagogical inquiry with children. As I wrote in the introductory chapter, our intention was not to ‘fix’ the Quarry—this was not an inquiry for reinscribing individual responsibility or reproducing sustainability narratives for shifting individual behaviour and habits. The scale to which waste’s accumulation has and will continue to reshape landscapes is beyond the purview of any one group of children or educators, however, in saying that, I also want to be careful to not suggest evading a pedagogical response-ability to shared waste worlds. It matters that educators, scholars, and activists attend to the intersections of childhood and waste as a shared concern for pedagogical and curricular thought in early childhood education. At the heart of what remains as this inquiry drew to a close is an uncertain wondering—can we walk new waste worlds into being? The indeterminate life of waste leaves that question temporarily unresolvable, however, this inquiry has shown that we can walk new relationalities with waste into being. I see this as a rejoinder for early childhood education to remain critically attuned to the conceptual and pedagogical work ahead for reshaping childhood waste subjectivities. Waste pedagogies which take up waste as a co-poietic presence to walk alongside with 21st century childhoods open to the possibilities toward less extractive, more recuperative, and more collectively engaged and attuned waste futures.

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Chapter One: Introduction

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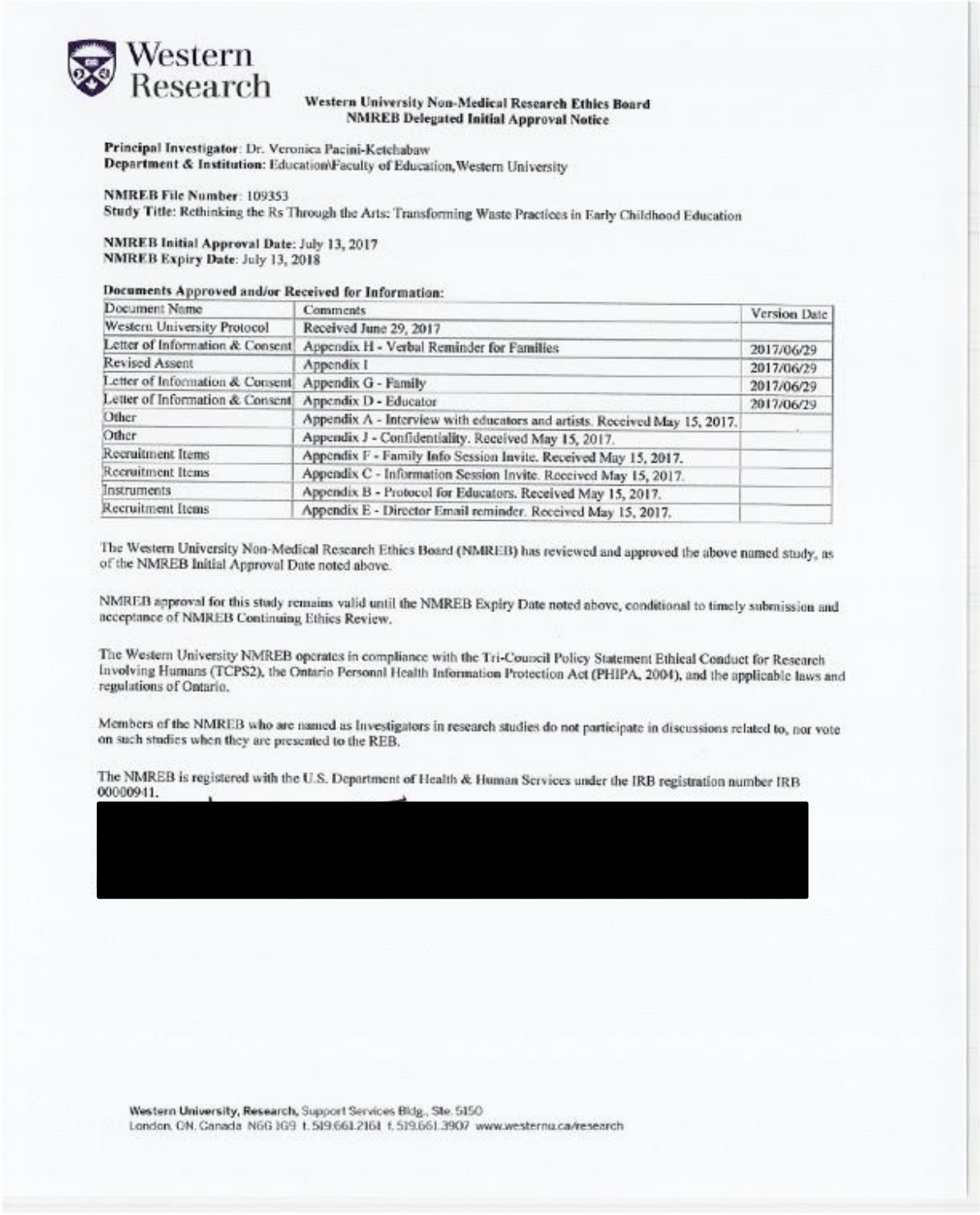
Appendix A: Research Ethics Initial Approval Notice



Western Research

Western University Non-Medical Research Ethics Board
NMREB Delegated Initial Approval Notice

Principal Investigator: Dr. Veronica Pacini-Ketchabaw
Department & Institution: Education\Faculty of Education,Western University

