Summer 2019

Common Worlds: Multi-Species Interactions at a Nature Based Preschool

Patty Born

COMMON WORLDS: MULTISPECIES ENGAGEMENTS AT A NATURE-BASED PRESCHOOL

PATTY BORN

A dissertation submitted in partial fulfillment of the requirements for the degree of Doctorate in Education, Hamline University, Saint Paul, Minnesota
August 2019

Dissertation committee chair: Vivian Johnson
Committee members: Teresa Lloro-Bidart and Constance Russell

To Dominic, Lucy, and Julian.
For you, everything, always.

And to
the animals with whom we share this Earth,
and with whom we share moments and futures.

ACKNOWLEDGEMENTS

I first offer my heartfelt gratitude to my family, whose love is the most wonderful part of my life. First, my husband and soulmate Dominic: your belief in me and this process has, on many occasions, been the only thing keeping me going. Thank you for keeping everybody happy while I was so busy. Thank you for always believing in me. You are the greatest of all time. My two children, Lucy and Julian, for not only tolerating but celebrating this work and reminding me what matters. I am sorry I missed so many weekends with you while I was in school. I could never have done this work without your patience, expectation, and love, nor would I have wanted to. You give me more hope for the future than anything. I also offer thanks to Dr. Vivian Johnson, who chaired my dissertation committee and whose support, guidance, and integrity pushed me to clarify my purpose, continually ask the questions that felt right to me, and who willingly ventured into unknown territory in order to support me. Having the support, mentorship and commitment of my two committee members, Drs. Teresa Lloro-Bidart and Constance Russell, has been a great gift for which I am deeply grateful. They welcomed me into the world of environmental education research,

and held the door for me as I stumbled through. They have been unfailingly generous with their scholarship and their support, sharing with me resources, ideas, and feedback that have had profound impacts on my thinking. I'm humbled by your support and so grateful to you both for the work that you do and for the many gifts you shared with me throughout the journey.

I also deeply appreciate those who helped me with the physical act of putting this thing together. Thank you to the staff at Hamline's Bush Library for always being able to pull obscure articles from thin air and deliver them to my inbox. My colleagues in the ninth doctoral cohort at Hamline University-you all have made such an impact on me and I am grateful to you for so many things.

Finally, I extend heartfelt thanks to the staff, families, and animals at the research site. Thank you for letting me be a guest in your world. Your openness and willingness to let me tag along is deeply appreciated. Because you allowed me to do so, I was able to engage in this research, and I hope that my work is a worthy contribution.

TABLE OF CONTENTS

CHAPTER ONE: Introduction……..……..……10

Overview……....10

Background of the Problem……...……11

Definitions……..14

Nature…….14

Animals……..15

Pronouns……16

Affordances……16

Interactions…….17

Wild……17

Environmental Education……...17

Early Childhood Environmental Education……...18

My Own Background and its Influence on My Stance as a Researcher……18

Conceptual Framework for the Study and Theoretical Inspirations……..20

Assumptions and Positionality……...23

Significance of the Dissertation Study……...24

Conclusion…….26

CHAPTER TWO: Literature Review……..27

Overview……27

Environmental Education (EE)……...……...28

Theoretical Frames and Narratives that Influence Environmental Education…...29

The anthropocene, anthropocentrism, and human exceptionalism……30

Problematic narratives and false dichotomies……33

History and Purpose of Early Childhood Environmental Education…….34

Connecting Children to Nature……..37

Animals and Early Childhood Environmental Education……..39

Significance of Child-Animal-Nature Interactions……44

Common worlds…….45

Animals as peers: Embodiment/kinship…….48

Aversion…….50

Conclusion…….52

CHAPTER THREE: Conceptual Framework, Methodology, and Methods……...53

Overview……53

Conceptual Framework: Common Worlds……54

Rationale for a Qualitative Observational Multispecies Approach……...56

Influence of Multispecies Ethnography…….58

Description of the Research Setting and Participants……62

Method: Observation and Jotting……...63

Observing children…….64

Observing animals…….66

Notes……..68

Data Analysis…….68

Ethics…….76

Conclusion…….77

CHAPTER FOUR: Findings and Discussion…….…….78

Overview……78

Theme 1: Power and Agency…….80

Subtheme 1: Rules, safety, consequences, and discipline……..81

Subtheme 2: Children's expressions of power……...85

Subtheme 3: Animals' expressions of agency……...90

Theme 2: Fear, Uncertainty, and Vulnerability……..……95

Theme 3: Identity…….105

Theme 4: Teacher Talk…….111

Conclusion……...114

CHAPTER FIVE: Conclusion…….…..116

Overview……..116

Summary of Findings……...117

Limitations……...…118

Sample size……..118

Timelines……..119

Weather……....119

Additional, unexpected limitations……..120

Size and context……...120

Limitations of dominant discourse……...121

Recommendations for the Field……...123

Future Research Plans……..125

Final Reflection……...128

References……...130

Appendix A……165

LIST OF FIGURES

Figure 1. Visual representation of author's data collection process……..69

Figure 2. Illustration of a "code assemblage." ……..70

Figure 3. Core theme, identity, resulting from emergent themes based on groups of codes.…….72

CHAPTER ONE

Introduction

Overview

The purpose of this dissertation is to contribute to a conversation among practitioners and scholars of environmental education (EE) that urges a reconsideration of the ways in which the framing of much of early childhood environmental education practice and pedagogy (ECEE) rationalizes, perpetuates, or challenges our relations with non-human animals. While numerous researchers are and have been exploring these ideas for some time (Nxumalo, 2016; Nxumalo & Pacini-Ketchabaw, 2017; Rautio, 2013a, 2013b; Russell & Fawcett, 2018; Taylor & Pacini-Ketchabaw, 2019) there is still much to understand. The main question that drives my research is:

- What are the observable and identifiable ways in which children and animals interact within the context of one nature-based early childhood program in a suburb of a metropolitan area in the upper Midwest of the United States?

Secondary questions associated with this study are:

- What are some notable characteristics of interactions between the children and the farm animals in this setting?

- What are the implicit or explicit discursive frames used by educators related to child-animal interactions in this setting?

The purpose of this chapter is to explain the background and significance of these questions, articulate their importance to the field of EE, particularly ECEE, and describe my own relationship to these questions. This is followed by a description of the limitations present within the paradigms and the conceptual frames that have influenced my research. Finally, the chapter ends with a description of how this dissertation contributes to the field, and how I hope my research impacts practitioners and participants in EE experiences as well as those with an interest in the field.

Background of the Problem

The discipline of EE tends to lump animals into an ambiguous category referred to as nature, a term that is ambiguous at best, and open to various interpretations (Bell & Russell, 2000; Stevenson, Wals, Dillon & Brody, 2017). EE practice is often influenced by assumptions that education about or positive feelings toward nature will generally lead to greater stewardship and responsibility toward all of nature including animals[1]. For example, researchers have suggested that directly participating in care for animals may lead to generalized pro-environmental behaviors and attitudes (Chawla & Derr, 2012; Kellert, 2012). Other researchers (e.g. Ascione, 1992; Daly & Suggs, 2010; Gruen, 2009; Hoffman, 2005; Vinig, 2003) have suggested that relationships with animals promote empathy and prosocial behavior, particularly, as noted by Bailie (2010), when those relationships occur during early childhood.

[1] My use of the term animal intentionally excludes humans. While this term reinforces a separation between the human and other members of the animal kingdom, oft-used alternatives such as "nonhuman," "other-than-human," and "more than human" are problematic in their own ways.

Despite the powerful and diverse roles that animals play in people's lives, Wolfe (2010) notes the need for scholars and practitioners to consider more deeply the "animal question" generally, which has been echoed by EE researchers. Although scholars have engaged with this work, they have been largely at the margins, finding a home at the intersections of feminist theory, critical animal studies, eco-pedagogy, and anthropology (Fawcett, 2013; Oakley et al., 2010; Oakley, 2011; Russell & Fawcett, 2018; Spannring, 2017). Early childhood environmental education and pedagogy has largely embraced the so-called children and nature movement, also known as the New Nature Movement (Dickinson, 2013; Fletcher, 2017). Research pertaining to young children and animals in the context of the New Nature Movement tends to focus on the pedagogical, academic, or social benefits of child-animal relationships. This research may arguably be seen as avoiding interrogation of those relationships from a critical perspective that avoids foregrounding humans (Russell & Fawcett, 2018), instead maintaining an anthropocentric paradigm of humans-as-center, and regarding animal-human relationships through the lens of how these relationships impact or benefit humans and human well-being.

My goal in this research is to contribute to the conversation about the "animal question" and to urge others to consider deeper reflection into what it means to share a world with animals, to have intertwined and intersecting lives, and to consider possibilities beyond those limited to how relationships with animals benefit children pedagogically, socially, or otherwise. I am interested in what is happening in those moments shared by children and animals together. How do the relationships between children and animals emerge in early childhood? My work considers the ways in which

human-animal-nature relations unfold, beginning in early childhood, and the implications of that unfolding.

Prominent researchers in the field of EE have identified links between a feeling of nature-connectedness and a commitment to acting in pro-environmental ways (Chawla & Derr, 2012; Ernst & Theimer, 2011). There is a generally expressed concern (Kahn, 1999; Louv, 2008; Mayer & Franz, 2004) within EE, spurred by the child and nature movement, that humans have become detached from their environment both physically and emotionally, and as a result, have minimal sense of connection to, responsibility for, or stewardship toward the natural world. As noted above, however, human-animal relationships largely remain at the margins of the research, if they are addressed at all.

An anticipated outcome of this research is to provoke others to reflect on how animals are situated within ECEE. As some researchers (Boileau & Russell, 2018; Russell & Fawcett, 2018) note, animals are typically valued in ECEE primarily for their role in child development-their use as pedagogical tools. A challenge in ECEE is the deeply rooted child-centric approach to research and practice, which foregrounds children's development and hence, at its core is anthropocentric. Instead, I wish to help push the focus toward an approach that is more inclusive: instead of only prioritizing the child and her development, let us prioritize all inhabitants and constituents of the world, and recognize the relational nature of child-animal experiences, beyond the traditional child-centric focus that characterizes early childhood environmental education. In making this shift, there is the potential to transform practice, thinking, and relating to and within

the environment, expanding our conception of relations to include worlds we co-inhabit and share with multitudes of other species, elements, and spaces.

The research design I used intentionally foregrounds the shared experience between animals and children as a necessary step to better understanding the nature of their relationship, beyond the pedagogical implications of their value in children's development. This decision suggests that by questioning and interrogating our own ideas and paradigms of animals and our relations with them, we become open to new possibilities for relationship. This practice may not only expand our own thinking as practitioners and researchers, but it can actively challenge the status quo, namely those old frameworks that ignored or devalued animals as sentient, living beings with their own biographies independent of their value as pedagogical tools.

Definitions

Throughout the review of the research literature for this study, I used and encountered numerous terms that may be interpreted differently depending on the experience of the reader or the writer. In an effort to establish clarity within the context of this dissertation, my working definitions of terms follow.

Nature. The discussions of nature within the domain of EE tend to embrace the use of the term nature as referring to the environment as a whole: plants, animals, rocks, water, and all the other elements that make up the natural environment, often exclusive of humans. Indeed, varying perspectives and attitudes warrant a deeper consideration of just who and what is included in the term nature (Duhn, Malone, & Tesar, 2017; Russell, 2005), including within the realm of EE research. For example, according to Taylor, Kuo,

and Sullivan (2001), the term nature generally encompasses green space. Hofmeister (2009) adds wilderness areas as another element, while Wells (2000) highlights nearby nature and generally refers to settings ranging from untrammeled acres to those green places and parks found in urban environments. While many definitions of nature abound (Bell & Russell, 2000), in this dissertation this term refers to any area that is predominantly comprised of space that is not the physical, human-built environment, and that includes the geological, fungal, microbial, plant, and animal members of that community. Therefore, wooded edges, vacant lots, and back yards could all be described as nature as could oceans, rainforests, wilderness areas, and even those settings that feature *in situ* nature, such as preserves, arboreta, and parks.

Animals. Although the kingdom animalia includes 36 phyla, most of the literature focused on child-animal relations deals with particular groups such as insects and arthropods, fish, amphibians, birds, reptiles, and mammals. In this research, the word animal includes all or specific members of those groups. When attempting to separate humans from the other members of this kingdom for descriptive or identification purposes, I will refer to humans as such.

I will refer to animals who are not human as animals. Many humans recognize themselves as members of the animal kingdom, and acknowledge that this linguistic frame of human/animal binary separates humans from animals. Several researchers (Myers, 1998; Plumwood, 1993; 2002; Serpell, 1986) note how this linguistic separation, specifically related to animals, may serve to further alienate humans from reflecting on their role in the natural world and to disregard their relations to other species.

Nevertheless, I have chosen to adopt that usage within this dissertation for a couple of reasons.

The first reason is articulated by Herrmann, Medin, and Waxman (2012). They describe how in children's own usage, their tendency is to describe non-humans as animals, and exclude themselves from that definition. As Myers (2007) notes, young children begin to linguistically differentiate animals from people beginning around age four, which marks a developmental point at which they may begin to see animals as "other." Maintaining that binary for the purposes of this research serves as a reminder that children regard animals as social others: like them, but different (Fawcett, 2013 Myers, 2007). Further, given my desire to foreground children's voices and agency in my research, I have adopted the language and usage preferred by children whenever possible.

Pronouns. When referring to animals, many scholars and practitioners use pronouns such as "which" instead of "who," and "that" or "it" instead of "he" or "she" since most formal grammar rules dictate that object pronouns be used for everything that is not human. This practice reduces animals to the status of object rather than subject (Brown, 2018). As noted by Kimmerer (2015), "objectification of the natural world reinforces the notion that our species is somehow more deserving of the gifts of the world than the other 8.7 million species with whom we share the planet" (para 5). For this reason, I choose to use personal pronouns when possible.

Affordances. Within the context of early childhood education (ECE), the term affordance is commonly used to describe the relationship between an individual and the potential of an object (Gibson, 1977; Jones, 2003). For purposes of this discussion, and

since it is a term largely well-understood within the context of ECEE (Kernan, 2010), I have cautiously adapted the term affordance to refer to the potential for something to happen between one individual and another – in this case, a child and an animal - as a result of being in the presence of one another. In adapting the term in this way, my intent is to broaden the definition of the word to include the moments of time and space between the other objects, materials, and animals (including humans), and the latent potential of their interactions, rather than to reduce animals to the status of objects.

Interactions. Shared moments between young children and animals can be characterized as interactions, when the child and animal are interacting directly, each responding to the actions of the other, or affordances, when the child is in the presence of an animal though not involved in a direct interaction, and is interested or cognitively engaged with the animal, and vice-versa.

Wild. My use of this term is also grounded in children's parlance. According to Melson (2001), animals who live in their natural habitats and are not contained in cages or other types of enclosures are often called wild by young children. Free-living is another term that has been used. However, since most children use the term wild, I have chosen to do so as well.

Environmental education (EE). The term environmental education is defined by the United States Environmental Protection Agency (2018) as "a process that allows individuals to explore environmental issues, engage in problem solving, and take action to improve the environment" (para 1). Further, the North American Association for Environmental Education (2019) describes it as:

> . . . a process that helps individuals, communities, and organizations learn more about the environment, and develop skills and understanding about how to address global challenges. It has the power to transform lives and society. It informs and inspires. It influences attitudes. It motivates action. EE is a key tool in expanding the constituency for the environmental movement and creating healthier and more civically-engaged communities. (para 1)

There are numerous interpretations of the term EE and a variety of approaches to the discipline (e.g. Payne, 2016; Sauvé, 2005; Stevenson, Wals, Heimlich, & Field, 2017; Stevenson et al., 2013; Wals, Dillon, & Brody, 2013). The acronym EE is used throughout this dissertation for brevity.

Early childhood environmental education (ECEE). Numerous terms abound, including forest preschools, nature-based early learning programs, and forest kindergartens (Larimore, 2016; MacQuarrie, Nugent, & Warden, 2015; Sobel, 2015) to describe early learning settings that aim to expose young children to nature through total or partial immersion throughout the day. In this dissertation, the term early childhood environmental education is used to refer to those settings that regularly engage children outdoors in natural areas, and for which nature is considered an integral part of the curriculum (Finch & Bailie, 2015) The acronym ECEE is used throughout.

My Own Background and Its Influence on My Stance as a Researcher

As a child, I loved animals. In fact, one of my earliest memories occurred at a local zoo. Standing there in the September sun watching the ostriches, I remember being fascinated by their long legs, their bouncy, frilly feathers, and their faces. When one

ostrich approached the fence near me, I poked my finger through the metal wires. She looked at me, blinked, then leaned forward and nipped at my finger. Whether I was terrified or thrilled, I do not remember, but the memory of the feeling of entering another creature's world - if only for a second - is clear.

At the time I did not think much beyond my own surprise, but when reflecting on that experience, I now see that the significance was that the ostrich had acted of her own free will, had initiated an action that seemed to be directed at me for reasons of her own, reasons I could never truly understand. Whether she was telling me to back off, thought my finger was something to eat, or had some other motivation is unclear. At the time, my ability to frame the encounter was limited, as it remains now.

However, in that moment, what was clear was that the ostrich brought me into her world. While other young children may have forgotten the encounter, or worse, become afraid of ostriches or other birds as a result, I kept that experience inside me like a secret gift. I felt a special connection to ostriches for a long time. For me there was a fascination about animals as separate beings, so unlike humans, living in a reality all their own, with agency and motivation, instincts, feelings, and capacities beyond anything humans could truly comprehend. This fascination grew into curiosity and reverence. This reverence for animals shaped my entire childhood, and continues to impact my work today, including the desire to research child-animal relations.

My career choice was also influenced significantly by my childhood experiences with family pets, my curiosity about wild animals, and my love for animals in general. When I was 11 years old, I wrote a report for school about factory farming, and gave up

all meat. In recent years, I have become an ethical vegan, eschewing all animal-derived products. For a time I was a volunteer wildlife rehabilitator, and my life has been filled with numerous pets who have brought great joy to my life. Through my desire to live peacefully with, learn more about, and have more encounters with animals, I discovered my own passion for conservation and experience in nature.

Much of my career has centered around EE and my fascination with human-animal relationships. Having worked in the EE field for over 25 years, I have a lot of experience with different kinds of animals in a wide range of settings including zoos, nature centers, science museums, and parks. My career arc impacts my attitude going into this study as a significant portion of my life's work has been to help people think about, reflect on, and appreciate their relationships with animals. It is this breadth of my experiences that has led me to my questions and their connection to posthumanism.

Conceptual Framework for the Study and Theoretical Inspirations

Posthumanism, which challenges notions of human exceptionalism, has influenced my thinking about animal-child relations and this research in particular. Hamilton and Taylor (2017) note that posthumanism "expressly includes other-than humans (although not always nonhuman animals)" and suggest that it offers a chance to "correct a phase of 'hyper-humanism' that has pervaded ethnography" (p. 43). Posthumanism strays from a fundamentally anthropocentric paradigm that typifies much of EE (Lloro-Bidart, 2017a), particularly in the Western world. It asks us to consider a multispecies paradigm, a world Haraway (2008) describes as entangled, interconnected, mutually dependent, and therefore mutually response-able. Aligning as it does with my

desire to de-center adult humans in my EE research, it has led me to common worlding as a conceptual framework (Latour, 2004a; Taylor & Pacini-Ketchabaw, 2015; Taylor, Blaise & Giugni, 2013). Inclusive and relational, this framework acknowledges the inter-relationships and entanglements between and among humans and other species as well as the many elements that comprise the environment. Further, it acknowledges shared social networks and relations between humans and animals. Scholars from other disciplines (e.g., Latimer, 2013) and within EE (e.g., Lloro-Bidart & Russell, 2019; Russell, 1999; Russell & Fawcett, 2018; Spannring, 2017) have taken up the question of human-animal relations and begun to trouble the divide that separates humans from other animals.

This approach to research challenges us to interrogate and shift our notions about who is a subject and who is an active agent in a relationship. Researchers interested in common worlding and multispecies paradigms consider, as Lloro-Bidart (2015) urges, how animals may be "subjects of inquiry and agents of knowledge as they participate in learning experiences and are materially (and in some cases emotionally) affected by them" (p. 112).

Within the context of early childhood, common worlding "engages with children's relations with human and more-than-human others" (Taylor & Giugni, 2012, p. 109). Relational in nature, common worlding recognizes all participants as equally important in a setting: adults, children, and the other living organisms present within a community. Common worlding even extends to other elements extant within a setting: the rocks, water, soil, leaves, air, and rain, to name but a few (e.g., Nelson, Pacini-Ketchabaw &

Nuxmalo, 2018; Taylor, 2013; Taylor, Blaise, & Giugni, 2013; Tsing, 2010, 2013, 2015). It challenges us to move beyond looking specifically at animal-child encounters with a focus specifically on the child and to expand our view to include all creatures and elements so as to avoid "defaulting to observations that would limit the significance of the nonhuman partners to the pedagogical approaches they afford the children" (Pacini-Ketchabaw, Taylor, & Blaise, 2016, p. 154). It challenges traditional paradigms about who is subject, who is object, and how relationships, settings, and conditions of being-with can themselves be teachers.

In my own research practice, I regard this approach as a way of acknowledging and operating within the world of shared relationships, entanglements, and energies and a means for resisting the human tendency to emphasize the human experience. I sought to include other animals in my research ethically, and as much on their own terms as possible, without idealizing or romanticizing them or their role in children's experience.

I acknowledge that all animals have their own biographies that go well beyond description of their biology. I thus sought to enter what Fawcett called "the terrain of participatory consciousness" (2015, p. 275). I aimed to position the human as only one of numerous participants in my research and to acknowledge the intersubjective nature of human-animal interactions. Such an approach challenges researchers to foreground the agency of all beings, not just the human ones, and it urges us to attend to the whole of what is happening as opposed to simply what is happening in the children's or educators' experiences. Since my aim is to better understand child-animal relations, my research

documents relations and interactions, noting the observable ways that children and animals participate and seem to experience those interactions.

Assumptions and Positionality

The field of EE has long wrestled with the nature-human dichotomy, with some practitioners and interpretive approaches assuming a great disconnect (e.g., Louv, 2007) and others (e.g., Fawcett, 2013; Rautio, 2013a), rejecting what Dickinson (2013) termed "alienation discourse" (p. 2). It is an assumption of this research that for practitioners of EE, specifically those who work with young children, there is a continued need to undertake a critical examination of our relationships with other living species. In doing so, we acknowledge the agency and biography of the co-inhabitants of Earth, and expand our collective worldview to make room for all creatures, thereby increasing the chances for a future that is relational, ethical, and recognizes the common world where we all reside.

Given that this research arises from my own love for animals, and a desire to help others better understand their own multispecies relations, my bias is toward a strong bond between humans and animals. My strong feelings about the agency and rights of animals has driven me, from a very early age, to personally interrogate the many ways humans control animal lives, bodies, and experiences. Moreover, my work with young children throughout my career has motivated me to support their agency as individuals who make their own choices, have their own experiences, and develop their own attitudes, whether in response to (or in spite of) what they are told to do by the adults in their lives.

There are other elements of my positionality that I have identified as well. First, having worked in the EE field for over 25 years, my experience working with different kinds of animals in a wide range of settings is deep. Many of my previous jobs involved animals, whether the animals were serving as program topics or hooks for attracting public interest, subjects of citizen-based research, or residents of nature centers and other settings where I worked. In these situations, my goal has always been to try to present animals in a variety of ways, aiming to help people see them as more than mere objects, and to always be mindful of animals' agency. My work in public settings has also allowed me to interact with park visitors who have shared with me their very diverse set of views, philosophies, and feelings about animals. Certainly, the collective of my professional career impacted my attitude going into this study and how it unfolded.

Significance of the Dissertation Study

A major objective of this research was to encourage additional discussion in the ECEE community about the discursive frames that maintain a human/animal divide, and to reiterate the importance of a relational approach. Fawcett (2013) noted that EE has historically maintained a paradigm of humans-as-center, despite its ostensible positioning of being about, by, and for the environment. Reconsideration of this paradigm is important because of its potential to perpetuate the divide with unintended consequences that could reduce the field's ability to create a more sustainable future (Fletcher, 2017). In other words, as long as EE (and, in the case of this research, ECEE) is still framed by human-centric discourses and practices, practitioners and participants alike are unable to truly relate to or appreciate nature, the multitudes of other species on this planet, and the

Earth as a whole. Our species' continued focus on itself separates us ideologically from the system in which we participate with other earthly relations.

ECEE as a field, along with its germinal literature, acknowledges that animals are part of nature, hence, the disciplines of EE and ECEE each recognize that interactions with animals offer children many benefits. In this research, I sought to join with others in pushing toward and seeking an intentional focus on the role and potential of animals: one that avoids attending exclusively to children's development, and which instead acknowledges animal agency and individual animal biographies: lives with meaning and importance of their own (Nxumalo & Pacini-Ketchabaw, 2017; Taylor & Pacini-Ketchabaw, 2019). I venture into new territory by considering farm animal-child relations, a focus area which has not, to my knowledge, been addressed within the common worlds research community. Finally, the body of research related to common worlds is still relatively geographically limited and I seek to broaden the reach of this work, particularly in the United States.

Another way this dissertation is significant for the field of ECEE is how this research is relational and attends to the other living beings and matter in a child's experience. This approach promises greater awareness of the intrinsic value of animals, which will continue to expand the worldview and experience of nature for many practitioners and the children with whom they work. The continued study of and engagement with the value and meaning of animals for young children (and our adult selves) will expand the capacity and quality of ECEE as a discipline, and will allow those of us working in the field to better honor those multispecies entanglements that shape

our world.

Conclusion

Following this chapter, a review of relevant literature outlines some central ideas, paradigms, and theoretical frames that grounded my research. Chapter Three details my methodology including the rationale for my qualitative research design that was inspired by posthuman multispecies ethnography, and describes my data collection and analysis process. Chapter Four presents the major themes that emerged during my research. Chapter Five presents a discussion of the findings, along with revisiting my personal connection to the work and an acknowledgement of the research design limitations, then concludes with an eye toward future research and questions that remain.

CHAPTER TWO

Literature Review

Overview

This chapter outlines the framework for my primary and secondary research questions and situates them within relevant academic literature. As a reminder, my primary research question is:

- What are the observable and identifiable ways in which children and animals interact within the context of one nature-based early childhood program in a suburb of a metropolitan area in the upper Midwest of the United States?

Secondary questions associated with this study are:

- What are some notable characteristics of interactions between the children and the farm animals in this setting?
- What are the implicit or explicit discursive frames used by educators related to child-animal interactions in this setting?

Much of the relevant literature falls under the domain of environmental education (EE), and my attention is further focused on young children's interactions with, understandings

of, and access to animals, particularly within early childhood environmental education settings. However, these matters cannot be addressed without looking at the ways American, and more broadly, Western European culture frames human-animal relationships. This cultural context is complex; yet awareness of it is necessary in order to understand children-animal lifeworlds and those places and moments of multispecies engagement.

The following sections provide a review of literature in order to contextualize my research. First, a short overview of EE and some of the important narratives and paradigms that shape practice and pedagogy is provided. Next, I provide a brief review of the history and purpose of ECEE, including information about the role and perceived value of animals in different ECEE contexts. Following that, I describe important elements of child-animal interactions and how they relate specifically to my research questions.

Environmental Education (EE)

EE, as a discipline, has existed in the United States since the mid 1960's (Stevenson, Wals, Dillon, & Brody, 2013). Although the history and diverse threads of EE is beyond the scope of this chapter, it is worth noting that a frequently articulated aim of EE is to deepen human relationships with the environment in order for people to make more informed decisions about and to promote behavioral changes that "help" the environment (Heimlich et al., 2013; Lloro-Bidart, 2017b; North American Association for Environmental Education (NAAEE), 2019; Stevenson, Brody, Dillon, & Wals, 2013). Because of this goal, much of EE has benefitted animals, nature, or the environment writ

large by resulting in people joining conservation organizations, engaging in pro-environment behavior, or focusing on earth-stewardship (Fraser, Gupta, & Krasny, 2015; Lloro-Bidart, 2017b; Stevenson & Robottom, 2013; Wikelski, 2016). Given that EE has aimed to influence human behavior and attitudes, researchers have begun to explore the role of EE in the lives, experiences, and education of young children (e.g., Adams & Savahl, 2017; Hacking, Cutter-Mackenzie, & Barratt, 2012; Kuo, Barnes, & Jordan, 2019; Nelson, 2018; Nxumalo, 2017; Rautio, 2013a, 2013b; Rautio, Hohti, Lienonen, & Tammi, 2017), particularly in response to research suggesting that early childhood experiences may lead to pro-environmental behavior in the adult years (Chawla, 2015; Chawla & Flanders Cushing, 2007; Ewert, Place, & Sibthorp, 2005; Wells & Lekies, 2006).

There are numerous theoretical frames that influence the delivery, scholarship, purpose, and outcomes of EE. Several key narratives have shaped the field, and continue to impact EE in both research and practice. They include anthropocentrism, biophilia/biophobia/ecophilia, human exceptionalism, and the false dichotomy of the human/nature divide. The following section provides a very short overview of these narratives to contextualize this work, particularly as it relates to early childhood settings.

Theoretical Frames and Narratives that Influence Environmental Education

While this is not an exhaustive list, this section includes some of the theoretical frames and narratives that influence EE. Here I articulate major ideas and how they connect to EE.

The Anthropocene, anthropocentrism, and human exceptionalism.

Throughout North America, Western, white, male, settler-colonial ideologies have shaped much of our history, including our relationship with the land, and continue to drive human practices, behaviors, and habits. These ideologies have led to behaviors and consumption patterns with devastating consequences for the Earth and its inhabitants. Estimates of the rate of animal extinction (including insects and arthropods) range from 200 to 100,000 species annually (World Wildlife Foundation, 2017). Scientists have described this mass extinction event as "unparalleled in 65 million years" (Ceballos et al., 2015), noting that more than 30,000 species of mammals and amphibians are currently considered critically endangered, endangered, or threatened.[2] At the time of this writing, over one third of land vertebrates are experiencing population declines "of a considerable magnitude" (Ceballos, Erlich, & Dirzo, 2017, p. E6089). News media regularly provide new reports of species threatened with extinction or suffering due to human behavior; the United Nations has estimated that one million species are currently threatened with extinction within decades if not sooner due to human impacts (IPBES, 2019).

The human impact on natural processes, systems, and environments has been significant. Lewis and Maslin (2015), in describing relatively recent global environmental changes, suggested that our planet has entered a new epoch, one characterized by human domination, and which many scientists have termed the Anthropocene. The assignment of this term to our current geological epoch has been coined because of the profound and measurable human impacts on natural systems, landscapes, and processes (Crutzen,

[2] This number does not include birds, fishes, reptiles, insects, or arthropods.

2006). The Anthropocene goes hand-in-hand with an anthropocentric mindset maintaining that humans are at the center of the universe and that all human actions, education, and decisions should be primarily in the best interest of human well-being.

In recent years, scholars in EE and other disciplines have responded to the naming of the Anthropocene as an opportunity to reconsider the narratives of humans-as-masters of nature and humans-as-protectors of nature that have evolved from Western, white, male, settler-colonial ideologies (e.g Lloro-Bidart 2015; Taylor, 2017; Taylor & Pacini-Ketchabaw, 2015). By its very nature, the Anthropocene epoch is a function of an anthropocentric view of the world, with anthropocentrism giving rise to the notion of human exceptionalism.

Human behaviors resulting from this paradigm of human exceptionalism (Catton & Dunlap, 1978) damage our relationships with the natural world because human exceptionalism separates humans from nature and commodifies all organisms, systems, and processes insofar as they can serve human interests. These harmful practices of entitlement and dominion have been problematic to animals, other organisms, Earth processes, and systems. This separation precludes humans from reflecting on their role in the natural world and their relationships with other species (Bell & Russell, 2000; Cronon, 1991; Myers, 1998; Serpell, 1986).

Environmental education scholars have suggested that reflecting on and engaging with the notion of the Anthropocene, anthropocentrism, and human exceptionalism draws our attention to a critical choice (Fawcett, 2013; Taylor, 2017). Either we “default back to the comforting belief that we can always find another ‘solution’ to the problems that we

have created" (Taylor, 2017, p. 1450) or, as Taylor (2017) proposes, we choose humility, acknowledging that the Anthropocene "reaffirms the inextricable enmeshment of human and natural worlds and signals that it is no longer plausible to perpetuate the nature-culture divide that structures western knowledge systems" (p. 1450). Fawcett (2013) describes how anthropocentrism affects educational practices, both in EE contexts as well as in K-12 settings, and a number of EE researchers have begun to interrogate the hidden anthropocentric assumptions in education (e.g., Bell & Russell, 1999, 2000; Kahn, 2010; Kahn & Humes, 2009; Oakley, 2011) as I hope to do as well.

In 1984, E. O. Wilson asserted that, as humans, we have an innate, evolutionarily-grounded need to associate with other living things, including plants and non-human animals. He termed this need *biophilia*. The idea of biophilia is prominent in the field of EE, in particular with many popular environmental and conservation organizations and educational institutions and programs whose chief aim is to foster nature connections (Chawla & Flanders Cushing, 2007; Zhang, Goodale, & Chen, 2014). Affiliation with other living things is seen to satisfy an innate human need (Heerwagen & Orians, 1995, 2002; Kals, Schumacher, & Montada, 1999; Kellert, 2012). Other less human-focused frames exist such as *biocentrism* (Callicott, 1989, 1995), which extends the notion of biophilia and values all life intrinsically, not strictly for its impact on human well-being. Another frame, *ecocentrism* focuses on ecosystems as a whole, and values them intrinsically as systems (Eckersley, 2002; Fawcett, 2013). Ecocentrism could be said to "favor[ing] ecological integrity over individual interdependence" (Fawcett, 2013, p. 411). While other frameworks exist within EE as a whole, these frameworks in

particular influence the pedagogical approach of the early childhood setting that is the focus of this dissertation.

Problematic narratives and false dichotomies. Biophilia presumes alienation as a sort of pre-existing condition of being human. In this narrative, nature is not a place that includes humans; instead, biophilia drives us to re-connect and to return to a place where we once had a home (Louv, 2007, 2008; Mayer & Frantz, 2004; Rissotto & Giuliani, 2006). Numerous scholars have characterized this as a "fall-recovery" narrative: nature is a place where we once belonged, and now need to return (Bullis, 1996; Cronon, 1996a, 1996b; Dickinson, 2013; Fletcher, 2017). This "fall-recovery" narrative has been popularized in recent years, particularly in ECEE settings, as I will detail later in this chapter.

In light of the human-driven catastrophic levels of destruction of the Earth's systems, some scholars have posited that our species' behavior is a result of biophobia (Orr, 2004; Ulrich 1993; Wilson,1997) they contend that fear of and aversion to the natural world has led us to destroy it, or, at the very least, to develop feelings of apathy (Sobel, 1996; Smith & Sobel 2010). Others note that feelings such as aversion, disgust, and unease, which are often associated with things found in nature, such as mud, insects, animal scat, and unpleasant smells, further reify this supposed split (Kharod & Arreguín-Anderson, 2018; Lemelin & Yen 2015; Rautio, et al., 2017).

Given that EE has aimed to influence human behavior and attitudes, researchers have begun to explore the role of EE in the lives, experiences, and education of young children (e.g., Adams & Savahl, 2017; Hacking et al., 2013; Kuo et al., 2019; Rautio,

2013; Rautio et al., 2017; Tammi, 2019), particularly in response to research suggesting that early childhood experiences may lead to pro-environmental behavior in the adult years (Chawla, 2007; Chawla & Derr, 2012; Chawla & Flanders Cushing, 2007; Ewert et al., 2005; Wells & Lekies, 2006). As this research has developed, several additional theoretical frames have emerged, which will be described in the sections that follow.

The nature/culture and animal/human binaries have been perpetuated both implicitly and explicitly throughout EE. Kahn (2010) and others (e.g., Bell & Russell, 2000; Cronon, 1991, 1996a, 1996b; Dickinson, 2013) asserted that this dichotomy positions humans squarely outside the realm of nature and operationalizes a narrative of separation from nature. Especially in the case of EE directed at young children, this separation narrative implies an urgent need for [re]connection of children and nature. Hence, there is growing interest in ECEE, as evidenced by the increase in early childhood programs throughout the United States that aim to create opportunities for children to have experiences in nature.

The following section briefly describes the history of ECEE, introduces some important frameworks that shape the practice and pedagogical approaches, and provides grounding for my research questions with a focus specifically on animals in ECEE settings.

History and Purpose of Early Childhood Environmental Education

Evident within the disciplines of EE and early childhood education is an increased awareness of the important role of nature in young children's lives. As interest in this topic has grown, the fields have each expanded to create a new interdisciplinary area,

early childhood environmental education (ECEE), sometimes referred to as nature-based early childhood education (NbECE). Since 1967, when the first nature-based preschool in the United States was created, the total number of (self-reported) nature-based preschool settings in the U.S. has increased to over 250 (North American Association for Environmental Education (NAAEE), 2017) at the time of this writing. Generally speaking, these programs tend to include extended time outdoors, usually in so-called natural areas which are used as the backdrop or context for children's learning and exploration. They may also incorporate the use of natural materials for play, and a variety of outdoor activities for children. In addition to nature-based preschools in the United States, recent years have seen an increase in forest kindergartens inspired by the European forest schools (Sobel, 2017) which are characterized by lengthier immersion in nature, with children often spending full days outdoors regardless of weather conditions (Knight, 2009; Larimore, 2016; Sobel, 2017).

The number of nature-based preschools or early care settings worldwide is unknown, as is the extent to which any program integrates or immerses children in nature, but it is safe to say there are many nature-based preschools in numerous countries around the globe. The growth of ECEE programs and diversity of pedagogical settings in recent years demonstrates that many support the idea that young children benefit from and enjoy time in nature and reflects a collective professional desire to increase opportunities for children's access to the natural world (Larimore, 2016; North American Association for Environmental Education, 2017).

In addition to formal settings such as classrooms and care centers, EE for young children occurs in nonformal settings (Shlomo & Shmida, 2009; Storksdeick, Ellenbogen, & Heimlich, 2005). These nonformal settings include places such as nature centers, arboreta, zoos, and aquaria (Kola-Olusanya, 2005). While this dissertation does not address these settings, I include them here to provide examples of the diverse settings where ECEE occurs and illustrate the wide range of approaches influenced by the ideas described in this chapter.

In response to this increase in nature-based programs and opportunities for young children, the North American Association for Environmental Education (NAAEE) developed *Guidelines for Excellence in Early Childhood Environmental Education Programs,* asserting that "the task of environmental education for young children is to forge the bond between children and nature" (NAAEE, 2010, p. 4). Further, ECEE generally aims to support young children in the development of knowledge, appreciation, curiosity, and respect for the natural world within a developmentally appropriate framework (NAAEE, 2010; Wilson, 1993).

Research in this area underscores the assertion that contact with nature has an important role in child development and well-being (Chawla & Derr, 2012; Kuo, 2013; Larimore 2016; Wishart & Rouse, 2018), noting measurable impacts on children's self-efficacy, agency, and prosocial behaviors (Baillie, 2010; Chawla & Derr, 2012; Kellert, 2002). In much of this research, however, nature largely serves as a backdrop or context within which children's development is sacrosanct. Many ECEE programs thus unintentionally frame nature and animals merely as pedagogical tools rather than living,

sentient beings, places, and/or systems with their own experiences and co-creating lifeworlds alongside children (e.g Russell & Fawcett, 2018; Nxumalo & Pacini-Ketchabaw, 2017). In other words, children are outside nature, acting upon it, and reaping its bounteous rewards through discovery and exploration. However well-intentioned this narrative may be, it ignores a needed shift toward a paradigm of humans living alongside and within nature.

Connecting Children to Nature

The child and nature movement, also known as the New Nature Movement (Dickinson, 2013), was arguably set in motion in the United States by the publication of Richard Louv's *Last Child in the Wood*s in 2007. Louv's book draws on the work of numerous researchers, not exclusive to EE, who have focused on children and their relations with nature (Chawla, 2015; Kahn & Kellert, 2002; Sobel 1996, 2017). In it, Louv (2007) raised an alarm call by offering a pseudo-medical diagnosis, *nature-deficit disorder*, which asserts that children no longer have connections to nature, with subsequent effects on their development, mental health, and sense of place. The New Nature Movement asserts that we need to return children to a state of being in/with nature where they have free, unfettered access to wild places.

It has been argued that this view is somewhat nostalgic and romanticized as well as narrow and exclusive (Malone, 2016a). Moreover, there have also been critiques of the pseudo-medical obesity discourses tightly interwoven in the narrative (Dickinson, 2013; Fletcher, 2017) which assert that time in nature prevents weight gain, diabetes, asthma, and scores of other human health problems (Frumkin & Louv, 2007; Gill, 2007, 2011;

Kuo & Faber Taylor, 2004; Louv, 2007). Finally, the widely repeated narrative that urban children in particular lack connection to nature erases the experience of thousands of children throughout the world, who Rautio et al., 2017, argues do not need "rescue or remedy" (p. 1380) and ignores the real possibility that children experience connection with nature on terms other than those defined or understood by adults (Clarke & Mcphie, 2014).

An additional effect of the New Nature Movement, particularly evident within the context of ECEE, has been the tendency to reduce nature (and animals) to mere pedagogical tools in service of an adult human agenda, nothing more than an "inert stage or backdrop for/to the all-important human teaching and learning activities" (Taylor & Pacini-Ketchabaw, 2015, p. 14). Oft-used terms such as discovery and exploration suggest that enrichment of the child is the primary purpose of spending time in nature, and that nature offers a rich bounty, just waiting to be discovered, explored, and taken freely (Nxumalo, 2015a, 2015b).

Finally, the prevailing narrative associated with the New Nature Movement seems to view children from a deficit perspective, that is, in order for children to fully develop, they must have access to or connections with vast, wild natural spaces (Fawcett, 2002; Malone, 2016a; Taylor, 2013). Louv's (2007) ideal settings are safe, lush, and idealized as "natural wildness: biodiversity, abundance" (p. 8), or as Chawla stated, "a world humans have not created" (2009, p. 6). It presumes that children cannot fully develop without nature experiences, and the further nature is from human interference, the better. I present these narratives here in order to situate my work within a conversation that is occurring

broadly in the ECEE domain and that shape the New Nature Movement, which has momentum in the United States and beyond.

It is possible, however, as numerous scholars have observed and noted, that children may already feel connected to nature and animals on their own terms and in their own ways (e.g., Boileau & Russell 2018; Fawcett, 2002; Rautio, et al., 2017; Russell & Fawcett, 2018; Tipper, 2011; Taylor, Blaise, & Guigni, 2013; Taylor & Pacini-Ketchabaw, 2015), as will be articulated in the sections that follow. My research is aligned with these alternative perspectives that are more inclusive of the lived experience of children and animals, open to learning from and with children, animals, and nature.

Animals and Early Childhood Environmental Education

Many ECEE settings intentionally include animals as part of children's experiences, responding to the idea that animals play a positive role in children's sense of connection to the natural world as well as their social emotional development (Bone, 2013; Russell & Fawcett, 2018; Selly, 2015; Timmerman & Ostertag, 2012; Uttley, 2013). Some do so through the creation of "farm" settings where children can participate in the care and feeding of animals such as chickens, rabbits, sheep, goats, and other species typically associated with farms. Others do so through the collection and keeping of captive animals, usually native to the area where the ECEE setting is located. Still others aim to engage children in encounters with "wild" animals through forays into natural settings. Researchers have begun to interrogate this variety of settings and pedagogical approaches, as is described in the section that follows.

Shapiro (2010) noted that animals are frequently presented "as cultural artifacts, symbols, models, or commodities in a largely human-centered world" (p. 332). While Shapiro was not referring to ECEE per se, at times this practice becomes evident in these settings. In some cases, the value, experience, or role of animals, as communicated by adults, is ambiguous. Many early childhood classrooms, both nature-based and traditional, keep animals in captivity, although licensing regulations in the United States vary from state to state and impact both whether and which animal species may be kept. In these settings, captive animals may be referred to as pets or wildlife or friends. Some ECEE programs include "unreleasable" native wildlife, arthropods, or insects, who are there for children to observe, care for, and learn from/with (Boileau & Russell, 2018; Meadan & Jegatheesan, 2010; Nxumalo, 2018; Nxumalo & Pacini-Ketchabaw, 2017; Patrick & Tunnicliffe, 2011). Other programs include time outdoors searching for animals and animal homes during typical forays into the natural world.

Teachers who keep classroom pets do so for a variety of reasons, including their potential to enhance curricular goals (Gee et al., 2017; Hachey & Butler, 2012; Uttley, 2013), reduce children's stress and anxiety (Kellert, 2002, 2012) for their presumed role in the development of pro-environment feelings in young children (Torquati, Gabriel, Jones-Branch, & Leeper-Miller 2010; Torquati & Ernst, 2013; Baillie, 2010), their potential positive impact on children's emerging sense of justice and morality (Gilligan & Wiggins, 1987; Myers & Saunders, 2002; Poresky, 1990), as well as demonstrations of empathy, including perspective taking and acts of care toward animals as well as concern

for animal welfare (Chawla, 1988, 2007; Kellert, 1985; Myers, Saunders, & Garrett, 2003).

Of particular interest to some practitioners and researchers is the role animals may have in the promotion of caring behaviors in young children (Chawla & Derr, 2012). Several researchers have sought to understand and articulate the nature of care between humans and animals (Nelson, 2018; Noddings, 1986; van Dooren, 2014). Melson (2001, 2003) noted that caring directly for animals can be a powerful factor in developing a sense of empathy. This may be of particular benefit to boys; demonstrations of vulnerability and nurturing behaviors, such as caring for dolls or other outward expressions of nurturance, can be socially risky even in early childhood settings, while caring for animals remains a socially safe activity (Melson, 2001; Noddings, 1986) though some researchers suggest that there are risks even here (Blenkinsop, Pierson, & DeDanann Sitka-Sage, 2018). Nelson (2018) reflected on what caring might look like "beyond prevailing humancentric approaches in early childhood education" . . . because "these times demand more than traditional forms of care promoted through humancentric frameworks" (p. 36). This statement leads me to wonder, what are the many different ways that children demonstrate caring? And is it reciprocal - do animals care for human children?

Children demonstrate concern for animals and their well-being even when they are remembering, describing, or imagining their relationships with animals. Fawcett (2013) noted that young children had "very moral actions" (p. 263) in their narrative

relationships with animals, which suggests that children have moral feelings about animals even when they may not be physically present with them.

The practice of keeping animals as classroom pets, while not overtly harmful, has several problematic implications, namely its potential to reinforce a human exceptionalism mindset and resulting commodification of animals in service of a pedagogical agenda (Boileau & Russell, 2018; Nxumalo & Pacini-Ketchabaw, 2017). Early childhood settings where animals are described as "our pets" or "ours to take care of" maintains humans as more powerful than other animals; in these settings, adults decide who is of value, who lives and who dies, and who is welcome in the classroom. The animals have very little agency in such a setting (Boileau & Russell, 2018; Nxumalo, 2017). The discursive frames employed in many ECEE settings maintain a hierarchy that is ultimately harmful to human-animal relationships and animal well-being (e.g., Lloro-Bidart & Russell, 2017; Malone, 2016a; Russell & Fawcett, 2018). At times, the discursive frames adults employ in their dealings with animals are ambiguous, confusing, or even harmful, for example when classroom pets are neglected or given improper care, or when teachers express aversion or disgust toward certain animals but not others. In other cases, there may be an erasure of the connection between the products and foods in children's everyday lives and their animal origins (Selly, 2015; Rice, 2013).