NMREB File Number: 109353
Study Title: Rethinking the Rs Through the Arts: Transforming Waste Practices in Early Childhood Education

NMREB Initial Approval Date: July 13, 2017
NMREB Expiry Date: July 13, 2018

Documents Approved and/or Received for Information:

Document Name	Comments	Version Date
Western University Protocol	Received June 29, 2017	
Letter of Information & Consent	Appendix H - Verbal Reminder for Families	2017/06/29
Revised Assent	Appendix I	2017/06/29
Letter of Information & Consent	Appendix G - Family	2017/06/29
Letter of Information & Consent	Appendix D - Educator	2017/06/29
Other	Appendix A - Interview with educators and artists. Received May 15, 2017.	
Other	Appendix J - Confidentiality. Received May 15, 2017.	
Recruitment Items	Appendix F - Family Info Session Invite. Received May 15, 2017.	
Recruitment Items	Appendix C - Information Session Invite. Received May 15, 2017.	
Instruments	Appendix B - Protocol for Educators. Received May 15, 2017.	
Recruitment Items	Appendix E - Director Email reminder. Received May 15, 2017.	

The Western University Non-Medical Research Ethics Board (NMREB) has reviewed and approved the above named study, as of the NMREB Initial Approval Date noted above.

NMREB approval for this study remains valid until the NMREB Expiry Date noted above, conditional to timely submission and acceptance of NMREB Continuing Ethics Review.

The Western University NMREB operates in compliance with the Tri-Council Policy Statement Ethical Conduct for Research Involving Humans (TCPS2), the Ontario Personal Health Information Protection Act (PHIPA, 2004), and the applicable laws and regulations of Ontario.

Members of the NMREB who are named as Investigators in research studies do not participate in discussions related to, nor vote on such studies when they are presented to the REB.

The NMREB is registered with the U.S. Department of Health & Human Services under the IRB registration number IRB 00000941.

[redacted]

Western University, Research, Support Services Bldg., Ste. 5150
London, ON, Canada N6G 1G9 t. 519.661.2161 f. 519.661.3907 www.westernu.ca/research

Appendix 1 Research Ethics Initial Approval Notice

Appendix B: Continuing Ethics Review Form

Western Research

Date: 12 July 2022

To: Dr. Veronica Pacini-Ketchabaw

Project ID: 109353

Study Title: Rethinking the Rs Through the Arts: Transforming Waste Practices in Early Childhood Education

Application Type: Continuing Ethics Review (CER) Form

Review Type: Delegated

Meeting Date: August 5 2022

Date Approval Issued: 12/Jul/2022 12:43

REB Approval Expiry Date: 13/Jul/2023

Dear Dr. Veronica Pacini-Ketchabaw,

The Western University Non-Medical Research Ethics Board has reviewed this application. This study, including all currently approved documents, has been re-approved until the expiry date noted above.

REB members involved in the research project do not participate in the review, discussion or decision.

The Western University NMREB operates in compliance with the Tri-Council Policy Statement Ethical Conduct for Research Involving Humans (TCPS2), the Ontario Personal Health Information Protection Act (PHIPA, 2004), and the applicable laws and regulations of Ontario. Members of the NMREB who are named as Investigators in research studies do not participate in discussions related to, nor vote on such studies when they are presented to the REB. The NMREB is registered with the U.S. Department of Health & Human Services under the IRB registration number IRB 00000941.

Please do not hesitate to contact us if you have any questions.

Sincerely,

The Office of Human Research Ethics

Note: This correspondence includes an electronic signature (validation and approval via an online system that is compliant with all regulations).

Appendix 2 Continuing Ethics Review Form

Curriculum Vitae

Name:	Cory Jobb, MEd, BECE
Post-secondary Education and Degrees:	University of Western Ontario London, Ontario, Canada 2017-present, PhD candidate, Curriculum Studies
	Brock University St. Catharines, Ontario, Canada 2015-2017, MEd, Social and Cultural Contexts of Education
	Brock University St. Catharines, Ontario, Canada 2012-2015, Bachelor of Early Childhood Education
	Algonquin College of Applied Arts and Technology Ottawa, Ontario, Canada 2005-2007, Diploma in Early Childhood Education
Honours and Awards:	Province of Ontario Graduate Scholarship 2018-2019, 2019-2020, 2020-2021
	ETFO Doctoral Scholarship 2017-2018
	Fall Convocation Dr. Michael Kompf Book Prize, Brock University 2017
	Dept. of Graduate Studies Spring Fellowship, Brock University 2017
	Bluma Appel Graduate Entrance Scholarship, Brock University 2015-2016
	Dept. of Graduate Studies Entrance Scholarship, Brock University 2015
	Dept. of Graduate Studies Graduate Fellowship, Brock University 2015-2017
Related Work Experience:	Assistant Professor, Faculty of Education and Social Work Thompson Rivers University

2021-present

Sessional Instructor, Department of Educational Studies
Brock University
2018-2021

Research Assistant
University of Western Ontario
2017-2021

Teaching Assistant
Brock University
2015-2017

Early Childhood Educator
Hamilton-Wentworth District School Board
2011-2021

Publications:

Wintoneak, V., & **Jobb, C.** (2022). Walking collaboratories: experimentations with climate and waste pedagogies. *Children's Geographies,* 1-15.

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