However well-intentioned ECEE programs may be, when it comes to animal-human relations, an interrogation of the implicit species hierarchy is in order. In doing so, a more expansive relationship with animals is possible, one which recognizes their agency, experiences, and lifeworlds not outside of children's experience, but as part

of them and likewise, entirely independent of humans (Nelson, 2018; Nxumalo, & Pacini-Ketchabaw, 2017; Russell & Fawcett, 2018; Taylor & Guigni, 2015).

In addition to caring for and keeping small animals as classroom pets, a growing number of ECEE settings in the United States also include larger animals such as goats, chickens, horses and other farm animals. These settings tend to have more open space, facilities and staff for animal husbandry. At the time of this writing, I was unable to find a reliable source articulating the approximate number of ECEE settings that include farm animals or have a focus on farm education. While ECEE settings that aim to incorporate model farms or farm animals certainly require outdoor space, the ECEE literature generally has not articulated the importance of such an approach nor the possible connections between farm education and nature-based education.

There is some literature that broadly defines "farming" in early childhood contexts to include fruit and vegetable gardening as well as "farm-to-preschool" programs (Hoffman et al, 2012; Hoffman et al., 2017; Stephens & Oberholzer, 2018). Much of this literature is focused on gardening as an intervention strategy to combat obesity (Reynolds, Jackson Cotwright, Polhamus, Gertel-Rosenberg, & Chang, 2013; Walker, 2011) or improve children's eating habits, often with a particular focus on urban or low-income children (Joshi, Azuma, & Feenstra, 2008; Dannefer et al., 2018,). As with the New Nature Movement, this narrative has the potential to fuel the problematic obesity discourse.

Additional research has explored and articulated the effect of children's time spent in farm environments, exposure to farm animals, or consumption of animal-derived

products such as milk and honey as potential mitigators of childhood asthma or allergies (Bellows, DuFour, Bachmann, Green, & Moore, 2003; Fall et al., 2019; von Mutius & Vercelli, 2010) or other health concerns (Radon, Windstetter, Poluda, Mueller, B., von Mutius, & Koletzko, 2007), and as a way to foster children's academic learning (Hachey & Butler, 2009, 2012; Miller, 2007; Ruid & Beck, 2000; Smeds, Jeronen, & Kurppa, 2015). Relationships between farm animals and children has been given some prominence in the literature related to animal-assisted therapies which tends to focus on the use of farm animals to mitigate childhood depression, anxiety, and behavior disorders or maintains a focus on therapeutic [horseback] riding and its benefits for children with physical or cognitive delays (e.g., Katcher, 2002; Parshall, 2003).

Notwithstanding the value of this work, literature focused on the shared relations of children and farm animals outside of the few areas mentioned above is scant. Given a number of ECEE programs seek to include animals in children's experience, and the variety of pedagogical practices evident within the discipline, I sought to better understand the relational nature of these shared worlds. I thus turn my attention next to specific discourses and frameworks that shape those relations.

Significance of Child-Animal-Nature Interactions

Child-animal-nature interactions are of interest to scholars who aim to understand the "throwntogetherness" (Massey, 2005, p. 141) of children and animals. How do they impact the experiences of one another? How do they co-create experience? What connections or relationships are there that may not be immediately apparent to adults or casual observers? To better understand this, scholars of ECEE have begun to critically

examine the discourses of early childhood engagements with animals' death and dying (Nelson, 2018; Russell, 2017), children's representations and expression of animals through children's story and imagination (Fawcett, 2002), art (Lee, Walshe, Sapsed, & Holland, 2018), and embodiment (Russell & Fawcett 2018; Myers, 2007). As my own work here focuses on direct interactions taking place between children and animals, I describe three ideas which have influenced my thinking and approach to this research, namely the common worlds framework, embodiment, and aversion.

Common worlds. The common worlds approach (Taylor, 2013) situates children, animals, and nature as co-creators of shared experience and as members of a shared community. The relationships, nuances, and engagements between child and animal are themselves teachers and experiences in their own right (Malone, 2016a; 2016b; Taylor & Pacini-Ketchabaw, 2015; Pacini-Kechabaw & Nxumalo, 2015; Rautio; 2013a, 2013b). The common worlds framework, as described by Taylor and Giugni (2012), recognizes the collective, relational nature of being and learning together in early childhood communities. This being and learning together includes all the living and non-living elements, beings, and systems present in the setting: the "specific constellation of all the heterogeneous relations" (p. 112). It extends far beyond the human experience to include other participants, including animals as I did in my research. In doing so, it actively resists the child/nature split and exists within the realm of a shared experience co-created by children and animals together (Taylor & Giugni, 2012). It acknowledges the multiplicity of relationships and their ever-changing nature as well as their power to affect all participants who share experience.

Along these lines, Haraway (2008) wrote about the implicit and explicit power dynamics present between people and animals, and urges that we continually reflect on and engage with the similarities, differences, and challenges inherent in living in a community with other species. The common world framework, as built on the work of Latour (2004a, 2004b), positions young children as members of a community in a world inclusive of animals, rather than one where animals are simply characters or supporting actors (Taylor, 2013; Taylor & Giugni, 2012). In other words, animals are regarded as important beings who have both agency and autonomy, and are valued intrinsically, rather than being valued because they give us companionship, food, amusement, or products. Children and animals participate together in common worlds through direct interaction, imagination, and affordances. Their encounters and shared experience is meaningful on its own terms, not just because of a pedagogical benefit assumed or promoted by practitioners.

Common worlds researchers (Nxumalo & Pacini-Ketchabaw, 2017; Taylor & Pacini-Ketchabaw, 2015; Taylor & Pacini-Ketchabaw, 2019; Taylor et al., 2012) concern themselves with the 'ethical, political and pedagogical' implications (Taylor, 2013, p. 115) of children learning and being with animals, co-creating experience. This challenges traditional, hierarchical, instrumentalized early childhood pedagogies. It means attending to the "small, mundane, seemingly insignificant everyday relations" (Nelson, Pacini-Ketchabaw, & Nxumalo, 2018). For example, Nxumalo and Pacini-Ketchabaw, (2017) note the temporal, complex and ethically messy nature of children's relationships and learning-with classroom pets, presenting an alternative to more traditional

pedagogical approaches that view caring for classroom pets as simplistic, hierarchical, and human-centric.

Underscoring these messy relationships are Rautio et al. (2017). Providing rich descriptions of one child's reaction to a gull, they attend to how the two beings co-create an experience that contains and is affected by strong emotions, questions of life and death, the threats and risks of being a bird in an urban environment; all elements that make up the event of the boy/bird/city/landfill/emotions. Their interpretation is inclusive of many elements involved, and of who affects/is affected by the experience. This provides an example of considering the whole of a situation, not just one [adult] perspective.

Other common worlds researchers (Taylor & Pacini-Ketchabaw, 2015) explore children's relations with worms in a classroom and consider how children think about and understand worms, an act which includes paying attention to how the worms move in response to the children's advances, using this event as an invitation to consider how children and worms alike experience vulnerabilities. They further describe the ways in which children and ants enact agency through a "provocative dance of relating, of threatening and protecting, of advance and retreat" (p. 523) observing child-ant interactions and co-created experiences that happen when children poke at an ant nest with sticks. Their work offers an opportunity for researchers to think about the ways that risk, ethics, vulnerabilities, and the lives of other creatures affect and are affected by encounters with children. The ideas and approaches expressed by common worlds

researchers have had a significant impact on my thinking and design of this research study and is revisited in Chapter Three which details my methodology.

Animals as peers: Embodiment/kinship. Children migrate between the shared experiences, places, and worlds they inhabit, joining animals as co-inhabitants and participants of shared experience. According to Sobel (1996), "early childhood is characterized by a lack of differentiation between the self and the other" (p. 13), which may help to explain the ease with which young children are able to participate with animals in a common world. Myers (1997) noted that young children seem to have an appreciation for the subjectivity of animals, an awareness of animals' "cues of agency, coherence, affect, and continuity" (p. 46) and that children as young as age five seem to recognize that animals have perceptions and mental experiences (Myers, 2007; Karniol, 2012). Fawcett (2014, p. 353) developed the idea of children's "kinship imaginaries": those relationships with animals where children join animals in their spaces: sometimes imaginary, wished-for, or remembered (Rautio, 2013a, 2013b; Rautio et al., 2017).

Children have different ways of engaging with and knowing animals in spite of what adults teach. They may recognize the intrinsic value of animals not because of what animals do for us, what we can take from them, or how they help us, but because they are living creatures (Kidd, & Kidd, 1990; Myers, 2007; Rautio 2013a, 2013b; Rautio et al., 2017; Russell & Fawcett, 2018). This viewpoint warrants special consideration, as it suggests a relationship with animals that is very different from that maintained and understood by many adults.

Children also join animals in their common world when they include animals in their play, directly address animals (by talking to, caring for, and taking action with the intent of impacting an animal's experience), and connect with animals in the realm of imagination (embodying animals in their play, for example). In addition to feeding and directly caring for pets, and dramatic play involving animals, one of the more common behaviors children engage in is talking to animals. This sense of animal as peer asserts the child's awareness of animal as another being, capable of communicating, understanding, and perhaps even responding to a child's social advances (Myers, 2007). When children talk *to* non-human animals at home, those who live in classrooms as pets, or those who live in the wild, it indicates that the child feels a desire for communication and connection with them. This is described as attunement: a sense that the animal not only recognizes what the child is saying, but that the animal is interested and sympathetic to the child's feelings and thoughts (Blue, 1986; Daly & Morton, 2006; Lasher, 1998; Myers, 2007).

Indeed, when asked what their pets think about, some children are confident that their pets are thinking about them and how much they love them (Triebenbacher, 1998). Talking to an animal, sharing that attunement, means that the child and the animal are in some way sharing psychic space (Tipper, 2011), another way in which they inhabit a common world. When one talks to or with another, there is an implication of a two-way interaction, a sense that each party has a contribution to make and is engaged in the communication. This contrasts sharply with talking *about* another being or object, where there is an implied separation, even an implication of in-animacy. Fawcett (2013) and

other researchers (e.g. Triebenbacher, 1998; Myers, 2007; Melson, 2001, 2018) notes that children sometimes describe animals as friends or family members: indicating a sense of peer relation and social equality. These ideas influence the notions of individual identity in early childhood education. Children come to understand themselves by experiencing and learning about their relations with and to what Myers termed social others (1997, 2007).

Aversion. In their zeal to create awareness of the plight of many animal species, many ECEE practitioners address topics about climate change, deforestation, water pollution, and other environmental issues, such as through thematic activities. Examples of thematic activities included rainforest-themed classrooms, for example, or through children's environmental literature (Echterling, 2016). Sobel (1996, 2007, 2015) and others (e.g. Davis, 2015; McKnight, 2010) have cautioned that too much negative information too soon can lead to feelings of anxiety and apathy and they advocate for developmentally appropriate approaches, advising that discussing "tragedies" before grade 4 is inadvisable.

In other cases, well-intended efforts to connect children to nature may incorporate experiences that some children (and adults) may find unpleasant, for example mud play, encounters with insects, or examinations of animal scat. Sobel offers this (univeralizing) perspective on children and aversion, shared by many traditional early childhood educators: **"**[children] are too creeped out to touch earthworms, they don't know where their food comes from, and they are afraid to walk in the forest alone" (Sobel, 2017, p. 23). In some cases, adults' own discomfort with children's feelings of disgust or aversion

can be a barrier (Ahn, 2005; Ahn & Stifter, 2006; Morris, Denham, Bassett, & Curby, 2013) leading them to avoid experiences that may provoke such feelings.

In contrast, some ECEE scholars have suggested that aversion and discomfort are part of children's experiences and ideas about nature and animals and have suggested that engaging with children's questions, feelings, and responses are important (Kharod & Arreguin-Anderson, 2018; Nelson, 2018; Rautio, et al., 2017; Russell, 2017). Rautio (2013a, 2013b) and others (Fawcett, 2013; Boileau & Russell, 2018; Nelson, 2018; Nxumalo & Pacini-Ketchabaw, 2017; Russell & Fawcett, 2018) have urged practitioners and researchers to make room for aversion, discomfort, and even repulsion. Their rationale recognizes these reactions as normal responses and other ways of connecting with animals and elements in nature. Therefore it is important to recognize that elements such as mud, scat, humus, and other materials that can provoke disgust, it is also important to recognize recognizing their centrality and importance in the human-animal-nature co-experience. To authentically support and create space for the common worlds of children and animals, ECEE practitioners would do well to move beyond a romanticized and overly sterilized notion of children in nature to allow space for aversion and avoidance (Dickinson, 2013; Hadfield-Hill & Zara, 2019; Rautio et al., 2017). In other words, as Hadfield-Hill and Zara (2019) suggest, recognizing and welcoming those moments can "contest or jar prior assumptions about childhood and nature as romantic and idealized" (p. 66).

Conclusion

This chapter provided a review of relevant literature related to ECEE. It first presented an overview of EE as a discipline and practice and identified some important theoretical frames that influence EE. Next, it identified several approaches that EE employs in addressing human/nature relationships, describing how these approaches may reify problematic narratives and false dichotomies, possibly reinforcing a human-animal-nature split. The chapter then presented literature related to how EE has recently influenced many early childhood education settings, and describes the history and purpose of ECEE. Following that, the chapter addressed the role of animals in early childhood environmental education broadly, as well as more specifically, such as in classroom settings or farm settings. Finally, the chapter described important frameworks and ideas for understanding child-animal relationships, such as common worlds, embodiment, and aversion.

My study, which takes a common worlds approach to multispecies interaction, aims to contribute to the conversation in ECEE about how children and animals relate to one another. Through observation and reflection on interactions, going beyond what may appear at the surface, my research considers possibilities beyond the pedagogical implications that have so long been the focus within ECEE. Through my own attempts to participate in these common worlds, noting interactions and actions, I hope to join with other EE scholars in creating and holding space for these shared animal-child experiences to unfold on their own terms. Chapter Three describes my research design and the rationale for my decisions.

CHAPTER THREE

Conceptual Framework, Methodology and Methods

Overview

As a reminder, my research question is:

- What are the observable and identifiable ways in which children and animals interact within the context of one nature-based early childhood program in a suburb of a metropolitan area in the upper Midwest of the United States?

Sub-questions associated with my primary question are:

- What are some notable characteristics of interactions between the children and the farm animals in this setting?
- What are the implicit or explicit discursive frames used by educators related to child-animal interactions in this setting?

In this chapter, I situate my research within the theoretical framework of common worlds and the broader context of nature-based early childhood education. I then describe the research design, offer a rationale for qualitative observational research framed by a multispecies ethnographic approach, and then provide an overview and description of the

research setting and the study participants. The chapter concludes with a detailed description of the data collection and analysis process and a discussion of ethics and the research limitations.

Conceptual Framework: Common Worlds

A common worlds framework, which has become of increasing interest to EE researchers challenges researchers to expand conceptions of relationships in the world to include animals, and to recognize collective agency and mutual becoming (Nxumalo, Pacini-Ketchabaw & Taylor, 2015; Pacini-Ketchabaw, Taylor, & Blaise, 2016; Taylor, Blaise & Giugni, 2013; Taylor & Giugni, 2012). Common worlds refers to the "manners and means through which children learn from engaging with other species" (Taylor & Pacini-Ketchabaw, 2015, p. 508) and this framing allows the researcher to better identify, recognize, and attempt to understand the "relational and co-shaping learning that occurs when children and animals physically encounter each other in their common worlds" (Taylor & Pacini-Ketchabaw, 2015, p. 508). A common worlds framework resists the nature/culture divide and situates childhood within entangled human and nonhuman, social and material realities unlike the idealized, romanticized (usually influenced by Western, white, middle-class) notions of children and nature that are often associated with the New Nature Movement (Dickinson, 2013). Common worlds are the actual, messy, entangled, and imperfect worlds real children co-inhabit along with other human and nonhuman beings and entities (Taylor, 2013, 2017).

While common worlds as a descriptor does not exclusively focus on children and animals but also on other aspects of nature, both living and non-living, as well as

materials and the built environment, for the purposes of this dissertation I am choosing to do so for the sake of brevity. Through this framework, children are regarded as active agents and participants in the world, along with other species rather than as passive recipients of adult-designed pedagogies, experiences, and curricula. In addition, common worlds acknowledges animal agency and responds to the entanglements between humans and animals as valid experiences in and of themselves (Nelson, 2018; Nuxmalo & Pacini-Ketchabaw 2017; Taylor & Pacini-Ketchabaw, 2016).

Members of the Common Worlds Collective, a group of education researchers from around the world (primarily Australia, Canada, and the United States) describe the research approach this way:

> The notion of common worlds is an inclusive, more-than-human notion. It helps to avoid the divisive distinction that is often drawn between human societies and natural environments. It de-centers the human in research and instead re-situates humans within "indivisible common worlds," foregrounding others. It focuses upon "the ways in which our past, present and future lives are entangled with those of other beings." (Common Worlds, About the Collective, 2018, para 4)

This description summarizes my approach to this research and articulates my aim to be inclusive of animals as co-creators of experience.

My aim in this research was to explore the nature and characteristics of child-animal relations in early childhood educational settings. Adult humans' pedagogical, behavioral, and communicative choices impact children's perceptions and experiences with animals, but children and animals are important beings with

relationships, interactions, and experiences of their own. As part of a larger research agenda, my investigation into these relationships needed to first identify and document, and reflect on the ways in which children experience these interactions, including how animal participants engage, or not, in the interactions. The research design allowed for observation of both planned and unplanned interactions between children and animals to document the agency of both while also making space for unexpected events and occurrences.

Rationale for a Qualitative Observational Multispecies Approach

My aim is to contribute to an ongoing conversation within the field of early childhood environmental education (ECEE). Secondarily, my aim is to experiment and grow as a researcher, using an approach that challenges traditional notions of research. Maxwell (2013) recommended a qualitative approach when the goal is making sense of how participants experience something. My desire was to better understand and contextualize the whole of the experience, the people, animals, materials, and intangibles that together make up a shared moment. Maxwell (2013) elaborated that "not only the physical events and behavior that take place, but also in how the participants . . . make sense of these, and how their understanding influences their behavior" (p. 30). This study used a qualitative observational research design informed by multispecies ethnography, which I will discuss more fully below.

Creswell (2007) noted that a qualitative approach works well for "collection of data in a natural setting sensitive to the people and places under study" (p. 37). While Creswell's definition was limited to people and places, I included animals in my research.

My interest in identifying and documenting the experiences of multiple participants groups aligns well with other elements characteristic of qualitative research described by Creswell (2007) such as "reporting multiple perspectives, identifying many factors involved in a situation, and generally sketching the larger picture that emerges" (p. 39).

Creswell (2007) stated that qualitative research also typically includes analyzing data through an inductive process to discover themes or connections across a range of data points. Further, he noted that qualitative research is characterized by fluidity; "all phases of the process may change or shift after the researchers enter the field and begin to collect data" (p. 39). As such, my research required an openness to trends, patterns, and other data that emerged during the data collection and analysis process.

Maxwell (2013) asserted that qualitative research demands approaching field research through a theoretical lens that affirms the agency and voice of all parties, maintaining a focus on seeking to discover meaning in the experience of the participants, which might include "cognition, affect, intentions, and anything else that can be encompassed in . . . participants' perspective" (p. 30). While traditional qualitative research tends to focus on human perspectives, there are a number of environmental education (EE) researchers who have embraced a multispecies approach that included animals and what might be surmised or gleaned about their experience or participation in shared experience (e.g., Gannon, 2016; Lloro-Bidart, 2014, 2018; Nxumalo & Pacini-Ketchabaw, 2017). This approach broadens the reach and scope of critical reflection on human relations with other species in ECEE contexts, and resists the

research paradigm that privileges human experience over that of the rest of the world (Hamilton & Taylor, 2017).

This qualitative approach requires a willingness to embrace and trust the everyday, seemingly inconsequential moments that occur when children engage with the outdoors, with other species, and with other materials (Nxumalo, 2016). It requires the researcher to remain open to the possibility that meaning-making comes not from judging, counting, and ordering, which are typical anthropocentric research approaches, but instead requires shifting away from "matters of fact" to "matters of concern" (Blaise, Hamm, & Iorio, 2017, p. 33). Rather than viewing children as subjects and interpreting their behavior out of context, Blaise et al. (2017) advocate an approach that pays attention to events and encounters that elevate everyday moments of interspecies connection and to the "situated, specific, and interdependent" (p. 33). This approach is not without precedent (Blaise et al., 2017; Iorio et al., 2017; Nxumalo, 2016; Nelson, 2018) and is sometimes referred to as pedagogical narration or pedagogical documentation (Hodgins 1996). It is employed to "move away from familiar anthropocenic modes of explanation" (Nxumalo, 2016, p. 40).

Influence of Multispecies Ethnography

Ethnography can be richly descriptive as a result of its reliance on multiple sources of information and focus on social relationships (Hammersley & Atkinson, 1983). Multispecies ethnography critiques who is typically considered to be part of social relationships, pushing beyond the human in contrast to many traditional research methodologies and methods that rely on a paradigm of human exceptionalism (Kirksey &

Helmreich, 2010; Ogden, Hall & Tanita, 2013; Plumwood, 2002). Multispecies ethnography requires a reflective openness as well as a "degree of methodological flexibility about what ethnography actually is or *can be*" and "opens the door to, and legitimates the study of human entanglements with other species (Hamilton & Taylor, 2017, p. 45).

I was inspired by a multispecies ethnographic approach and borrowed elements in conducting my own research. Hamilton and Taylor (2017) observed that multispecies ethnography aims to "create a liberal and emancipatory empathy for 'the other' " and to ". . . . centralise and problematise the workings of power which are crucial to our understandings of (how we treat) those 'others' " (2017, p. 29). The common worlds approach challenges researchers and others to rethink and re-enact the human place in the world. It honors and acknowledges relations and interactions between and among species, the "meshworks of relations" (Hamilton & Taylor, 2017, p. 46). According to Tsing (2013), multispecies ethnography aims to include a wide range of others beyond the human such as animals, plants, and other living organisms. Ogden et al. (2010) defined multispecies ethnography as "research and writing that is attuned to life's emergence within a shifting assemblage of agentive beings" (p. 6). All animals are seen, as Hamilton and Taylor (2017) noted, as "social actors in networks" rather than merely "static and measurable materials in a human story" (p. 25). These assertions undergird my decision to view animals alongside children as co-creators of experience and not as pedagogical tools or props in service of children's development. Furthermore, they illustrate the entangled nature of common worlds and multispecies ethnography. While the two terms

are not exactly interchangeable, there is interplay between the approaches and a great deal of overlap.

Multispecies ethnography also requires moving toward acceptance of other ways of knowing, being, and sensing beyond subject/object or the human/nature binary. As Taylor and Pacini-Ketchabaw (2015) explain, multispecies ethnography requires that researchers "become companion participants in sticky webs of connection engaging in experimental and inventive practices" (p. 514). Multispecies ethnography urges researchers to move from searching for meaning to being receptive to "affect," a term Whatmore (2006) described as the "ways in which sentient beings are affected and moved by each other" (p. 604). This requires what Spannring (2017) described as "the willingness and ability to listen to the animals' voices" (p. 65), which, in this study, took the form of noting animals' movements, sounds, and other signs of willingness or resistance to participating in human-directed experience. In addition, this research was attuned to their agency as demonstrated by what the animals did or did not do in response to human interaction. As Taylor and Pacini-Ketchabaw (2015) described, "pay[ing] attention to the movements and actions of the [animals and children], be [ing] affected by and think with all of the actors" (p. 514).

Being inspired by multispecies ethnography meant remaining open and receptive, letting the setting and participants inform and guide the research, rather than bringing a pre-set notion of what to search for and what patterns to expect to emerge. As Taylor (2013; 2017) aptly described, this posthuman educational research is messy, complicated, and challenging, because "the presumptions it entails-that one can access, know about,

and represent the ‘experience’ of an ‘other’s’ reality-are not so easily dispensed with, no matter how reflexively one tries” (2007, p. 17). This work was deeply challenging and throughout the data collection process, required me to actively resist imposing my human interpretations on what I observed and instead remain attuned to the experiences, interactions, and engagement that were unfolding, keeping an open mind, and recognizing that each moment had significance for the participants.

After all data were collected, the data were coded employing Saldana’s (2016) recommendations, with additional attention paid to other significant moments of potential interest that did not necessarily lend themselves to categorization or established codes or themes. I found this work of engaging in common worlds research challenging and required me pushing beyond the urge to remain child-centered, and to inhabit what Pacini-Ketchabaw et al. (2016) referred to as “a radically expanded conceptualization of the social” (p. 151).

In addition to my desire to better understand child-animal interactions, I also view my research as a political act, that of learning and being alongside and inside multispecies entanglements in an effort to cultivate transformational practices, relationships, and responsibilities toward non-human others, in this case, animals. Throughout, I attempted to be attuned to matters, events, and meanings beyond those that are exclusively human by noting the behaviors of both the children and the animals as well as the settings or conditions in which they interacted. In doing so, I embraced my role as a researcher in what Fawcett (2015) referred to as an “ecology of subjects” (p. 276), including children, animals, and myself. (Kato, Gibson, Rose, & Fincher, 2015). I

tried to view all participants as members of a community, each making a contribution and co-shaping the experience. As Pacini-Ketchabaw et al. (2016) noted, “it seems much easier to theorize about decentering the human than to walk the talk” (p. 149). Embodying this work and articulating it in practice is difficult but necessary in moving toward a more relational co-existence/co-learning/participating with animals in common worlds.

Description of the Research Setting and Participants

The classroom to which I was granted access hosts half-day (3.5 hours in length) preschool classes for children ages 3-5 every day of the week. I participated in two different classes, the morning and afternoon classes that ran on Mondays, Wednesdays, and Fridays. Each class had 15 children, one lead teacher, and two teaching assistants. During the course of the study, one child moved away, reducing the class size of the afternoon program to 14 children. The facility is located in a suburb of a major metropolitan area in the upper Midwest of the United States. I have a working relationship with the staff and director of this site, and have known the center director and some of the teachers for several years. I was granted permission to observe before, during, and after the daily classes.

The classroom is home to an unnamed green tree frog (*Hyla cinera*) who lives in a terrarium. Besides the frog, there are no other classroom pets. The majority of each day is spent outdoors exploring the nature preserve, but given the time of year and weather conditions, most of the interactions involving animals took place in one of two locations. One location was a building on site known as the Reptile Lab that houses captive fishes,

reptiles, and amphibians as well as a flying squirrel. The second location was the model farm that is home to numerous species of animals including chickens, hogs, goats, sheep, and horses. There is also a wood duck (*Aix sponsa*) called Skipper who lives in the chicken coop who is considered "non-releasable" as he imprinted on his human keepers when he was a chick.

The research participants thus included 30 (and then 29) children who attend a nature-based preschool, the wild animals who live on the grounds of the nature preserve where the preschool is based, the classroom tree frog, exhibit animals in the Reptile Lab, and the animals residing in the working farm located within the preserve that is managed as an education exhibit.

Method: Observation and Jotting

During the course of the study, I engaged in what Emerson, Frietz, and Shaw (2011) called jottings: noting my sensory impressions, and assessing what may or may not be potentially significant immediately after or shortly following my time in the field. Jotting seems particularly appropriate for multispecies ethnography, supporting as it does the researcher's perceptions, feelings, senses, and emotional responses. Each day when I returned from the research site, I wrote my jottings into extended field notes while making initial meaning from the notes and participating in daily reflection. I later revisited the jottings and field notes, adding in any memories or sensory impressions that seemed germane to the situation.

In attempting to center the work in the common world shared by animals and children, I noted animal agency and behavior where and when it seemed germane to the

situation. Animal agency is a difficult concept to articulate, and required what Warkentin (2010) called a "praxis of attentiveness" (p. 101) and a willingness to note animal movement, resistance, or other demonstrations of agency. In my field notes, I was inspired by ecofeminist Rose's (2015) practice of "witnessing." For Rose, this meant listening with attentiveness, being called to connection, and responding. As Blaise et al. (2017) describe, researchers are called to connection by "mak[ing] room for the more-than-human" and acknowledging that "non-humans are co-shaping knowledge with humans, and therefore humans are not sitting safely on the outside making judgments" (p. 35).

As a researcher, I responded by attending to the everyday, opening to meaning-making, and resisting the urge to label, judge, and make pronouncements squarely centered on children. Following the lead of other multispecies ethnographers, I made notes about my observations about the actions of the animals in this setting, collecting stories and moments (Lloro-Bidart, 2014, 2015, 2017a, 2017b; Nxumalo, 2015a, 2015b; Taylor, 2017; Taylor & Pacini-Ketchabaw, 2015). I describe the logistics of my various methods in the following sections.

Observing children. My visits to the preschool occurred immediately before or during the group's time outside. When the children were brought outside to explore, hike, or play, I followed behind the group quietly, or walked alongside children, carrying a field notebook in which I recorded my observations. I engaged in what Nelson (2018) called "walking and tracking with children" (p. 21), following along as they moved through the landscape. Nelson (2018), in describing her field work, commented on

noticing and attending to the terrain and the numerous other-than-human elements that make up the place; including animals, plants, rocks, dirt, leaves, even temperature, precipitation, and other elements. This non-intrusive observation of children and animals, while being alongside and moving through the landscape and other spaces with them, allowed me to attend to and document the ways in which they interacted directly and indirectly with one another and to also be aware of the role of the natural environment, which was a co-creator of the experience of the animals and the children involved.

My observations of children focused on their responses to affordances, interactions with one another and with animals, their conversations, questions, and behaviors toward, around, and in relation to animals. I quietly and unobtrusively recorded children's behaviors and their use of language, actions, and behavior that emerged during their interactions with animals. So as to minimize my influence on children's experiences and behavior, I did not speak to the children unless spoken to first. I resisted questioning or interrogating them about their behavior, choices, or feelings about animals. Notable comments, conversations, outbursts, and other actions were recorded in my field notes for my data analysis.

I carried an audio recorder to capture the sounds of the animals and children. This proved to be particularly useful when the temperatures dropped so low that removing a glove to write would have resulted in frostbite. The field recordings also were valuable in allowing me to return to the children's dialogue and other sounds, and reflect on the visits, remembering moments and details in the dialogue and other sounds that might have otherwise gone unnoticed. As an example, I was able to return to the back-and-forth

that occurred between children and sheep as they vocalized together, and the cacophony of chickens clucking and crowing, with children's voices being drowned out by the chickens at times. Following my site visits, I sent the recordings to a third-party transcription service where all dialogue was transcribed and double-checked for accuracy. I retained the original recordings to keep a record of animal sounds and other background noise that was of interest.

Observing animals. As Hamilton and Taylor (2017) cautioned, "animals may be brought to life or silenced by the inscription methods that we humans use in our research" (p. 51) hence my strong desire to be attuned to animals' ways of communicating and acting, and willingness to let go of my human-centric tendency to attach meaning to those actions. Maintaining a posthumanist stance toward this ethnography was one way to attempt to de-centralize humans and human ideas, to include animals in the discourse, lest they and their voices disappear (Hamilton & Taylor, 2017). At each location in the research site, I observed what the animals did, how they engaged, or not, with the children, how they demonstrated agency, and how they responded to children and adult interventions.

Mindful of the importance of de-centering humans in this research, I used the idea of agency broadly to include moving towards or away from children or adults, initiating encounters through prolonged gazing, sniffing, or approaching children or adults, shifting or stopping encounters through alarm behavior such as biting, defecating, or urinating, or doing something entirely unrelated to the humans present, such as eating or grooming.

Cases where animals had little opportunity to demonstrate agency, such as when an animal is captive in a tank or cage, were also noted.

Warkentin (2010) reminds the researcher not to presume to know the inner experience of an animal; “I do not think humans can thereby know what animals are ‘saying’ per se, or how they actually feel . . . I am not comfortable with calling our embodiments ‘homologous’ and assuming that it gives us access to the emotional experience of other animals” (p. 107). She goes on to say that humans can “understand some basic qualities of gestures and behaviors to the extent that attentiveness to nonverbal communication can inform an ethical response, particularly in moments of direct human-animal interactions” (p. 109). In other words, while it is not possible to truly understand or know an animal’s experience, it is possible for humans to be aware of that animal’s gestures and behaviors to a degree that guides responses toward awareness, consideration, concern.

Other multisensory methods of research are also called for when engaging with animals, and were noted during my research. Hamilton and Taylor (2017) wrote, “animals inhabit a deeply sensory world where language is less significant” and thus “ . . . . tuning into our own senses equips us better for the sort of posthuman, species-inclusive ethnography we advocate” (p. 112). They advocated for methods that employ attention to sounds, movements, ambient noises, temperatures, and even smells. I thus was particularly attuned to changes in temperature, sounds, and smells, and how these elements seemed to shape and co-create experiences. Finally, to inform my own understanding of specific animals’ lived experiences, I looked to animal behavior and

biology resources related to any animals who ended up featuring prominently in encounters with the children.

Notes. The notes made upon revisiting the jottings or recordings served as secondary data. After each site visit, notes were reviewed quickly and additional ideas captured in a format Emerson et al. (2011) referred to as "in-process memos" (p. 123). In-process memos are notes written or recorded either during or shortly after a field research session about what to consider later: ideas, connections, insights, or questions that may inform the researcher's attention to other details, questions, or incidents. Field notes and in-process memos were transcribed weekly from my notebook. Following collection of all data, audio recordings were sent to a third-party transcription service. Field notes, in-process memos, and transcriptions were then reviewed both individually and as one large body of material during the coding process.

Data Analysis

Field observations, field notes, and 14 audio recordings collected during 60 hours of research served as the primary data. During the open coding process, all field notes, memos, and transcriptions were reviewed and initial codes were established. During open coding, all notes were reviewed as a corpus of work, with emergent themes noted, and then reviewed line by line. Initial codes were entered into a database I designed in Microsoft Excel for the purpose of recordkeeping during this research process. Next they were aggregated to provide distinct codes and counts. The most frequently occurring codes served as placeholders for potential emergent themes. Similarities between codes

were identified and noted as were significant incidents or other moments of potential interest. A visual representation of this process is provided in Figure 1.

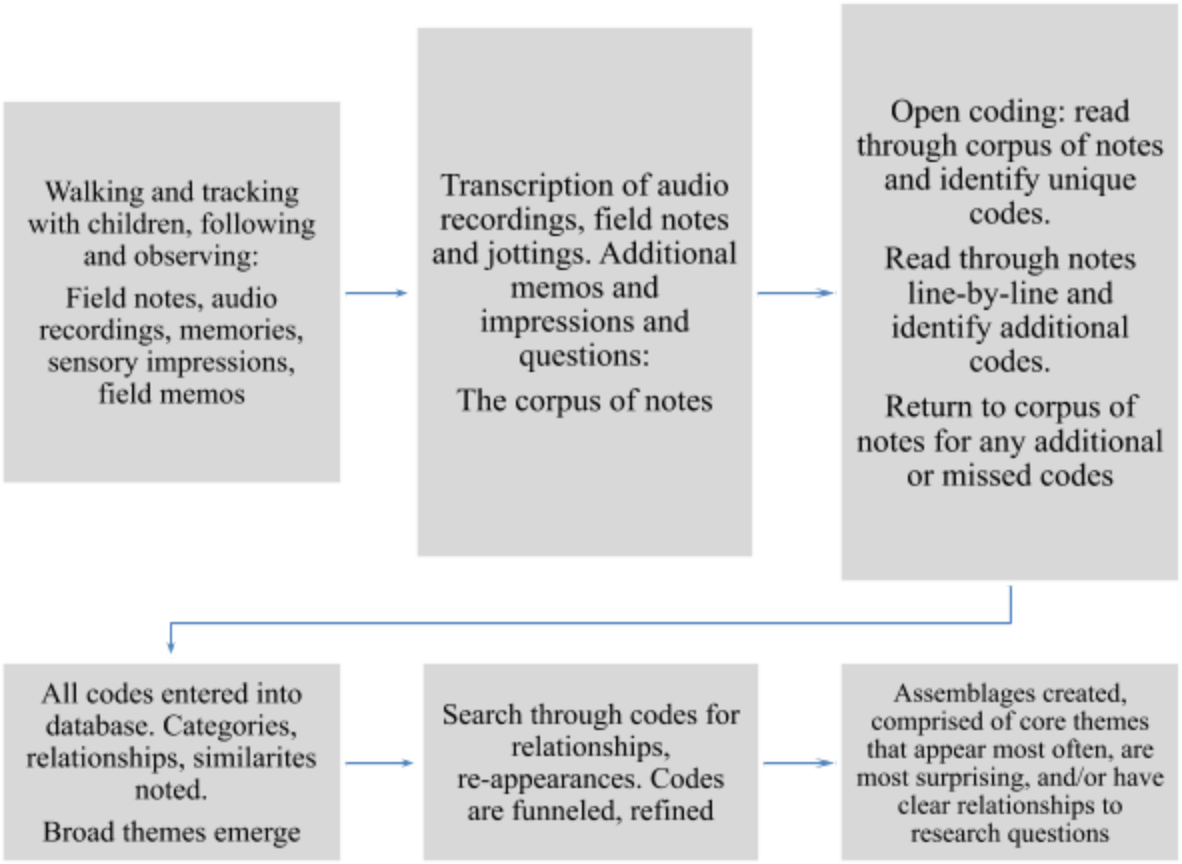

Figure 1. Visual representation of author's data collection process.

The core themes and their associated codes were then assembled as patterns and relationships emerged during particular affordances. The code assemblage displayed in Figure 2 illustrates the emergence of a series of codes related to identity, which arose when children were observing brown trout fingerlings in a tank.

Figure 2. Illustration of a "code assemblage."

Themes emerged in a variety of ways during the analysis process. In the example illustrated in Figure 2, the children were engaging with baby rainbow trout in a tank, watching them and having lively discussion. What seemed most important to the children during this time, based on their conversation and questions, were the fishes' relationships to one another based on their social identities, mostly related to family. For this reason, the interactions with the fishes also led to the resulting code assignment of identity.

Using the corpus of notes, emergent themes were identified by grouping together codes through assembling them, and then organizing them into broad, connected categories. This process of assembling codes gave way to the development of what Emerson et al. (2011) referred to as core themes, which were then further analyzed. During this sorting process, each vignette or note was considered in isolation, but also in context of the related codes with which they had previously been associated. In these cases, when relationships were evident, I searched for other relationships within themes. In some cases, codes had clear relationships to more than one theme. As Figure 3 illustrates, established sets of codes organizing numerous incidents later gave rise to additional themes.

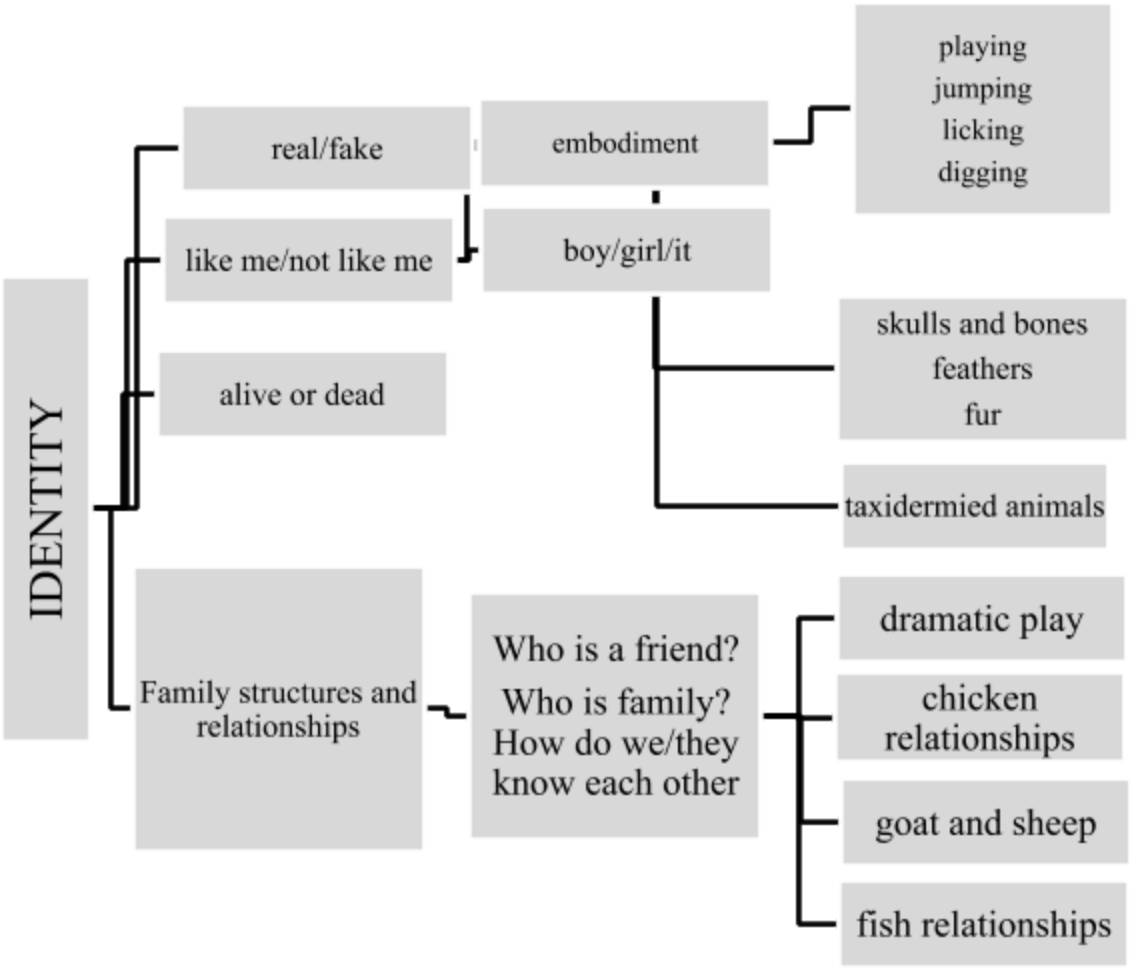

Figure 3. Core theme, identity, resulting from emergent themes based on groups of codes.

Throughout the review process, there were numerous rich moments when children established, questioned, discussed, experimented with, or described relations between and among real and imagined species, wrestled with their own identity in relation to others, questioned the difference between real/fake and alive/dead, and aimed to make sense of self/other. As a result, identity emerged as a final layer theme that seemed to best contain these subthemes.

Throughout the coding process, I followed the guidance of Emerson et al. (2011) and sought "patterns and variations in relationships and in the ways that members

understand and respond to conditions and contingencies in the social setting" (p. 19). This practice aligns with common worlds-inspired ethnography in that it allowed me to focus on particular moments that may be illustrative of an idea or a multispecies interaction rich with potential meaning. Moments or instances of potential interest were regarded with the same, or greater, value than those that occurred most frequently.

Using an inductive approach, field notes and recording transcriptions were reviewed with particular attention to patterns in how and in what ways children interacted directly or indirectly with animals. This included noting whether children talked directly to animals or about them, and how children handled, approached, and otherwise engaged with animals, living or dead. In addition, instances of embodiment when children joined animal worlds through play and imagination were noted. I paid particular attention to patterns and trends of agency, power and vulnerability, and what sorts of things tended to provoke actions by children and animals. As well, I attended to the language that children and adults alike used when talking about animals.

I was attuned to those moments where children engaged with animals through physical touch, play, or embodiment, along with other ways that children attempted to be with animals in their shared world. Following the lead of other common world researchers, I focused on human-animal entanglements that required deep reflection on the everyday and often overlooked moments and interactions that happened when children and animals were together (Nelson, 2018; Pacini-Ketchabaw & Nuxmalo, 2015; Rautio, 2013a, 2013b; Taylor, 2017). This meant attending fully to moments of interest and then, using the jottings and extended field notes, unpacking those moments and

extending them into longer narratives. Following common worlds researcher Nxumalo's (2015a, 2015b) approach, particular moments which "[speak] to me, trouble me, and leave me with questions about what remains invisible" (p. 24) were selected. In the next chapter, I consider those moments, mulling over what they might mean within the context of common worlds. I reflected deeply on the everyday moments and interactions when the children and animals were together, working to unpack those moments.

As an example of how I recorded and reflected on my data, I share an encounter from this research involving children and a small sparrow (*Passer domesticus*) who was perched on the railing inside the barn at the field site.

> Two young girls were extremely interested in the bird and crept slowly toward it, hunching over and whispering. Maybe they want to be smaller, more her size. I notice that they don't talk loudly or blurt out their thoughts. Instead they whisper to each other and "shh" one another. They are very focused on approaching the bird, a house sparrow. When she flutters her wings and moves on the railing, they grip each other's arms tightly, and Greta grits her teeth as the girls freeze in place. When other children talk or get too close, the two girls "shh" them and whisper "get away, get away!"

In this example, I noted the girls' body movements and was particularly attuned to children's responses to bird's actions.

> The girls' act of crouching down and freezing in place indicates an awareness of the sparrow's affect and agency. In order to be small and sneaky, they are crouching and tiptoeing (though their clunky winter boots

> make that quite a challenge!) The girls are clearly trying to become smaller, quieter and less intrusive. Is this an act of sneaking up on the bird or is this embodiment, are they trying to share the bird's experience of being small? Maybe they are trying not to provoke her into flying away or moving?

The sparrow finally flutters her wings again, shaking her body, then flits away to a high rafter. The girls quietly groan in disappointment. Were they hoping to touch her, or was it enough just to be close to her? What did the bird think about all of this? Was she aware of the girls?

In the research setting for this study, I expected to observe certain patterns of interaction. I both searched for those and also revisited and combed through my data to see if other patterns or trends emerged. Using my field notes, I sought patterns in behaviors and discursive frames employed by the children as well as the animals to determine any repeating "interaction patterns," (Kahn, Weiss, & Harrington 2018a, p. 1; 2018b). Drawing on Emerson et al. (2011) work, I first employed open coding (Saldaña, 2016) to my field notes, identifying any and all themes that emerged or were suggested. I then examined specific aspects (e.g., child-animal interactions, behavior related to animals) that emerged within the broader context, as described by Yin (2015). Next, I engaged in what Emerson, et al. (2011) call focused coding, identifying topics or themes of particular interest and that had the potential to inform the structure and interpretation of my data. From there, I created mind maps to help organize the themes that had emerged such as the example provided in Fig. 3.

Ethics

Following my proposal meeting and incorporating feedback from my committee, my Institutional Review Board (IRB) application was drafted and submitted. The IRB application was approved on December 6, 2018 along with a sample letter of informed consent that I shared with parents of the children in the classroom. All parents or guardians of the 30 children in both classes signed the letter of informed consent before I began my research. As per my IRB specifications, all names of children and adults have been anonymized using pseudonyms throughout.

While the informed consent letter was reviewed and signed by parents of the children in the selected classroom, I felt it was important to honor the children's wishes as well and thus I worked with the lead teacher of the classroom to ensure that she introduced me, explained that I was there to observe the class, and that, if they were not comfortable or if they had questions, the children could let her or another familiar adult know. No child expressed a desire for me not to observe them or join them on their forays into nature. In fact, I was welcomed into the group and they seemed eager to have me join them in their adventures.

Although there is little research on how to obtain informed consent from other animals, interspecies etiquette as described by Warkentin (2010) was a helpful tool. She asserted that such etiquette

> . . . can be expressed through one's body and actions, or, in some cases, inactions . . . . [e]ach individual's ability to choose whether or not to interact is ethically

> imperative. It involves a conscious and deliberate bearing of openness to others while creating space for either engagement or avoidance. (p. 102)

Plumwood (2002) suggested that in human-animal encounters, one can choose to adopt "a posture of openness, of welcoming, of invitation, towards earth others" (p. 175). This advice was on my mind throughout the duration of the study.

Conclusion

This chapter situated the research questions within the conceptual framework of common worlds and presented a rationale for qualitative, observational, multispecies-inspired fieldwork. It described the research methods, setting, and participants. Data collection and analysis were summarized and clarified using graphic representations of the process of assembly of information and the emergence of themes. It further provided some detail related to ethical considerations.

In the next chapter, I turn to my findings, provide details about the emergent themes and their connections to the guiding research questions. Each core theme is described followed by a narrative vignette to help explicate the relationship of the theme to the research questions.

CHAPTER FOUR

Findings and Discussion

Overview

As a reminder, this chapter presents the results of a qualitative observational ethnographic research study conducted to answer the following questions:

- What are the observable and identifiable ways that children and animals interact within the context of one nature-based early childhood program in a suburb of a metropolitan area in the upper Midwest of the United States?

The secondary questions were:

- What are some notable characteristics of interactions between the children and the farm animals in this setting?
- What are the implicit or explicit discursive frames used by educators related to child-animal interactions in this setting?

This chapter describes the findings generated through a data analysis process grounded in multispecies ethnography and inspired by a common worlds framework. Throughout the chapter, descriptive vignettes illustrate findings, major themes, and other matters of

concern (Blaise, Hamm, & Iorio 2017; Latour, 2004b). Each theme will be described and connected to the original research questions, and is supported by excerpts from field notes that serve to clarify the themes, elucidate or connect research ideas, or illustrate the intertwined and complex nature of multispecies relations. The identity of all human participants has been masked; pseudonyms are used throughout. To acknowledge animals as research participants, they are referred to by their species where possible and their common names and sex when known.

The coding process generated four core themes: a) power and agency; b) fear, uncertainty, and vulnerability; c) identity; and d) teacher talk. As described in Chapter Two, the first three of these themes are common ways that children engage with animals, whether through play, literature and other media, actual encounters, and in various academic settings in early childhood, such as preschool classrooms. Three of these themes - power and agency, fear, uncertainty, and vulnerability, and identity - respond to the research questions about children's interactions with animals, with particular attention to those who reside on the farm.

Following a discussion of these three themes and their relationships to the research questions, is a description of the fourth theme, teacher talk that addresses the third research question about the discursive frames used by educators related to child-animal interactions. As well, examples from my observations show the relationship between themes and I note the significant qualities of interactions and clarify the relationships to the research questions. In each section that follows, I also present additional examples of moments of potential significance events or situations that

lingered in my mind and felt rich with meaning. These examples are particularly illustrative of the common worlds conceptual framework.

Theme 1: Power and Agency

The theme of power and agency, which includes three subthemes, emerged from 116 unique observed instances when children responded to animals' violation of their expectations, sought to otherwise assert physical or imagined control over animals, or when animals demonstrated agency. The three subthemes were: 1) rules, safety, consequences, and discipline as noted or initiated by children (21 incidents); 2) children's expressions of power over animals (56 incidents); and 3) animals' expressions of agency (35 incidents).

Traditional early childhood literature recognizes children's expressions of power in a variety of ways including physical expressions of control such as grabbing or holding, demanding attention from other children and adults, and attempts to manage or control situations (Lee & Recchia, 2008). In my review of the common worlds literature I noted that to date, power dynamics and expressions of power by children or animals, is an area not addressed by the literature. However, in reflecting on my field notes, I attempted to make meaning of the demonstrations of power, as provided in the vignettes related to this theme. Since common worlds framing focuses on the "manners and means through which children learn from engaging with other species" (Taylor & Pacini-Ketchabaw, 2015, p 508). I kept my focus on the interspecies engagements related to power and agency in an effort to trouble traditional notions of these qualities, examining them from within a common worlds context..

Subtheme 1: Rules, safety, consequences, and discipline. When children witnessed animals doing something unexpected or "naughty," they asserted their own sense of power by expressing indignation or surprise at the animal's behavior. This was one observable and identifiable way that children interacted with animals in the farm setting. Here is an interaction between children and Tony the Percheron horse to illustrate:.

2/6/2019 Vignette: Tony breaks a rule and the children respond. The children are watching as Tony stands in his paddock in the snow. There is a large sleigh in the paddock and it's covered with a silver tarp. The tarp was just put on the sleigh last night, Teacher Katie tells me, and Tony is "still trying to figure it out." He bites at the tarp with his teeth. We can see his lips moving from where we are standing a few hundred feet away on the outside of the fence. Steam comes from his nostrils. He pulls the tarp and tosses his head, making the tarp flutter and wave like a sheet . . . . the children become very excited, "What's he doing, what's he doing?!" Allison cries, jumping up and down. She knows this is not Tony's "usual" behavior. Farmer Dan sees Tony doing this and we watch him walk from his gator (a type of small all-terrain vehicle) parked nearby to the entrance of the paddock. "Oh! What's going to happen?" Teacher Katie asks, "Here comes Farmer Dan!" The children shriek with excitement and anticipation. Tony, meanwhile, keeps pulling at the tarp and tossing his head. What's he doing? Is he trying to pull it off the sleigh? Is he bored? Is he upset or agitated? He is swishing his tail somewhat lazily and doesn't seem stressed, but he does seem pretty fixated on this tarp. He's just grabbing at it, tossing his head, and the tarp flaps in the wind.

When Tony sees Farmer Dan approaching, he stops pulling at the tarp and takes a few steps away from the sleigh. Then Tony looks in our direction, and the children cheer. “Hi Tony!” they cry, as Farmer Dan approaches the sleigh and begins to replace the tarp over the sleigh, tucking it in to places where it can be secured. Tony is standing under a tree branch not too far from the sleigh, and he is watching Farmer Dan.

As soon as Farmer Dan is satisfied that the tarp is secure again, he starts to walk away. He turns his back, and when he does, Tony slowly walks toward the sleigh and the children again shriek with delight. “No, Tony!” cries Teacher Krissy in mock surprise, as Tony grabs the tarp between his teeth. As Tony begins to pull on the tarp to loosen it from the sleigh, the children begin to yell, “YES, Tony, YES! Yes, Tony!” and continue to cheer him on, even as Farmer Dan turns around to replace the tarp yet again. Farmer Dan gets close to Tony and leans in close to his face. Farmer Dan doesn’t touch Tony, but his breath turns to steam in the air, so we can tell he’s talking to Tony. Tony backs up a few steps while Farmer Dan makes adjustments to the tarp. “What do you think is happening? What is Farmer Dan saying to Tony?” Teacher Krissy asks a child. “I think Tony’s going to get a punishment!” cries one of the children, David.

In this example, the qualities of the interaction include the children’s surprise and agitation at Tony pulling on the tarp. Allison’s agitation when she notices Tony pulling on the tarp is clear, as demonstrated by her exclamation about Tony’s unusual behavior, since this is the first time she as seen Tony pull on a tarp with his teeth. An additional notable quality is the fact that several of the children excitedly yell “Hi” to Tony when he looks in their direction. This greeting indicates children’s feelings of attunement (Myers,

2007; Tipper, 2011) with Tony, which will be further explicated in the discussion on the theme of identity. In this example, the children's awareness of rules and expectations is indicated by their strong reaction to Tony violating their expectations (Mammen, Köymen, & Tomasello, 2018; Nucci & Nucci, 1982; Smetana, 1981). The short conversation between David and Teacher Katie about the farmer's interaction with Tony provides evidence that David is aware of how Tony is expected to behave, and that there may be consequences for his behavior.

This example was selected because it contains children's demonstrated expectations, expressions of surprise, a horse's demonstration of curiosity and persistence, a farmer's demonstrated expectation, and a teacher inviting the children's ideas. Without applying a common worlds approach to this interaction, I would have perhaps stayed focused on the children's actions alone, and considered how this interaction impacted their social-emotional development. Instead, the common worlds approach kept me attuned to other elements of the interaction such as Tony's reaction to the tarp, his demonstrations of agency, how the children reacted to his demonstration of agency, and how the children and teacher contexualized his actions within a cultural norm of the school. Following is an additional example that illustrates a child's spontaneous recognition of two sheep breaking a rule.

2/7/2019 Vignette: The sheep are eating. In the barn just after feeding time, Parker noticed that two sheep were eating out of a feeder at the same time. She tugged on the teacher's sleeve and exclaimed, "Those two are eating without taking turns!"

This example is notable for two reasons. First, it illustrates Parker's internalization of the expectation that is reinforced consistently throughout early childhood: take turns. Parker sees two ewes not following that expectation, and she is so shocked that she alerted the teacher that a rule was being broken. This example also sheds light on Parker's perception of her shared world with the sheep, along with evidence of her sense of kinship with them: since the sheep share a world with the child, they are kin, and are therefore bound by the same expectations.

This example offers a small glimpse into the experience of the sheep: clearly, they have a shared expectation of one another, demonstrated by their ability to eat from the same hay feeder without bumping into each other or experiencing conflict or competition. How have they learned to eat together? What are the manners a sheep needs to have in her social world? Sheep have wide-set eyes and have a wider peripheral vision than humans and thus in some way, command a sort of "personal bubble" around themselves.

Nonetheless, sharing a hay feeder in close quarters must be a learned experience. Sheep have zones of personal space much like humans do, and can be uncomfortable when their personal space is intruded upon, such as by another sheep (American Sheep Industry Association, 2016; Grandin, 2008). Grandin (2008) also explained that those zones of personal space are different depending on the settings in which the sheep are kept. Sheep who have large pastures or grazing areas have bigger zones of personal space than do those confined to pens, such as the sheep in this setting. Hence, these sheep have developed a comfort with one another, being close together, allowing them to comfortably share space at the feeder.

The sheep eating together was interpreted as a demonstration of expectation, since the sheep are experiencing and enacting behaviors considered normal within their own social structure (Fisher & Matthews, 2001). Seeking another interpretation, one that resists the urge to seek a human-centric label and definition of this behavior, I simply note that the sheep were, together and individually, experiencing their own lives and having an experience of eating. Whether the presence of the children in the barn, or Parker's exclamation, had an impact on the sheep is unknown. I did not note any visible reaction on the part of the sheep in response to Parker's exclamation or the ambient noise in the barn, despite the fact that sheep are known to have sensitive hearing and are easily startled (Fisher & Matthews, 2001).

Common worlds literature does not specifically address awareness or understanding of shared social rules and norms between animals and children. Nevertheless, these examples address the first research question by providing measurable and observable ways in which children interacted with the farm animals in this setting. It was clear throughout multiple interactions that there are rules, expectations and norms between and among children and animals. Furthermore, the common worlds approach prompted me to consider not just the experience of the children, but the sheep themselves as participants in the experience that was unfolding. My desire to maintain a multispecies focus drove me to wonder about the sheep's experience, and the shared expectations and norms that may have been guiding their behavior.

Subtheme 2: Children's expressions of power. This subtheme encompasses incidents of children asserting or demonstrating power over animals and includes actions

that have a direct perceived impact on an animal's behavior, physical state, or emotional state. On 29 occasions, children enacted power by touching or handling animals, or pursuing or provoking them. Children also enacted or described possible actions they might take toward animals, sometimes asking the teachers if those actions would harm the animal, as if uncertain of their power. In the following example, children stand looking at a tank of rainbow trout fingerlings, thinking about or enacting power in relation to the fishes. In this vignette, a boy, Rand is standing next to a teacher and observing dozens of trout fingerlings:

2/25/2019 Vignette: Rand wonders about squishing a fish. Rand, Joey, Ava, and Henry are standing at the tank next to Teacher Katie looking at the fingerlings and watching them swim. There must be hundreds of fishes in there. The tank itself seems to be moving, there are so many fishes. It looks like a laboratory, no plants or anything, just a glass box with fish. Rand slaps the tank and the fingerlings scatter in all directions. He giggles.

Teacher Katie "Rand, when you hit the glass, they move. And that means they're scared. So don't do that, OK?"

Rand says, "They went like this." And he does a full-body wiggle, all the way down to his fingers, which he stretches out to his sides. He does a pretty convincing imitation of a school of fish. The three other children stay there for a while, watching the fingerlings. After a few minutes of watching, Rand says, "I can hold them but I can't squish the blood out of them."

Teacher Katie "No."

Ava “Squish them?”

Teacher Katie “Yeah, we don’t want to squish them. That would hurt them.”

Rand “Do they get sick if people squish them?”

In this example, Rand verbalizes his thoughts about the impact of his actions.

After noticing the effects of his actions on the fingerlings in the way they scattered, as pointed out by Teacher Katie, Rand demonstrated an awareness of what the trout had done. During the few minutes when the children and the teacher watched the trout, it seems Rand had been thinking about what he might do to the trout. The distinction that Rand makes about holding them but not squishing them could be a demonstration of his curiosity about his own power over the trout. It is also possible that Rand does not quite understand the effects that holding or squishing would have, as evidenced by the question, “Do they get sick if people squish them?”

This example illustrates a child experiencing his own power vis-a-vis an animal. First, Rand’s act of slapping the side of the tank was possibly an attempt to see what effect it would have on the fishes inside. The teacher reminds Rand not to hit the tank “ . . . they move, and that means they’re scared” was the reason given. This information tells Rand that he has the power to provoke a behavioral reaction and create fear, an emotional response, in the fingerlings and affirms the child’s own power. At the same time, the exchange between the teacher and Rand also reminds Rand that the teacher is in charge and has authority, as evidenced by Rand choosing to stop the unwanted behavior. This moment offers a glimpse into another power dynamic evident in this interaction; that between adult and child.

As a final note, the fishes here have little agency. There are dozens of them together in a tank that has no rocks or vegetation in which they could seek shelter or put distance between themselves and the onlookers. In this setting, they are being raised as biocommodities (Collard, 2014; Gillespie & Collard 2015; Lloro-Bidart, 2014, 2015, 2018) in service of an anthropocentric agenda. This nature center is rearing trout as part of a program through the state's "Trout in the Classroom" project, which aims to "use trout as a platform to implement educational opportunities for students to learn about watersheds, water quality, fish biology, and wetland ecology" (Trout in the Classroom, 2019, para. 1). The staff at the nature center raise rainbow trout for repopulation into streams and other waterways, and have hatched eggs, reared young, and will place some of the adult fishes in their hydroponics lab. Some of the fishes will be released into local streams, while some will be eaten by staff.

As described by Krebs, Huysmen, Voorhees, and Barnes, (2018), as well as others, (Näslund & Johnsson, 2016) fish "culturing" environments (tanks in which fish are raised) are generally kept barren and that is largely for human convenience. They note that materials such as plants and rocks help to reduce stress and other behavioral issues in rainbow trout fingerlings, but adding materials to tanks is problematic as it interferes with "routine fish culture activities" (Krebs et al., 2018, p. 27) such as tank cleaning. Is this the reason these fingerlings have nothing in their tank? No one seems to notice or wonder except me. Here is an example of how the living conditions of the animals are maintained not with their primary interests or needs in mind, but in a way

that will best accommodate human needs. The following excerpt from my field notes reflects on the living conditions present in the reptile lab.

2/25/2019 Vignette: Living arrangements inside the reptile lab. The "purpose" of these fingerlings is not discussed by the teachers or the children during this interaction. I am left wondering about the political dimensions of this situation, and think about the many factors that are mixing together to create this event: The trout are nothing more than commodities in this setting, to be later released as game fish for fisherman or eaten by staff. Do the children know this? Their tank is mostly empty, while the nearby salamander tank, for example, is luxurious by comparison: Like most of the other reptile and amphibian tanks in the reptile lab, it has damp moss and mulch, some leaf litter, a thermometer which measures temperature and humidity. The salamander (*Ambystoma tigrinum)* has several living ferns in her tank, a dish of water and a few living crickets for food. There is a decorative label taped to her tank that states her species name, what she eats, where she would be found in the wild, and it also features a cartoon picture of a salamander. What do the children think when they see the difference in living conditions? Does the habitat that was created for the salamander suggest that she is more valuable, important, or interesting than the fish, who have literally nothing in their tank but a filter and each other? Do the children notice the difference? Do the teachers? Why is the salamander more deserving than the trout? What is the hierarchy of species in the reptile lab? Who decides?

The literature in early childhood education discussed in Chapter Two, recognizes children's developing sense of power and justice as being particularly acute during the

early childhood years. (Gilligan & Wiggins, 1987; Myers, 2007; Myers, Saunders, & Garrett, 2003; Sobel 1996). Common worlds literature, on the other hand, has not directly addressed the role of power and justice in children-animal relations, nor what the implications may be in light of the common worlds view of animals and children co-creating experiences. Chapter Five provides further discussion.

This subtheme of power and justice directly relates to research question one, since many of the children's expressed ideas about power and justice were responses to animal behavior. In other cases, children enacted or wondered about their own power in relation to animals on numerous occasions, as described here, particularly related to farm animals which addresses research question two. These examples provide observable and identifiable ways in which children were engaging with animals, both directly and indirectly, in this setting. Common worlds framing helped me to see how power and justice were enacted by all participants in the experience.

Subtheme 3: Animals' expressions of agency. Thomas (2016) argues for a conception of animal agency and autonomy that recognizes their abilities to "make decisions and direct their actions based on reasons" (p. 5), and that animals thus have desires, preferences, and intentions. Here, animals expressed and demonstrated agency through the freedom to move (or not), and act with intention; they made decisions about their own movements, vocalizations, and, in some cases, their interactions with humans. Since most of the animals observed during the course of this research study were captive in the care of humans, their agency as defined by Thomas (2016), was limited. Despite this limitation, there were numerous instances of animals acting subtly and overtly with

agency, and which I characterized as observable and identifiable behaviors taking place alongside children, a response to both research questions one and two.

During the field observations, I noted that human responses to animal agency varied. At times, the animals' choices went unnoticed while at other times the teachers interpreted the animals' behavior out loud, presumably for the children's benefit. Sometimes the children reacted with curiosity or other emotions, and in one notable instance, the teachers followed the animal's lead when she demonstrated agency. One example is when a hen, Hilda, made decisions and demonstrated a preference for one location over another by actively traveling to that location on several occasions. Her human caregivers ultimately responded to this behavior by letting her stay in the location she seemed to prefer.

Undated. Vignette: Hilda's story. Teacher Katie says, "Hilda was the chicken in our class last year. She came back to the farm. She decided she didn't want to live at the school. She is usually hanging out here in the barn. And this baby goat (Cornelius) is her friend." Hilda is a hen who had previously lived in the classroom but who "relocated" to the barn. In the words of one of the animal care staff members, "She kept leaving the preschool grounds and walking over to the farm to be with the other chickens, so we eventually just let her stay." It seems that Hilda would frequently (i.e., several times every week) leave the yard at the preschool and walk the short distance to the farm to be with the other chickens. After several months of this, the staff finally stopped capturing her and returning her to the preschool, deciding instead to just let her stay where she seemed to want to be.

I found this story especially interesting because it seems that the humans "listened" to Hilda. They saw what she was doing, where she wanted to be, and they eventually let her go there to stay. While this incident occurred during a time I was not conducting observations, it is notable because it is an example of how the adults in this context listened to the hen and subsequently responded to her expression of agency. For Hilda, there was a purpose to her wandering. There were reasons she was leaving the preschool. Perhaps it was her relationship with the goat, perhaps it was something else, I do not know, but this example gives a glimpse into Hilda's inner life and opens up territory for questions about her intent, relations with other animals, and persistence. Why was the staff willing to let Hilda make this decision? How do they recognize or respond to other animals' attempted demonstrations of agency? Additional questions this incident prompted will be discussed further in Chapter Five.

Another notable element of the child-animal interactions related to animals' demonstrations of agency occurred when I observed children demonstrating acts of caring toward the animals. What follows is a description of children demonstrating caring behavior observed during the research.

3/8/2019. Vignette: Nestmaking for the Canada Geese, who have returned to their pond. We are standing on a boardwalk that spans a frozen pond. Three girls, Molly, Ava, and Greta, note the return of a small flock of Canada Geese, who descend on the frozen pond with a loud series of honks, flapping wings, and a "whoosh" as they touch down on the ice and slide forward, coming in for a landing. I've been told the geese come back to this pond every year to build nests and rear their young. There are nine geese and some

of them are on one side of the boardwalk where we are standing, and a few of them are on the other side. After watching the geese walk around on the ice for a few minutes, the girls began to pull dry cattail stems from a frozen wetland area and pile them up near the dock, making nests for the geese. The children were motivated to take action in ways they believed would intentionally benefit the geese. The children's behavior was not prompted by the teacher, who observed quietly while the children selected the softest stems and carefully laid them down, adding a topping of cattail seeds for extra soft fluff. The nest-making went on for about twenty minutes, resulting in one very large nest and a smaller one alongside. As the children constructed nests, most of the geese flapped over the boardwalk so they were all on the same side. At one point, there was a single goose standing on the ice, away from the eight other geese, who were on the other side of the boardwalk where the children, the teacher, and I stood. Molly, Ava, and Greta were very concerned about the lone goose, who would take one or two tentative steps toward the boardwalk, then stop and squawk, as if calling out to the others. Ava watched her intently and said to me, "I think she's scared, I don't think she wants to be away from her family." The goose continues to stand and look at her family. The girls, with prompting from Ava, decide that this goose is in trouble, that she wants to be with her family, and so they pull more cattail leaves and stems, laying them across the dock, creating a bridge or walkway for the goose to use in getting back to her family. All the while they coax her to "come walk on the path we made you" promising "it's going to be ok, we'll get you back to your family."

What does this mean to the goose? She could fly over the boardwalk (which she eventually did) to join the others. Why did she remain behind, watching the children watch her? Does she somehow know they were acting on her behalf, and talking to her? This is a pond the geese return to again and again, year after year. Are they surprised to see the children today? Are they surprised by the ice that still covers the pond? I wonder about their plans, have they now changed? Clearly it's still a bit early and there is no open water on the pond for them. What will they do? Will they stay or go?

I am curious about the children identifying this group of geese as a family. There was no discussion, no negotiation, it was pronounced by Ava and from that moment on the children accepted that the geese were a family unit. Maybe they are? They migrated here together as a group, no doubt enduring challenges together on the way, and as Teacher Katie mentioned, they come back every year. The children's understanding of family seems important here. It seems to drive their actions toward the geese: of utmost importance was keeping the family together. Second was the girls' shared concern about the goose who was separated from her family. Also notable was their apparent certainty that it was up to them to ensure safe passage for the geese, evidenced by their language (use the path *we* made, *we'll* get you back to your family), despite having just seen her flying and moving freely.

Caring behavior is reflected the early childhood literature related to children's caring and prosocial behavior (e.g. Bailie, 2010; Chawla, 1999; Kidd & Kidd, 1990) as well as their generalized positive feelings toward nature. Common worlds literature addresses caring behaviors as well (e.g. Boileau & Russell, 2018; Nxumalo &

Pacini-Ketchabaw, 2017) This vignette illustrates an instance where the children reflected on what they thought the geese might need, and then took action accordingly. It also challenged my thinking about family, causing me to wonder how children define family, and I was interested in how the children sought to keep the family together. And what about the goose who lingered on the other side of the boardwalk, was she watching the children? I wondered what these geese might be thinking, returning to find their pond still a solid block of ice. I presume that the girls' intention was to help the geese: with the acts of nest building, bridge building, and their expressions of concern for the well-being of the geese. As happens with common worlds research, these questions remain, lingering in my mind. The acts of caring toward animals were observable and identifiable, therefore they too directly respond to research question one.

The next section articulates the second major emergent theme in my data analysis: fear, uncertainty, and vulnerability.

Theme 2: Fear, Uncertainty, and Vulnerability

A total of 85 interactions noted during the data collection process provided examples of the fear, uncertainty, or vulnerability. In this research setting, the animals are necessarily more vulnerable than the children, given their lack of true agency and total dependence on humans for food, shelter, and water. An additional factor that seemed to influence interactions and provoke demonstrations of fear, uncertainty, or vulnerability was the significant size difference between children and these specific animals: many of the animals are much larger than the children, and even animals who an average sized

adult would consider relatively small such as the hens may seem large to a child who is just a few feet tall.

Children expressed vulnerability by moving away from an animal's advances, attempting to provoke a moving-away-from response in animals (such as by chasing or lunging at animals, which could also be interpreted as a power move), or by asking questions or talking about an animal's actions and how they might relate to the child. Animal expressions of fear, uncertainty, or vulnerability took the form of moving away from other animals or children by running, flying, or otherwise putting distance between their body and others. Other moments that I interpreted as vulnerability included shrinking one's body or freezing in place, all actions which are typical prey responses to bodily threat or harm.

After initial coding of expressions of fear, uncertainty, or vulnerability, it was clear that several factors served as triggering events, including: a) sensory inputs such as noise, odor, or unexpected movements on the part of children or animals (a total of 40 instances noted in field notes); and b) children's verbalized or demonstrated expressions of concern for safety, hygiene (10 incidents), their own well being (3 incidents) or the animals' well-being (7 incidents). This emergent theme will be unpacked as follows: observed examples of fear, uncertainty and vulnerability will be shared in an attempt to explicate how these qualities appeared or were identified in children and animals. Additionally, examples of the triggering events leading to those expressions will be provided to contextualize them.

The example I offer here provides context and illustrates the interplay between fear, uncertainty, and vulnerability. It describes an extended interaction between a boy, Dillon, and a hen. In this vignette, both participants seem to simultaneously experience fear, uncertainty, and vulnerability, though they each seem to hold and express these qualities differently. Yet Dillon and the hen are also together, co-creating a moment that provokes these emotions along with other-unknown-feelings, and they both consciously participate in the exchange. Though neither may know what the other intends with their behavior, each chooses to stay engaged in the interaction.

2/25/2019. Vignette: Hen-boy event. Six preschoolers and two teachers walked into the barn. There were five chickens strutting around up and down the aisle between the stalls containing unnamed goats, sheep, and pigs. At first, the children seemed tentative, hanging back close to the teacher while we all entered the barn together. The chickens are large and the children are small. The chickens are each about shoulder-high to the children, which probably means that the chicken-child interaction is very different for the chickens and the children than they would be in a chicken-adult interaction. The chickens were loudly clucking, flapping their wings, and walking up and down the aisle. The chicken noise is intense; we have to raise our voices to hear each other over the din. "I don't want that guy too close to me," said one boy, Dillon, quietly to himself as a very large hen was clucking and pecking around, finally getting within arm's reach of him (and with whom he could probably stand eye-to-eye). When she stopped that close, Dillon seemed to steel himself, take a deep breath, and take a few steps toward her. She suddenly flapped her wings and took a few quick steps forward, but did not leave the

ground. She turned her body away from Dillon and walked back toward the door. Despite his earlier expression of concern, he seemed intrigued. He quickly took to following her up and down the aisle, doing his best "chicken-walk" about two feet behind her . . . quietly squawking and cooing the whole time just like the other chickens. For quite a while, Dillon kept pace with her, neither pursuing her nor fleeing from her, just walking in the same direction, at the same pace. When she stopped, pecked at the floor, then turned toward him and began walking towards him, he stopped and stood still. She didn't appear to look at him directly (in fact I'm not sure she noticed him there, busy as she was with searching for something to eat). As soon as Dillon took a step toward her, she turned and quickly walked in the other direction. The two went on like this for several minutes' time, Dillon following her, then stopping whenever she stopped and looked around or turned her body toward him. Any time she did this, Dillon just froze in his tracks. Then he would take a few steps toward her . . . as soon as she noticed him moving, the hen would then suddenly stop pecking around, change direction, and Dillon would follow her again, quietly cooing and clucking. This interaction is something of a dance between the hen and Dillon. Each is aware of, and somewhat tentative in their relations with the other. Neither feels the need to leave yet neither seems to be totally relaxed in the presence of the other. What is exchanged between the two of them that goes unseen by me? What are they experiencing, together, in these shared moments? Are they aware of one another? What else are they aware during this co-creation of experience?

While it is impossible to know what Dillon and the hen were actually sharing and experiencing in this example, it does offer an illustration of the two together and

separately demonstrating vulnerability, uncertainty, and fear. Upon first encountering the hen, Dillon expressed a desire to not let "that guy" get too close. Yet despite this initial hesitation, he chose to continue participating in the interaction for several minutes' time, through embodying "chicken" in his own style of walking, his noises, and by alternately following the hen and stopping in response to her movements.

Throughout the interaction, neither seemed to be quite sure of the other nor did the boy or the chicken ever seem to "forget" the other was there. In other words, with hen attending to boy and boy attending to hen. Neither seemed to take things any further than this act of following/being followed. Both Dillon and the hen moved in ways unexpected by the other and those movements provoked the other to move away. Each was having their own experience, but together they were creating an experience as well.

The analyses of other field notes revealed that additional expressions of fear and of vulnerability arose frequently on the part of both children and animals, and which were observable and identifiable. Uncertainty seemed to be a constant whenever children directly encountered animals. Animals seemed to react less frequently with uncertainty. The following example provides a perspective on how three children in this setting demonstrated vulnerability and uncertainty in response to an animal's demonstration of agency.

3/18/2019. Vignette: The children meet Cornelius. Just before introducing the children to a young goat, Teacher Katie reminded them that Cornelius "sometimes likes to eat mittens," and reminded the children to not let him eat their mittens. As three children took off their mittens and crowded around Cornelius' pen, reaching through the

bars to pet him on the head and neck, one girl, Sophie, stood back and made several comments related to her concern about the likelihood of Cornelius eating her mitten. “Is he going to eat my mitten?” When he did reach his mouth toward Sophie’s outstretched, mitten-covered hand, she pulled it back and expressed her concern again. “He wants to eat my mitten, he tried to eat my mitten.” She backs away from his pen and puts her hands safely behind her back.

Seeing the other children enjoy touching Cornelius, Sophie finally asks Teacher Katie for permission to remove her mitten so that she can pet Cornelius. Sophie is clearly unsure about how to engage with Cornelius; she wants to touch him but she is concerned about whether he might eat her mitten. She struggles with her own conflicting feelings of uncertainty (will he eat her mitten?) and desire to touch him and get to know him.

What Cornelius himself may have been experiencing at that time remains a mystery. It was reported to me (D. Oberdorfer, personal communication, April 22, 2019) that Cornelius is a San Clemente goat, a breed known for its gentle behavior and small stature (Cooper, 2019a, 2019b). I was told by the farmer that this goat was separated from his mother at a very early age due to an infection and was bottle-raised by the farmer himself, and then brought to the farm as a kid (young goat), when he was deemed ready to be “on display,” which presumably led to his habituation to children. During the time I was conducting observations, Cornelius was confined to a pen approximately 6 feet by 6 feet, and shared the space with a sheep who was described to me by a teacher as “a friend of Cornelius, she thinks of him as her baby.” Cornelius was confined to this pen to allow the pregnant female goats to have more space in their own pen nearby.

Upon first reflection, I thought Cornelius to be at ease, but after reading a bit about this breed of goat and domestic goats in general, I am no longer confident in my conclusion. According to Miranda-de La Lama and Mattiello (2010), goats, being very social animals, prefer the company of other goats, and can become stressed if there are no companions. While there were additional goats nearby, Cornelius did not have physical proximity or direct access to them. Additionally, domestic goats require quite a bit of physical space and can become distressed if they do not have adequate space (Cooper, 2019a). Notably, it is also reported (Nawroth & McElligot, 2017) that domestic goats seem to prefer to see human faces during interactions, and will respond differently if human faces are obscured. This may have impacted Cornelius' behavior, since all of the children in this particular example were wearing hats (some with ear flaps), neck warmers pulled up over their noses, and/or ski masks, with openings only for eyes and noses due to the cold weather.

There were three types of external factors that seemed to trigger responses of fear, uncertainty, and vulnerability in children and animals: sensory inputs such as noise (11 instances); odor (12 instances); and unexpected movements (17 instances). For example, upon entering a chicken coop, a teacher and numerous students expressed displeasure at the smell, and some children were visibly uncomfortable during the time they spent in the confined space. The following is an excerpt from the field notes that illustrates the impact of sensory inputs.

3/11/19 Vignette: Inside the chicken coop. The children are about to enter the coop when Teacher Annie says, "It's stinky in here, it's stinky. You can use your face

warmer to block the smell." She opens the door and a rush of warm, humid, heavy, and gritty air slowly floods out. The smell is one I haven't encountered before, and to me it's a grainy, wet-cardboard, feathery smell and has a tang of gray, chicken droppings. The coop is one large building with several "rooms" separated by chicken wire fencing to keep the flocks separated. The noise in the coop is pretty intense too, with lots of squawking and crowing, and now also lots of children who are fussing about the smell. I wonder if their reaction to the smell clouds their feelings about the chickens? And how would they have reacted to the smell if the teacher hadn't mentioned it? A few of the children seem to move past the bad smell and they walk further into the coop. I have never seen so many chickens, there must be a couple hundred in here, scooting around in their chambers and flapping around. Feathers float in the air, drifting downward toward the ground. One boy starts coughing - a lot, and I wonder if he has allergies or needs an inhaler. I am in the middle of a chicken coop now, with 32 clucking and chattering Wyandotte hens around me. There is one boy, Peter, who is standing next to me, very still, with a recorder in his hand. Teacher Annie had given the children the job of recording sounds at the farm today, and he is taking his job very seriously. I can hear many children continuing to fuss about the smell. They are saying it stinks and it's too loud in here. Their voices grow louder by the minute and there is a collective sense of what is starting to feel like panic. I notice they aren't looking at the chickens or attempting to interact with them. They are standing in the aisle, close together, looking at each other and to Teacher Annie and asking her if she will take them out of here. Peter is still standing here quietly, watching and listening to the hens.

This vignette calls to mind Haraway's (2003) assertion that multispecies interactions occur even at the molecular level. Here, the chicken and children share an "intersubjective being in the world . . . equally exposed to the genomes that have infiltrated all bodies/entities (dirt, air, beings) at a molecular level" (Malone, 2016a, p. 10). We affect and are affected on every level when we share experience. Although Malone is not referring to an experience inside a chicken coop, she does articulate the profound unseen interconnections shared between humans and animals. Odor travels through the air as molecules and enters our bodies. What could be more intimate, more deeply shared than the very air humans and animals breathe?

In addition to these expressions and interactions, children's awareness of safety and hygiene (their own as well as that of animals) was an identifiable trigger. There were ten notable instances of children's discussions or concern for safety, and three demonstrated expressions of concern for their own well-being. The examples of animal behavior characterized as concern for safety include actions such as moving away from children's grasp or reach (25 instances).

Following is a vignette that describes children's concern for animal well-being:

2/27/2019. Vignette: A chicken with a bloody neck. In the barn, there were several dozen chickens roaming around at will at any given time. On one particular morning, one very skinny hen stood outside the barn door in a patch of sun. As we walked into the barn, one child, Garrett, exclaimed, "I see a chicken!" Jamey said, "I see its neck. It bited [sic] its neck!" Indeed, the chicken had a bloody, scabby, and nearly featherless neck. It looks as though it has been bitten. The three children, Jamey, Garrett, and Lauren, then

approached the hen who scurried out of the barn quickly. They were quite concerned about her. Garrett attempted to follow her, but Lauren said, “No, let her go, leave it alone.” I took his expression (following the chicken) to be one of concern for the chicken’s well-being. When the hen ran off, Garrett wanted to go after her. Another child, Lauren, saw the hen’s actions as an attempt to get away from the children, and acted on her behalf by stopping the other child from following her. The children talked among themselves, wondering what had happened to the hen and who had “bited” her neck. I note that the hen was quick to run away from the children and secretly I’m glad that Lauren intervened on her behalf. She seems to need some personal space. I hope she’s ok. Teacher Katie overheard the children’s conversation (I could see her watching from afar) but did not respond.

Curious, I later asked a farmer about that hen and he said he was unsure what had happened. He didn’t know which hen I was talking about. He seemed rather nonchalant about the whole thing. Presumably the injuries were caused by another hen in the flock, possibly due to some dispute related to food, water, or roosting space. I wondered if she was ok, and if there would be some first aid administered to the wound, or if it would be left to heal or become infected on its own. I wondered if the children still thought about her. I wonder if anyone else has asked the farmer about her, and what the adults have shared with the children.

The theme of fear, uncertainty, and vulnerability addresses research question one and two in that it offers numerous examples of children and farm animals alike visibly expressing their experience of these qualities. Common worlds literature addresses these

feelings and expressions of these feelings on the part of both children and animals (e.g. Boileau & Russell, 2018; Tammi, Rautio, Leinonen, & Hohti, 2018). Observed and identifiable expressions of these feelings and qualities vary widely and there is still a need for more research and documentation in this area. Keeping a common worlds frame in mind while observing these interactions helped me as a researcher to more openly inquire about how fear, uncertainty, and vulnerability are expressed by both children and animals. I also was more attuned to the subtleties, and the variety of factors shaping and influencing co-created experience.

Theme 3: Identity

The theme of identity as a whole contained a total of 124 identifiable or observable instances related to several subthemes which are described here. Identity encompasses ideas the children wrestled with when they wondered whether any particular animal was a "boy," a "girl," or an "it," pronouns the children frequently employed when talking about animals (Ericksson 2016). Instances of children and teachers talking *to* animals or *about* animals were also coded to this theme since the status of animals as subject or object was implied in these cases (O'Neil & Egan, 1992; Teterina, 2012) . There were 51 instances coded to gender/sex/non-sex, and subject/object distinctions were included in this category based on pronouns used (or not) (Lambdin, Greer, Kari, Rice, & Hamilton, 2003). In addition, the theme of identity captured children's ideas about family relations and roles shared by and among real or imagined animals, such as their actions during dramatic play and their questions about how animals at the farm or preschool related to one another (25 instances). Identity included familiar

names, scientific names, or made-up names (17 instances related to names were noted). Some animals at the farm, I was told, are deliberately not named.[3] Throughout the observation period, children and adults alike circled around the naming issue: some animals were given made up names on the spot, and others had no names. Some were referred to by species name while others were referred to by a familiar name like the horse Tony.

Identity is a theme that also included distinction between "real" and "fake" that the children struggled to unpack, especially in the case of taxidermied animals or when animal body parts were available for examination, and there were 11 unique instances noted here. For example, in the Reptile Lab, there were numerous turtle shells on a shelf for children to examine up close. Several children, upon seeing those shells, wondered aloud whether they were "dead" turtles or "real" turtles. The following excerpt from my field notes captures the children's challenge of understanding real or fake:

3/8/2019. Vignette: Real or fake? We are in the RL [reptile lab] and there is an old, dusty, taxidermied wood duck on a shelf up near the door. No one noticed it until Frankie saw it and asked, "How did that guy in here? Did he follow us in here? Why is he up there?"

Elayna "Never mind, it's not real anyway. It's not real."

Tia "Yes, yes, it is real! It's real."

Frankie "How did he get here anyway, how did he get up there?"

I wait to see how Teacher Katie will respond. She is busy helping Jessica with her mittens

[3] It was shared with me by two staff members and one farmer, on three different occasions, that "farm animals shouldn't have names."

and neck warmer, and she doesn't chime into their conversation. I'm not sure if she heard them. I wonder if they are thinking it is Skipper (the wood duck who lives in the chicken coop who the children had visited earlier that week). I wish I could ask them some questions about their thoughts right now. It's interesting that only Frankie is using the "he" pronoun. The others use "it." The children quickly stop debating because they are told it's time to put their coats back on to head outside.

This "real or fake" idea also emerged when children encountered a dead fish. Death and dying were included in the theme of identity because they seemed to impact the children's understanding of how dead animals relate to other animals, how the children relate to dead animals, and what it means to be dead. The following is an excerpt from my fieldnotes responding to an incident that occurred in front of a tank full of trout fingerlings:

> *3/9/2019 Vignette: encountering a dead fish.* Odin, Ben, and Trevor are in front of the tank.

There is one dead fingerling in the tank, being tossed about by the water and the movement of the other fish.

Odin "Hey what's wrong with that guy? He's going like this." [He tilts his head to the side and closes his eyes, tongue stuck out of his mouth]. The fish isn't actually doing any of those things, instead it is just stiffly drifting around in the tank.

Ben "He's dead, he's dead."

Trevor "How do you know he's dead? What do you mean?"

At this moment Amber, walks up, having overheard the boys, and she says, "Death is a mystery."

Ben and Trevor say together, "Death is a mystery." Amber, satisfied, walks off to join her friends.

The boys' attention immediately turns to some of the other fish who are alive, active, and swimming freely in the tank.

This excerpt provides an example of the boys' initial questioning of why the dead fish looked strange and was moving in an erratic way, and how they began to ask questions about what was happening, until they were interrupted by a female student Amber's pronouncement that "death is a mystery," which seemed to be enough of an explanation to satisfy all the children. Their questions stopped and they moved on to attend to other things.

Finally, identity emerged as a matter of interest when children compared themselves to animals or pretended to be animals, which Rautio (2013a, 2013b) characterizes as embodiment. 14 unique instances of embodiment occured. It was also applied to instances when they identified similarities between themselves and animals. On numerous occasions, children would reenact or demonstrate behaviors they had just seen an animal exhibit.

For example, in the barn one morning, one of the children noticed a chicken fluttering down off of a railing and coming to rest on the dirt floor before strutting away. The child, Tara exclaimed, "Hey, it jumped down into the hay, just like I did!" She was referring to an earlier play session in the barn's hayloft where lively children were free to

jump and hop in the hay with wild abandon. Later that morning, three children were watching Tony the Percheron as he was snuffling his nose into a pile of snow next to the fence, tossing his head, and appearing to eat the snow. The children were excited to see him doing this, and they immediately dropped to all fours and began to lick the snow and toss their heads "just like Tony." These two examples illustrate the children expressing and coming to understand their own similarities with animals. Children also experimented with embodiment, which illustrates perspective-taking (Kharod & Arregúin-Anderson, 2017; Myers, 2007; Sobel, 1996), kinship (Fawcett, 2013) and relations between children and animals which occur on children's own terms. Common worlds research interrogates notions of kinship and embodiment, yet again there are opportunities for more witnessing and articulation of these expressions in child-animal relations.

Such incidents were frequently identifiable throughout my research, and were a direct response to research questions one and two, such as when children interpreted animals' behaviors or attempted to give voice to animals' feelings. There were clear patterns; this happened multiple times (See appendix A.) One such example occurred when we were greeted with lots of loud squawks and bleats coming from behind the barn door. The noise was quite loud and cacophonous. One child, Emmie, exclaimed, "I hear the animals! I hear the animals! They are saying, 'Help!'" This incident exemplifies perspective-taking: a child thinking about what the animal was doing then attempting to understand the action and translate into words what she thought the animal was experiencing. It made me wonder what she understood about the captive animals in this

setting. Did she perceive them as feeling trapped, without autonomy? Did she know that some of these animals are eaten by people? Why was “help” her interpretation of what the animals were saying? Did her idea of what the animals were saying originate from other ideas or thoughts?

Another way that children engaged in perspective taking is through embodiment, which was demonstrated through physically acting out an animal’s actions, affect, or experience. These are illustrations of what Sobel (1996) described as a lack of differentiation between the self and other, which aligns with Myers’ (1997) assertions that children have an awareness of animals’ cues, affect, and body movements. This was apparent when the children pretended to be a family of cheetahs or baby dinosaurs, which were two common play themes in this research setting. In these play experiences, children would move in ways they thought the dinosaurs or cheetahs moved, growling and roaring from time to time. It was as if their bodies translated the cheetahs’ language of movement into their own language of movement. As well, when playing at being “baby” animals, some children would increase the pitch of their voices, cry out for “daddy” and pretend to need help from the mommy and daddy animals in the group, roles played by other children.

Awareness of animal’s body movements or affect was also quite clearly noted in my field notes. While playing at being cheetahs, for example, the children walked on all fours, sometimes made scratching motions toward one another, sat and perched like cats, hissed at each other, and pretended to lap food and tear meat, careful to avoid using their “paws” much like real cheetahs might do. Common worlds researcher Rautio (2013a,

2013b; Russell & Fawcett, 2018) notes that these acts of embodiment or kinship are ways in which children join animals in their spaces, entering the world of animals on the animals' terms.

This section explained how the children engaged with the idea of identity. These engagements took the form of children's observed or verbalized attempts to make sense of animals' relationships with one another and the children, their questions about animals' individual identities, including their sex, names, and subject/object, living/dead, real/fake status, as well as the similarities and kinship that the children felt with the animals. Common worlds literature and research, as well as that associated with more traditional early childhood education research explores identity through lenses including embodiment, dramatic play, relationships, and self-other.

Theme 4: Teacher Talk

During the data analysis process, an additional, unexpected theme emerged, teacher talk, which is described in this section. Initially, discursive frames used by educators was not an intended focus of this research, but the prevalence of teacher talk throughout the fieldwork was so significant that I had to include it as a major theme. As mentioned previously, the prevalence of teacher talk led to my third research question about discursive frames. The section includes examples of teacher talk, and provides evidence of the discursive frames in which teachers embed their communication about animals. Teacher talk as a theme includes teachers describing or interpreting animals or animal behavior, teachers asking children questions about animals or prompting them to take certain actions (e.g., "draw me a snake"), and teachers narrating animal actions.

It also includes the use of academic language or overt teaching of content about animals (such as when a teacher explained hibernation). Teacher talk also captures those instances where teachers directed children's attention to animals, their behavior, or other elements of note. The codes were notable and grouped together because they have one thing in common: they related to a teacher directing a child to attend to certain things over others, imposing an adult's perspective on what was happening in the child-animal interaction, and framing the child's experience of being-with the animal.

Provision of academic content (28 instances), and interpreting animals' behaviors, (21 instances) were the most common instances of teacher talk. The number of occurrences of teacher talk suggests that the teachers desired to share their knowledge about animals with children in efforts to help children learn and build relationships with animals. This aligns with some traditional early childhood environmental education (ECEE) literature which suggests that knowledge leads to caring. (Chawla & Derr, 2012; Kellert, 2002). Examples of academic content include teachers' questions seemingly designed to draw on children's prior knowledge about animals such as "Which [birds] have the brighter colors, the boys or the girls? Do you remember who has the brighter colors?" or "Who can remember if the boys or girls [chickens] lay eggs?" An additional tendency of teachers' content provision was to teach vocabulary, as in: "who can tell me the word we use [when] the geese fly away for the winter? Who remembers that word? The word is migration." and "What's the word for when an animal sleeps all winter long?"

In the cases where teachers narrated or interpreted the animals' behaviors, general interpretations tended to suggest that the teachers wanted the children to perceive the animal as interested in or reacting to the children. An alternate explanation might be that the adults wanted the children to be aware of their own actions and power to provoke reactions in animals. This explanation aligns with a [presumed] desire to help foster humane relationships between children and animals, for example, by making comments such as, "He is coming to say 'Hi' to you!," "What does he think of the sound you're making?" and, "They are doing that because they are afraid when you reach out toward them." These statements draw clear connections between animal-child actions and child-animal actions. In other words, they illustrate to the child that the animal is doing something directly in response to the child. I wondered why the children were not given the chance to have their own interpretations of animal actions in these cases.

On a number of occasions, teachers simply directed children's attention to particular actions the animals were taking: "Look, the chicken is going up the stairs, just like you." A notable characteristic about the pedagogical approach was the teachers' tendency to interpret animals' behavior for the children. In many cases, teachers interpreted the behavior of an animal as it was happening, leaving little time for children to observe or consider on their own what might be going on. For example, when Tony the horse came nearer, one teacher said, "He is coming up to say hello to you!"

The influence the teachers seemed to have was so significant it led to the development of the third research question related to teacher discourse. I found this notable due to its prevalence and its potential impact on the children's own perceptions

and experiences with animals, which could in turn have affected the experience the animal was having.

Conclusion

The findings underscore what Hamilton and Taylor (2017) state about posthuman qualitative research in that it

> . . . offers an invitation to come as you are and to experiment, invent, and create both what is (already) at hand and by bringing that which might (or might not) be useful, because you don't yet know, into the orbit of research. (p. 18)

I have attempted to share data and vignettes that may be useful in this way as my goal was to observe and note characteristics and qualities of interactions between children and animals at this ECEE setting. In applying my interpretations to the interactions, I experimented with multispecies ethnography to widen my own stance as a researcher and to allow space for other ways of knowing, interacting, reacting, and being together with other species.

The themes that best responded to my research questions were: a) power and agency, b) identity, c) fear, uncertainty, and vulnerability, and d) teacher talk. They were each described using examples of interactions, especially with farm animals, while attending to the discursive frames that educators used which seemed to shape child-animal interactions. Each of the first three themes included examples of identifiable and observable behaviors that occurred between and by children and animals. Teacher talk emerged as a significant influencer of child-animal interactions. I also included a number of additional vignettes which were particularly salient given the common worlds

conceptual framework which influenced this study. Appendix A provides a list of the most often used subthemes and themes described in this chapter. I turn now to Chapter Five to interpret the themes and their relation to the research questions.

CHAPTER FIVE

Conclusion

Overview

In this chapter, I relay my interpretation of my findings as well as discuss the implications and limitations of my study on animal-child interactions at one nature-based early childhood program in a suburb of a metropolitan area in the upper midwest of the United States. Each of the major themes that I assigned to those interactions is informed by the literature and my own understanding of the biology and biographies of many of the animals involved (brown trout, hens, goats, ewes, a wood duck, and a horse). Looking beyond the children's experience, I sought to understand and make meaning of some of the factors that influenced those animals' experience, behaviors, and/or responses. I provided additional vignettes to further explicate my experience as a common worlds multispecies ethnographic researcher.

Summary of Findings

My observation and analysis of children's behaviors, animal behavior, and the emergent themes was framed by the children's actions, the recognition of animal agency,

and my desire to contextualize their behavior. None of the recorded incidents or interactions in the field notes happened exclusively in the domain of the child or the animals. Each incident reflected the unfolding of shared experiences within the common world. Each of the vignettes provided offers a glimpse into that shared experience. Further, the presence of teacher talk had a role in the experiences as they unfolded, hence I attended to teacher talk as well. Throughout my analysis process, I remained aware of the emergent themes while at the same time reflecting on each incident alone. I grounded my work in the literature associated with traditional approaches to early childhood education as well as the emerging literature associated with common worlds and multispecies ethnography.

My findings document that children and animals engage in dynamic relations that are affected by factors invisible, visible, mutually and individually heard and felt. These factors may be overlooked by educators interested in attending primarily to child-animal reactions, since traditional forms of observation and pedagogical documentation have tended to foreground children's development, and focus exclusively on [adult interpretations of] children's experience, as has been discussed in previous chapters. Yet these factors are significant, because they are dynamic elements of the shared experience and influence all the participants of that experience. During this study these elements impacted the unfolding and co-creation of experience between children and animals.

Children and animals each in their own ways, move through expressions of power and vulnerability, reacting and responding to each other's expressions and agency during interactions. Children and animals also participate in explorations and demonstrations of

shared expectations, as noted frequently throughout this field work. Further, children engage with animals in common worlds through embodiment as well as kinship, and this engagement extends far beyond dramatic play or make believe, the application commonly applied in traditional early childhood literature. The influence of teachers' discursive frames was also noted for the subtle, yet significant impact on children's thinking, understanding, and experience of interacting with animals.

Limitations

Rautio (2013a) states, "we experience and view the world necessarily as the species that we are, with all of our species-specific biophysical limitations and possibilities" (p. 449-450). Though I can never truly know or understand the lived experience of another species, I can acknowledge my humanness as neither limitation nor advantage, but simply what is. I am one member of a multispecies community, what Rautio (2013a) called a "point of reference as one kind of being among others" (p. 450). I did my best to be open to other ways of being and knowing and to capture that understanding through a human-centric process, that of talking, writing, sorting, organizing, and further writing.

Sample size. Research limitations include the small sample size and the specific geographic area in which the study took place. Each class started with 15 children and three adult teachers (with one class dropping to 14 partway through the research). The representativeness of the sample is a limitation. All the children hail from relatively privileged backgrounds; the demographic makeup is largely white, upper-middle class, suburban children. The educational background of the teaching staff is high, with most

educators in this program having a teaching license in addition to a Bachelor's degree and in most cases, a Master's degree as well. Further, the location is a suburb of a major metropolitan area with a particular habitat and the nature center/preschool houses animals of specific species, each of whom has their own life history and experience. The results and findings thus cannot be generalized to other settings, species, or groups of children. This study is one picture of what happened in one nature preschool over the course of one winter.

Timelines. Another limitation was the timeline for this research. While ethnography, including multispecies ethnography, often extends for months or years, my access to the study site was limited and this research was being conducted within the confines of an EdD degree program with temporal limits.

Weather. Weather also had a significant impact on this research, as the extreme cold temperatures required shifts in plans and behavior for children and animals alike. As Hamilton and Taylor (2017) noted, multispecies ethnography requires researchers to be flexible, responsive, and willing to adapt. My flexibility was required when the state had record-breaking low temperatures and amounts of snowfall, which impacted class activities, in some cases limiting the amount of time the children were outdoors, restricting the distance the group could safely travel together, and dictating necessary shifts to the activities.

Due to the cold weather, the groups sometimes spent their outdoor time engaged in very active aerobic activity such as sliding down icy hillsides or kicksledding on the frozen pond. The winter weather thus impacted the data collection process by limiting the

likelihood of encountering wild animals: in extreme cold weather, many species are forced to make behavioral adaptations including limiting their movement and reducing foraging or hunting behaviors, among other things (Beever et al., 2017). The weather also impacted the data collection process as it required me to utilize a digital audio recorder since removal of mittens to hold a pencil and write would have resulted in frostbite almost immediately.

Additional, unexpected limitations. In addition to weather, there were other significant impacts on the data collection process that should be noted. The first factor was the multitude of non-verbal, often invisible or intangible factors that had a clear effect on animal or child behavior. The strong reaction the children had to the smell inside the chicken coop directly impacted their attitudes, comfort, conversations, and behavior in that setting.

Likewise, sudden, unexpected movement or noise from children impacted the chickens in this setting. In one example, a child screamed suddenly and a hen who had been strutting around near the child, immediately hurried off in the other direction, taking flight to a nearby railing to get herself away from the screaming child. Sensory inputs had a clear impact on the behavior, interactions, and experiences of children and animals alike as previously discussed.

Size and context. My study was relatively small, limited, local, and, to borrow a phrase, non-heroic; as Pacini-Ketchabaw, Taylor, and Blaise (2016) write, “there are no grandiose research findings from [our] multispecies experimentations, nothing to prescribe, nothing to apply universally” (p. 165). That said, multispecies ethnography

requires new ways of thinking, knowing, and engaging as a researcher. This practice of re-connecting and breaking down barriers between human/nature, child/researcher, self/other carries great potential for future relations between individuals and the rest of the planet, generating new ways of relating-to and being-with (Tsing, 2010; Roelvink, Gibson, Rose, & Fincher, 2015).

Limitations of dominant discourse. The term "farm animals" includes animals who are consumed for food such as chickens, pigs, sheep, goats, and cows as well as the products that can be made from their efforts such as eggs, milk, cheese, and butter. At my research site, I learned that the calves would later be "sent to auction" and that the eggs laid by the hens are regularly collected and sold at the adjoining nature center as food. Volunteer beekeepers sell honey from the hives they maintain on the nature center property, with revenues used to support the nature center and preschool. When I began this research, I was particularly interested in exploring issues around how children engage with animals who are regarded as biocommodities. I wondered how questions around meat-eating and eggs would be handled, and what understanding the children might have about these issues, as well as how it would be approached pedagogically.

Despite the setting being one for young children, I assumed there would be some discourse related to dairy and eggs, and possibly meat. For example, I thought that there would be some references to how farm animals such as sheep, cows, pigs, and chickens are eaten by humans, a topic that might come up during snack time when discussions about food are commonplace. During the data collection process, however, I heard no conversations or questions related to meat, dairy, or egg consumption. That leads me to

ask the following questions: Does this mean the children do not understand the connection? Does it mean there is a deliberate attempt to avoid the topic? These questions remain unanswered.

I remain curious about the pedagogical sidestepping in this context, particularly in light of the literature I encountered, which addressed farm animals in early childhood settings strictly within the context of public health issues (e.g., the presence of them being correlated with reduced childhood asthma rates) or in the context of using animals or animal characters to champion meat, dairy, egg, honey, and other animal product production and consumption. As noted in Chapter Two, "farm education" related to early childhood education is largely centered on gardening and orchards, fruit and vegetable consumption, and mostly lies within the domain of agriculture education. I did encounter literature that examined connections between farm education and young children's academic growth, particularly in the areas of science, technology, engineering, and math (STEM) but again, in this literature the term farm education was used to refer to gardens and plants, vegetables and fruits.

While this study was limited by a number of factors, researchers and readers may find value here particularly as early childhood environmental education (ECEE) programs continue to emerge around the world. For me, engaging with the existing literature related to common worlds and ECEE globally was informative and provocative. My hope is that this study adds to that body of work, and that readers will find something useful that can be applied to their own work or which will challenge their own thinking.

Recommendations for the Field

The data collected during this study has led me to consider a number of recommendations for the field of ECEE. In my opinion, it would be useful for other educators in this discipline to familiarize themselves with the common worlds theoretical frame as they prepare to work with children in nature-based settings. This will encourage them to develop and support practices that acknowledge the common worlds children share with other beings and the natural world. My assumption is that if practitioners were to engage with the common worlds framework they may be inspired to be more intentional and careful in regarding child-animal interactions as important and co-created and facilitate encounters that emphasize shared engagement and development that are often outside adult understanding. The result would be an expansion of the practitioner's ideological stance in theory and practice, which could ultimately help to narrow the [presumed] separation between children and animals.

My research also supports the idea that acknowledging, attending to, and intentionally creating space for multispecies interactions will help to disrupt the discourse around the child-nature split that has been popularized in the new nature movement. I think that this will happen through the act of doing: as educators start to regard child-nature-animal relations differently, as important, co-created experiences of being-with and becoming together, their paradigm may begin to shift. I see that as an important next step in addressing the larger problem of re-thinking and re-enacting the

human position, a necessary step toward renewed relations with the other inhabitants of the planet.

I recognize that changing this paradigm calls for a radical transformation in the thinking and acting that drives traditional child-centered, anthropocentric pedagogy in ECEE settings and will require educators to [re]consider their own relations with animals, with children, and to reflect on their role in shaping shared experience. Common worlds framing is an apt tool for better understanding and attempting to make sense of these ideas, since it extends beyond the traditional bounds of early childhood education research. It calls on practitioners to notice and attend to the everyday entanglements and moments shared by children and animals, and then to be open to emergent ideas, responses, and senses that arise when reflecting on those moments.

What might this look like in practice? What are some suggestions or "first steps" for practitioners to take in beginning to shift their own feelings and practices toward a common world approach? While multispecies work and common worlding, by their very natures, do not easily conform to step-by-step instructions or "best practices," there are nonetheless a few things that educators may do. Most of them involve simply getting out of the way and letting children and animal engagements unfold as they will, without direction or interference by the adults present.

Further, accepting the possibility that feelings of disgust and aversion are part of young children's multispecies relations is imperative in helping to support shared encounters, particularly in nature-based early childhood education. There are many stimuli and encounters that may provoke fear, anxiety, disgust, and other feelings that

educators may wish to avoid, or that they wish to protect children from experiencing. However, these feelings are actually normal responses and are critical in helping children make sense of their own relations to animals.

Finally, another recommendation is a change in teacher behavior to one of resisting the temptation to narrate, describe, or interpret animals' actions. However well-intended this "teacher talk" may be, it maintains a power dynamic between child and adult as well as between human and animal that suggests the teacher's words are to be trusted before the child's own experience or that of the animal. Furthermore, it closes the door on any interpretation or reflection the child may have on their own about the animal's action, agency, or individuality. Of course, most early childhood pedagogical approaches maintain a child development focus and pedagogical practices that are believed to benefit the child academically, socially, or otherwise will be foregrounded in many cases. However, educators can begin to resist the temptation to interfere in child-animal interactions by simply not talking when possible to allow the child-animal relationship to unfold on its own terms, and gives space to the children to make their own interpretations about what is happening.

Future Research Plans

My research agenda includes continuing to examine child-farm animal relations. As I discovered during my review of the literature, farm animals are marginalized in the literature related to children and animals, and their role in early childhood education literature is generally limited to discussions around public health issues. I found the dearth of resources to be frustrating and inspiring at the same time. It has affirmed for me

the need for more common worlds research that is focused on children and farm animals. There are a number of ECEE settings that incorporate farms and farm animals, and I have already begun to make connections with their education staff, with the goal of conducting future interviews with practitioners to better understand their perspectives on the discursive frames they reinforce, challenge or maintain in ECEE. Some additional questions that have emerged for me during this research that I want to explore through a common worlds research frame include:

- What are the differences (if any) in encounters between children and different species of farm animals?
- What are the primary senses that children use when interacting with farm animals?
- What are the senses that the animals themselves use?
- What is important to children about their relationships with farm animals?
- How do chickens or goats experience groups of young children?
- How is animal agency enacted in a setting where animals are contained and commodified? How is animal agency perceived by the human participants, including not only the students but also the educators and others (farmers) on staff?

As noted in the vignette about Cornelius the goat described in Chapter Four, many of the behaviors that I initially interpreted as comfort or nonchalance may have in fact been expressions of stress or discomfort. This has left me with many questions about the other animals encountered during the research period. I want to spend more time learning

from them and better understanding their unique context. More time to observe farm animals would allow me to know individual animals better, opening up possibilities for me to learn from/within my own multispecies encounters.

As a longtime vegetarian/vegan, questions about meat and dairy consumption linger in my mind. Despite the setting being one for young children, I assumed there would be some discussion related to dairy and eggs at the very least, and meat possibly. The reality in American culture is that farm animals such as sheep, cows, pigs, and chickens are considered more valuable dead than alive. During the data collection process, there were no conversations that I heard related to meat, dairy, or egg consumption. Nor were there any questions asked by children about these topics. Does the lack of this conversation mean that the teachers do not understand the connection? That they don't think the children do? Does it mean there is a deliberate attempt on the part of teaching staff to avoid the topic?

This is something that fascinates me, particularly in light of the literature I encountered, which looked at farm animals in early childhood settings strictly within the context of public health issues or in the context of using animal characters to champion meat, dairy, egg and honey production and consumption. Farm education in the literature related to early childhood education is largely centered on gardening and orchards, fruit and vegetable consumption, and mostly lies within the domain of agriculture education. I do note that there is a nascent body of research in EE related to food education (e.g., Lloro-Bidart 2019), some of which might be applied to an ECEE setting.

I also noted that there is little research to date on children's expectations of animals as being rule-bound. Yet during my field research it was clear that children in this setting expected animals to follow rules at times. The lack of research specific to animal-child social expectations presents interesting possibilities for future research. This expectation was apparent during numerous incidents when animals were seen as violating rules to which children were expected to adhere, such as in the case when two sheep were eating "without taking turns."

Final Reflection

One of my goals during the dissertation process was to contribute to the important conversations happening in ECEE and EE about child/animal relations to better support children and animals in their multispecies encounters. If there are to be truly ethical animal encounters and inclusive relationship with other species, my stance is that early childhood educators must experiment with new ways of approaching child-nature-animal encounters and relations and deepen the work they already do that supports this ethic.An important goal of my selection of a research topic and the research design was to offer some ideas to others who may be interested in pursuing similar work.

I have been deeply inspired as I have learned from other researchers who continue to challenge the limits of traditional qualitative research and move into the challenging, confusing, and messy terrain of multispecies, common worlds inspired work. I have found my own research journey to be deeply impactful, both because of what I was lucky enough to experience with the children and the animals, but also because of the ways in which I was able to experiment with my own stance as a researcher, challenging

myself to resist anthropocentrism in my work, to open to new ways of thinking and embrace different ways of making meaning through experiences alongside children and animals in their common worlds.

REFERENCES

Adams, S., & Savahl, S. (2017). Children's discourses of natural spaces: Considerations for children's subjective well-being. *Child Indicators Research*, *10*(2), 423-446.

Ahn, H.J., (2005). Child care teachers' strategies in children's socialization of emotion. *Early Child Development and Care*, *175*(1), 49-61. doi: 10.1080/0300443042000230320

Ahn, H. J., & Stifter, C. (2006). Child care teachers' response to children's emotional expression. *Early Education and Development*, 17(2), 253-270. doi: 10.1207/s15566935eed1702_3

American Sheep Industry Association, the Livestock Marketing Association, and Colorado State University (Producer). (2016). *How to handle sheep with Temple Grandin.* [Video file]. Retrieved from https://www.youtube.com/channel/UC2pWChronyIW1OYJhghhC4A

Ascione, F. (1992). Enhancing children's attitudes about the humane treatment: Generalization to human-directed empathy. *Anthrozoös: A Multidisciplinary Journal of the Interactions of People and Animals, 5*(3), 176-191.

Bailie, P. E. (2010). From the one-hour field trip to a nature preschool: Partnering with environmental organizations. *YC Young Children*, *65*(4), 76.

Beever, E. A., Hall, L. E., Varner, J., Loosen, A. E., Dunham, J. B., Gahl, M. K., . . . Lawler, J. J. (2017). Behavioral flexibility as a mechanism for coping with climate change. *Frontiers in Ecology and the Environment, 15*(6), 299–308. doi: 10.1002/fee.1502

Bell, A. C., & Russell, C. L. (1999). Life ties: Disrupting anthropocentrism in language arts education. In Robertson, J. (ed.) *Teaching for a tolerant world: Grades K-6 essays and resources* (pp. 68-89). Ann Arbor, MI: National Council of Teachers of English.

Bell, A. C., & Russell, C. L. (2000). Beyond human, beyond words: Anthropocentrism, critical pedagogy, and the poststructuralist turn. *Canadian Journal of Education/Revue canadienne de l'éducation*, 188-203. doi: 10.2307/158595

Bellows, B. C., Dufour, R., Bachmann, J., Green, C., & Moore, N. (2003). Bringing local food to local institutions: A resource guide for farm to institution programs. *National Sustainable Agriculture Information Service*, 1-16.

Blaise, M., Hamm, C., & Iorio, J. (2017). Modest witness(ing) and lively stories: Paying attention to matters of concern in early childhood. *Pedagogy, Culture, & Society, 25*(1), 31-42. doi: 10.1080/14681366.2016.1208265

Blenkinsop, S., Piersol, L., & De Danann Sitka-Sage, M. (2018). Boys being boys: Eco-double consciousness, splash violence, and environmental education. *Journal of Environmental Education, 49*(4), 350-356.

Blue, G. F. (1986). The value of pets in children's lives. *Childhood Education*, *63*(2), 85-90.

Boileau, E.Y., & Russell, C. (2018). Insect and human flourishing in early childhood education: Learning and crawling together. In A. Cutter-Mackenzie, K. Malone, & E. Barratt Hacking (Eds.), *Research handbook on childhoodnature: Assemblages of childhood and nature* (pp. 1-16). Cham, Switzerland: Springer. doi: 10.1007/978-3-319-51949-4

Bone, J. (2013). The animal as fourth educator: A literature review of animals and young children in pedagogical relationships. *Australasian Journal of Early Childhood, 38*(2), 57–64.

Brown, M. H. (2018). Rejecting human-animal dualism via pronoun choice: Evidence from an animal welfare discourse corpus. *SELSA 2018: The 5th Annual Symposium on Language and Sustainability in Asia*, 15–20. http://doi.org/10.5281/zenodo.1451007

Bullis, C. (1996). Retalking environmental discourses from a feminist perspective: The radical potential of ecofeminism. In J. G. Cantrill & C. L. Oravec (Eds.), *The symbolic earth: Discourse and our creation of the environment* (pp. 123-148). Lexington, KY: The University Press of Kentucky.

Callicott, J. B. (1989). *In defense of the land ethic: Essays in environmental philosophy*. New York: Suny Press.

Callicott, J. B. (1995). Intrinsic value in nature: A metaethical analysis. *The Electronic Journal of Analytic Philosophy*. *3*(5), 1-8.

Catton, W. R., & Dunlap, R. E. (1978). Paradigms, theories, and the primacy of the HEP-NEP distinction. *The American Sociologist*. *13*(4). 256-259.

Ceballos, G., Ehrlich, P. R., Barnosky, A. D., García, A., Pringle, R. M., & Palmer, T. M. (2015). Accelerated modern human–induced species losses: Entering the sixth mass extinction. *Science advances*, *1*(5), e1400253.

Ceballos, G., Ehrlich, P. & Dirzo, R. (2017). Population losses and the sixth mass extinction. *Proceedings of the National Academy of Sciences, USA*, *114*, E6089-E6096. doi:10.1073/pnas.1704949114

Chawla, L. (1988a). Children's concern for the natural environment. *Children's Environments Quarterly*, *5*(3). 13-20.

Chawla, L. (1998b). Significant life experiences revisited: A review of research on sources of environmental sensitivity, *The Journal of Environmental Education, 29(*3), 11-21. doi: 10.1080/00958969809599114

Chawla, L. (1999). Life paths into effective environmental action. *Journal of Environmental Education, 31*(1), 15-26.

Chawla, L. (2007). Childhood experiences associated with care for the natural world: A theoretical framework for empirical results. *Children Youth and Environments*, *17*(4), 144-170.

Chawla, L. (2009). Growing up green: Becoming an agent of care for the natural world. *The Journal of Developmental Processes. 4*(1), 6-23.

Chawla, L. (2015). Benefits of nature contact for children. *Journal of Planning Literature*, *30*(4), 433-452.

Chawla, L., & Derr, L. (2012). The development of conservation behaviors in childhood and youth. In Clayton, S. (Ed.), *The Oxford handbook of environmental and conservation psychology* (pp. 527-555). England: Oxford University Press. doi: 10.1093/oxfordhb/9780199733026.013.002

Chawla, L., & Flanders Cushing, D. (2007) Education for strategic environmental behavior. *Environmental Education Research. (13)*4, 437-452. doi: 10.1080/13504620701581539

Clarke, D., & Mcphie, J. (2014). Becoming animate in education: Immanent materiality and outdoor learning for sustainability. *Journal of Adventure Education and Outdoor Learning, 14*(3), 198-216. doi: 10.1080/14729679.2014.919866

Collard, R. C. (2014). Putting animals back together, taking commodities apart. *Annals of the Association of American Geographers,* 104(1), 151–165. doi:10.1080/00045608.2013.847750.

Common World Childhoods Research Collective. (2019). About the Collective. Retrieved from http://commonworlds.net/about-the-collective/

Cooper, T. (2019a). Are goats smart? Reading goats' minds: Understanding goats behavior and what they think of us. Retrieved from

https://backyardgoats.iamcountryside.com/ownership/are-goats-smart-reading-goats-minds/

Cooper, T. (2019b). Breed profile: San Clemente goats. Retrieved from https://backyardgoats.iamcountryside.com/goat-breeds/breed-profile-san-clemente-goats/

Creswell, J. W. (2007). *Qualitative inquiry and research design: Choosing among five approaches* (2nd ed.).Thousand Oaks, CA: Sage Publications.

Cronon, W. (1991). *Nature's metropolis*. New York: W.W. Norton.

Cronon, W. (1996a). Introduction. In W. Cronon (Ed.). *Uncommon ground: Rethinking the human place in nature* (pp. 23-56). New York: WW Norton & Company.

Cronon, W. (1996b). The trouble with wilderness. *Environmental history*, *1*(1), 7-28.

Crutzen, P. J. (2006). The "anthropocene." In Ehlers, E., & Krafft, T. (Eds.), *Earth system science in the anthropocene* (pp. 13-18). Berlin: Springer.

Daly, B., & Suggs, S. (2010). Teachers' experiences with humane education and animals in the elementary classroom: implications for empathy development. *Journal of Moral Education*, *39*(1), 101-112.

Daly, B., & Morton, L. L. (2006). An investigation of human-animal interactions and empathy as related to pet preference, ownership, attachment, and attitudes in children. *Anthrozoös: A multidisciplinary journal of the interactions of people and animals*, *19*(2), 113-127.

Dannefer, R., Power, L., Berger, R., Sacks, R., Roberts, C., Bikoff, R., & Solomon, E. (2018). Process evaluation of a farm-to-preschool program in New York City.

Journal of Hunger & Environmental Nutrition. 13(3). 396-414. doi 10.1080/19320248.2017.1364192

Davis, J. (2015). What is early childhood education for sustainability and why does it matter? In J. Davis (Ed.), *Young children and the environment* (pp. 7–31). Port Melbourne: Cambridge University Press.

Dickinson, E. (2013). The misdiagnosis: Rethinking "nature-deficit disorder." *Environmental Communication: A Journal of Nature and Culture*, *7*(3), 315-335.

Duhn, I., Malone, K., & Tesar, M. (2017). Troubling the intersections of urban/nature/childhood in environmental education. *Environmental Education Research.(23)*10. 1357-1368.

Echterling, C. (2016). How to save the world and other lessons from children's environmental literature. *Children's Literature in Education*, *47*(4), 283–299. doi.org/10.1007/s10583-016-9290-6

Eckersley, R. (2002). Environmental pragmatism, ecocentrism and deliberative democracy: Between problem-solving and fundamental critique. *Democracy and the Claims of Nature*, 49-70.

Emerson, R. M., Fretz, R. I., & Shaw, L. L. (2011). *Writing ethnographic fieldnotes*. Chicago: University of Chicago Press.

Eriksson, E. (2016). Is it called she or he?: A study of pronoun use in relation to animals (Masters thesis). Örebro University Department, Sweden. Retrieved from Google Scholar http://www.diva-portal.org/smash/get/diva2:918006/FULLTEXT01.pdf

Ernst, J., & Theimer, S. (2011). Evaluating the effects of environmental education programming on connectedness to nature. *Environmental Education Research*, *17*(5), 577-598.

Ewert, A., Place, G., & Sibthorp, J. (2005). Early-life outdoor experiences and an individual's environmental attitudes. *Leisure Sciences*, *27*(3), 225-239. doi: 10.1080/01490400590930853

Fall T., Lundholm, C., Örtqvist, A. K, Fang, F. Hedhammar, A. Kämpe, O., Ingelsson, E., & Almqvist, C. (2019). Early exposure to dogs and farm animals and the risk of childhood asthma. *JAMA Pediatrics*, *169*(11), e153219. doi:10.1001/jamapediatrics.2015.3219

Fawcett, L. (2002). Children's wild animal stories: Questioning interspecies bonds. *Canadian Journal of Environmental Education*, *7*(2), 125-139.

Fawcett, L. (2013). Three degrees of separation: Accounting for naturecultures in environmental education research. In R. Stevenson, M. Brody, J. Dillon & A. Wals (Eds.), *International handbook of research on environmental education* (pp. 409–423). New York: Routledge.

Fawcett, L. (2014). Kinship imaginaries: Children's stories of wild friendships, fear, and freedom. In G. Marvin & S. McHugh (Eds.), *Routledge handbook of human-animal studies* (pp. 259-274). New York, NY: Routledge.

Fawcett, L. (2015). Bioregional Teaching: How to climb, eat, fall and learn from porcupines. In P. Tripp & L. Muzzin (Eds.), *Teaching as activism: Equity meets environmentalism* (pp. 269-280). Montreal, CA: McGill-Queens University Press.

Finch, K., & Bailie, P. (2015). Nature preschools: Putting nature at the heart of early childhood education. *Occasional Paper Series, 2015*(33), 95-104. Retrieved from https://educate.bankstreet.edu/occasional-paper-series/vol2015/iss33/9

Fisher, A., & Matthews, L. (2001). The social behaviour of sheep. In *Social behaviour in farm animals* (pp. 211-245). Wallingford, UK: CAB International.

Fletcher, R. (2017). Connection with nature is an oxymoron: A political ecology of "nature-deficit disorder." *The Journal of Environmental Education*, *48*(4), 226-233.

Fraser, J., Gupta, R., & Krasny, M. E. (2015). Practitioners' perspectives on the purpose of environmental education. *Environmental Education Research, 21*(5), 777-800. doi: 10.1080/13504622.2014.933777

Frumkin, H., & Louv, R. (2007). The powerful link between conserving land and preserving health. *Land Trust Alliance Special Anniversary Report*, *2007*, 1-5.

Gannon, S. (2016). Saving squawk? Animal and human entanglement at the edge of the lagoon. *Environmental Education Research, 23*(1), 91-110.

Gee, N. R., Rawlings, J. W., O'Haire, M. E., Bennett, P. C., Snellgrove, D., & Peralta, J. M. (2017). Caring for classroom pets. In N. R. Gee, A. H. Fine, & P. McCardle (Eds.), *How animals help students learn: Research and practice for educators and mental health professionals* (pp. 212-220). New York, Routledge.

Gibson, J. J. (1977). *The theory of affordances*. New York, Routledge.

Gill, T. (2007). *No fear: Growing up in a risk averse society*. London: Calouste Gulbenkian Foundation.

Gill, T. (2011). *Children and nature: A quasi-systematic review of the empirical evidence*. London: Greater London Authority.

Gillespie, K., & Collard, R. C. (Eds.). (2015). *Critical animal geographies: Politics, intersections, and hierarchies in a multispecies world*. New York: Routledge.

Gilligan, C., & Wiggins, G. (1987). The origins of morality in early childhood relationships. In J. Kagan & S. Lamb, (Eds.), *The emergence of morality in young children* (pp. 277-305). Chicago: University of Chicago Press.

Grandin, T. (2008). *Humane livestock handling*. North Adams, MA: Storey Publishing.

Gruen, L. (2009). Attending to nature: Empathetic engagement with the more than human world. *Ethics and the Environment, 14*(2), 23-38.

Hachey, A. C., & Butler, D. L. (2009). Science education through gardening and nature-based play. *Young Children*, *64*(6), 42-48.

Hachey, A. C., & Butler, D. (2012). Creatures in the classroom: Including insects and small animals in your preschool gardening curriculum. *YC Young Children*, *67*(2), 38.

Hacking, E., Cutter-Mackenzie, A., & Barrett, R. (2012). Children as active researchers. *International handbook of research on environmental education*, 438-458. New York: Routledge.

Hadfield-Hill, S., & Zara, C. (2019). Complicating childhood-nature relations: Negotiated, spiritual and destructive encounters. *Geoforum*, *98*, 66-74.

Hamilton, L., & Taylor, N. (2017). *Ethnography after humanism: Power, politics and method in multi-species research*. UK: Palgrave Macmillan.

Hammersley, M., & Atkinson, P. (1983). *Ethnography, principles in practice.* New York: Tavistock.

Haraway, D. J. (2003). *The companion species manifesto: Dogs, people, and significant otherness.* Chicago: Prickly Paradigm Press.

Haraway, D. (2008). *When species meet*. Minneapolis, MN: University of Minnesota Press.

Heerwagen, J. H., & Orians, G. H. (1995). Humans, habitats. In S. Kellert, (Ed.), *The biophilia hypothesis* (pp.138-172).Washington, DC: Island Press.

Heerwagen, J. H., & Orians, G. H. (2002). The ecological world of children. In P. Kahn & S. Kellert, (Eds.), *Children and nature: Psychological, sociocultural, and evolutionary investigations* (pp. 29-64). Cambridge, MA: MIT Press.

Heimlich, J. E., Mony, P., Yocco, V., Stevenson, R. B., Brody, M., Dillon, J., & Wals, A. E. J. (2013). Belief to behavior: A vital link. In R. Stevenson, M. Brody, J. Dillon, & A.E. J. Wals (Eds.), *International handbook of research on environmental education* (pp. 262-274). Milton Park, England: Routledge Taylor & Francis Group.

Herrmann, P. A., Medin, D. L., & Waxman, S. R. (2012). When humans become animals: Development of the animal category in early childhood. *Cognition*, *122*(1), 74-79.

Hodgins, B. D. (1996). Pedagogical narrations' potentiality as a methodology for child studies research. *Canadian Children Journal. 34*(1), 4-11.

Hoffman, M. L. (2005). *Empathy and moral development*. Cambridge: Cambridge University Press.

Hoffman, J. A., Agrawal, T., Wirth, C., Watts, C., Adeduntan, G., Myles, L., & Castaneda-Sceppa, C. (2012). Farm to family: Increasing access to affordable fruits and vegetables among urban Head Start families. *Journal of Hunger & Environmental Nutrition*, *7*(2-3), 165-177.

Hoffman, J., Schmidt, E. M., Wirth, C., Johnson, S., Sobell, S., Pelissier, K., Harris, D. M., & Izumi, B. T. (2017). Farm to preschool: The state of the research literature and a snapshot of national practice, *Journal of Hunger & Environmental Nutrition,* (12)4, 443-465, doi: 10.1080/19320248.2016.1227747

Hofmeister, S. (2009). Natures running wild: A social-ecological perspective on wilderness. *Nature and Culture*, *4*(3), 293-315.

Iorio, J. M., Hamm, C., Parnell, W., & Quintero, E. (2017). Place, matters of concern, and pedagogy: Making impactful connections with our planet. *Journal of Early Childhood Teacher Education, 38*(2), 121-135. doi: 10.1080/10901027.2017.1306600

IPBES. (2019). Global assessment report on biodiversity and ecosystem services of the intergovernmental science-policy platform on biodiversity and ecosystem services. In E. S. Brondizio, J. Settele, S. Díaz, & H. T. Ngo (Eds.) IPBES Secretariat, Bonn, Germany.

Jones, K. S. (2003). What is an affordance? *Ecological Psychology*, *15*(2), 107-114.

Joshi, A., Azuma, A. M., & Feenstra, G. (2008) Do farm-to-school programs make a difference? Findings and future research needs. *Journal of Hunger & Environmental Nutrition*, *(3)*2-3, 229-246. doi: 10.1080/19320240802244025

Kahn, P. H., Jr. (1999). *The human relationship with nature: Development and culture.* Cambridge, MA: Massachusetts Institute of Technology Press.

Kahn, R. (2007). Toward a critique of paideia and humanitas: (Mis)education and the global ecological crisis. In I. Gur-Ze'ev & K. Roth (Eds.), *Education in the era of globalization* (pp. 209-230). New York: Springer.

Kahn, R. (2010). *Critical Pedagogy, ecoliteracy, and planetary crisis. The ecopedagogy movement*. New York: Peter Lang.

Kahn, R., & Humes, B. (2009). Marching out from ultima thule: Critical counterstories of emancipatory educators working at the intersection of human rights, animal rights, and planetary sustainability. *Canadian Journal of Environmental Education*, 14, 179-195.

Kahn, P., & Kellert, S., (Eds.) *Children and nature: Psychological, sociocultural, and evolutionary investigations*.. Cambridge, MA: MIT Press.

Kahn P. H., Jr, Weiss, T., & Harrington, K. (2018a). Modeling child–nature interaction in a nature preschool: A proof of concept. *Frontiers in Psychology*, *9*.

Kahn, P. H., Weiss, T., & Harrington, K. (2018b). Child-nature interaction in a forest preschool. *Research Handbook on Childhoodnature: Assemblages of Childhood and Nature Research*, 1-24.

Kals, E., Schumacher, D., & Montada, L. (1999). Emotional affinity toward nature as a motivational basis to protect nature. *Environment and behavior*, *31*(2), 178-202.

Karniol, R. (2012). Storybook-induced arousal and preschoolers' empathetic understanding of negative affect in self, others, and animals in stories. *Journal of Research in Childhood Education*, *26*, 346-58.

Katcher, A. (2002). Animals in therapeutic education: Guides into the liminal state. In P. Kahn & S. Kellert, S. (Eds.), *Children and nature: Psychological, Sociocultural, and Evolutionary Investigations* (pp. 179-198). Cambridge, MA: Massachusetts Institute of Technology.

Kato, K., & Gibson, K., Rose, D. B., & Fincher, R. (2015). *Listening: Research as an act of mindfulness*. Goleta, CA: Punctum Books.

Kellert, S. (1985). Historical trends in perceptions and uses of animals in 20th century America. *Environmental Review*, *9*(1), 19-33.

Kellert, S. R., & Wilson, E. O. (1993). *The biophilia hypothesis*. Washington, DC: Island Press.

Kellert, S. (2002). Experiencing nature: Affective, cognitive, and evaluative development in children. In P. Kahn & S. Kellert (Eds.), *Children and nature: Psychological, sociocultural, and evolutionary investigations* (pp.117-151). Cambridge, MA: Massachusetts Institute of Technology.

Kellert, S. R. (2012). *Birthright: People and nature in the modern world*. New Haven, CT: Yale University Press.

Kernan, M. (2010). Outdoor affordances in early childhood education and care settings: adults' and children's perspectives. *Children Youth and Environments*, *20*(1), 152-177.

Kharod, D., & Arreguín-Anderson, M. (2018). From aversion to affinity in a preschooler's relationship with nature. *Ecopsychology, 10*(4), 317-327. doi.org/10.1089/eco.2018.0044

Kidd, A. H., & Kidd, R. (1990). Social and environmental influences on children's attitudes toward pets. *Psychological Reports, 67*, 807-18.

Kimmerer, R. W. (2015). Nature needs a new pronoun. Let's start by ditching "it." *Yes!*, 73. Retrieved from: *https://www.yesmagazine.org/issues/together-with-earth/alternative-grammar-a-ew-laguage-of-kinship*

Kirksey, S. E., & Helmreich, S. (2010). The emergence of multispecies ethnography. *Cultural anthropology*, *25*(4), 545-576.

Knight, S. (2009). *Forest schools and outdoor learning in the early years.* Los Angeles: Sage Publications.

Kola-Olusanya, A. (2005). Free-choice environmental education: understanding where children learn outside of school. *Environmental Education Research, 11(*3), 297-307. doi: 10.1080/13504620500081152

Krebs, E., Huysman, N., Voorhees, J. M., & Barnes, M. E. (2018). Suspended arrays improve rainbow trout growth during hatchery rearing in circular tanks. *International Journal of Aquaculture and Fishery Sciences*, *4*(3), 27-30.

Kuo, M., Barnes, M., & Jordan, C. (2019). Do experiences with nature promote learning? Converging evidence of a cause-and-effect relationship. *Frontiers in Psychology,*

Environmental Psychology, *10.* Retrieved from: doi.org/10.3389/fpsyg.2019.00305

Kuo, F. (2013). Nature-deficit disorder: evidence, dosage, and treatment. *Journal of Policy Research in Tourism, Leisure and Events. (5)*2, 172-186, doi:10.1080/19407963.2013.793520

Kuo, F. E., & Faber Taylor, A. (2004). A potential natural treatment for attention-deficit/hyperactivity disorder: evidence from a national study. *American Journal of Public Health*, *94*(9), 1580-1586.

Lambdin, J. R., Greer, K. M., Kari, S. J., Rice, K., & Hamilton, M. C. (2003). The animal - male hypothesis: Children's and adults' beliefs about the sex of non-sex-specific stuffed animals. *Sex Roles, 48*(11), 471-482. doi.org/10.1023/A:102356701070

Larimore, R. (2016). Defining nature-based preschools. *International Journal of Early Childhood Environmental Education*, *4*(1), 32-36.

Lasher, M. (1998). A relational approach to the human-animal bond. *Anthrozoos: A Multidisciplinary Journal of the Interactions of People and Animals*, *11*(3), 130-133.

Latimer, J. (2013). Being alongside: Rethinking relations amongst different kinds. *Theory, Culture & Society*, *30*(7-8), 77-104.

Latour, B. (2004a). *Politics of nature: How to bring the sciences into democracy*. Boston, MA: Harvard University Press. Retrieved from https://ebookcentral.proquest.com/lib/hamline/detail.action?docID=3300665.

Latour, B. (2004b). Why has critique run out of steam? From matters of fact to matters of concern. *Critical Inquiry, 30*(2), 225-248. doi:10.1086/421123

Lee, Y. J., & Recchia, S. L. (2008). Who's the boss. Young childrens power influence in an early childhood classroom. *Early Childhood Research and Practice*, *10*(1). 1-6.

Lee E., Walshe N., Sapsed R., & Holland J. (2018) Artists as emplaced pedagogues: How does thinking about children's nature relations influence pedagogy? In A. Cutter-Mackenzie, K. Malone, E. Barratt Hacking (Eds.), *Research Handbook on Childhoodnature* (pp. 1-24). Springer International Handbooks of Education. Springer, Cham

Lemelin, R. H., & Yen, A. (2015). Human-spider entanglements: Understanding and managing the good, the bad, and the venomous. *Anthrozoös, A Multidisciplinary journal of human and animal relations. 28*(2), 215-228.

Lewis, S., & Maslin, M. A. (2015). Defining the anthropocene. *Nature, 519,* 171–180. doi:10.1038/nature14258

Lloro-Bidart, T. (2014). They call them 'good-luck polka dots': Disciplining bodies, bird biopower, and human-animal relationships at the Aquarium of the Pacific. *Journal of Political Ecology, 21*(1), 389-407.

Lloro-Bidart, T. (2015). Reassembling the 'environment': Science, affect, and multispecies educative practice at the Aquarium of the Pacific. *Environmental Education Research, 21*(4), 650-651.

Lloro-Bidart, T. (2017a). A feminist posthumanist political ecology of education for theorizing human-animal relations/relationships. *Environmental Education Research*, *23*(1), 111-130.

Lloro-Bidart, T. (2017b). Neoliberal and disciplinary environmentality and 'sustainable seafood' consumption: Storying environmentally responsible action. *Environmental Education Research, 23*(8), 1182-1199.

Lloro-Bidart, T. (2018). Cultivating affects: A feminist posthumanist analysis of invertebrate and human performativity in an urban community garden. *Emotion, Space and Society*, *27*, 23-30.

Lloro-Bidart, T., & Russell, C. (2017). Learning science in Aquariums and on whalewatching boats: The hidden curriculum of the deployment of other animals. In M. Mueller, D. Tippins, & A. Stewart (Eds.), *Animals and Science Education: Ethics, Curriculum and Pedagogy (Environmental Discourses in Science Education Book 2)* (pp. 41-50). doi: 10.1007/978-3-319-56375-6_4

Lloro-Bidart, T., & Russell, C. (2019). *Animals in environmental education*. New York, NY: Springer

Lloro-Bidart T. (2019) Intersectional and Interdisciplinary Approaches to Interspecies Food Justice Pedagogies. In T. Lloro-Bidart, V. Banschbach (Eds.) ,*Animals in Environmental Education.* Palgrave Studies in Education and the Environment. (pp. 53-76). Palgrave Macmillan, Cham

Louv, R. (2007). Leave no child inside. *Orion Magazine*, *57*(11), 1-6.

Louv R. (2008). *Last child in the woods: Saving our children from nature-deficit disorder*. Chapel Hill, NC: Algonquin Books.

McKnight, D. M. (2010). Overcoming “ecophobia”: Fostering environmental empathy through narrative in children's science literature. *Frontiers in Ecology and the Environment*, *8(6)*, 10-15. doi:10.1890/100041

MacQuarrie, S., Nugent, C., & Warden, C. (2015). Learning with nature and learning from others: Nature as setting and resource for early childhood education. *Journal of Adventure Education and Outdoor Learning. 15*(1), 1-23, doi: 10.1080/14729679.2013.841095

Malone, K. (2016a). Posthumanist approaches to theorizing children’s human-nature relations. In: T. Skelton, K. Nairn K, and Kraftl P. (Eds.), *Space, place, and environment. Geographies of children and young people* (pp. 185-206). doi.org/10.1007/978-981-287-044-5_14

Malone, K. (2016b). Reconsidering children's encounters with nature and place using posthumanism. *Australian Journal of Environmental Education*, *32*(1), 42-56. Retrieved from http://link.galegroup.com/apps/doc/A460573695/PROF?u=clic_hamline&sid=PROF&xid=e85aec41

Mammen, M., Köymen, B., & Tomasello, M. (2018). The reasons young children give to peers when explaining their judgments of moral and conventional rules. *Developmental psychology*, *54*(2), 254-262.

Massey, D. (2005). *For space*. London: Sage.

Maxwell, J. A. (2013). *Qualitative research design: An interactive approach*. Thousand Oaks, CA: Sage Publications.

Mayer, F. S., & Frantz, C. M. (2004). The connectedness to nature scale: A measure of individuals' feeling in community with nature. *Journal of Environmental Psychology*, *24*(4), 503-515.

Meadan, H., & Jegatheesan, B. (2010). Classroom pets and young children. *YC Young Children, 65*(3), 70-77.

Melson, G. F. (2001). *Why the wild things are: Animals in the lives of children.* Cambridge, MA: Harvard University Press.

Melson, G. F. (2003). Child development and the human-companion animal bond. *American Behavioral Scientist*, *47*(1), 31-39.

Melson, G. F. (2018). Rethinking children's connections with other animals: A childhoodnature perspective. In A. Cutter-Mackenzie, (Ed.). (2019) *Research Handbook on Childhoodnature: Assemblages of Childhood and Nature Research* (pp. 1-15). New York: Springer International.

Miller, D. (2007) The seeds of learning: Young children develop important skills through their gardening activities at a midwestern early education program. *Applied Environmental Education & Communication, 6*(1), 49-66. doi: 10.1080/15330150701318828

Miranda-de La Lama, G. C., & Mattiello, S. (2010). The importance of social behaviour for goat welfare in livestock farming. *Small Ruminant Research*, *90*(1-3), 1-10.

Morris, C. A., Denham, S. A., Bassett, H. H., & Curby, T. W. (2013). Relations among teachers' emotion socialization beliefs and practices and preschoolers' emotional competence. *Early Education and Development, 24*(7), 979-999. doi: 10.1080/10409289.2013.825186

Myers, G. (1997). A developmental model for an ethic of care and respect toward individual animals, species, and ecosystems. In C. Vernon, C. Saunders, & D. Kalina (Eds.), Developing and promoting caring attitudes toward the natural world: Preceedings of a planning charrette hosted by Brookfield Zoo and Minnesota Zoo.

Myers, O. E., Jr. (1998). *Children and animals*. Boulder, CO: Westview Press.

Myers, O. E. (2007). *The significance of children and animals: Social development and our connections to other species*(2nd Ed.). West Lafayette, IN: Purdue University Press.

Myers, O. E., & Saunders, C. D. (2002). Animals as links toward developing caring relationships with the natural world. In P. H. Kahn & S. R. Kellert (Eds.), *Children and nature: Psychological, sociocultural, and evolutionary investigations* (pp.153-178). Cambridge, MA: MIT Press.

Myers, O. E., Jr, Saunders, C. D., & Garrett, E. (2003). What do children think animals need? Aesthetic and psycho-social conceptions. *Environmental Education Research*, *9*(3), 305-325.

Näslund, J., & Johnsson, J. I. (2016). Environmental enrichment for fish in captive environments: Effects of physical structures and substrates. *Fish and Fisheries*, *17*(1), 1-30.

Nawroth, C., & McElligott, A. G. (2017). Human head orientation and eye visibility as indicators of attention for goats (*Capra hircus*) *PeerJ* doi: 10.1080/10409289.2013.825186

Nelson N. (2018). Rats, death, and anthropocene relations in urban Canadian childhoods. In A. Cutter-Mackenzie, K. Malone, & E. Barratt Hacking(Eds.), *Research handbook on Childhoodnature.* Springer International Handbooks of Education. (pp.1-23). New York: Springer.

Nelson, N., Pacini-Ketchabaw, V., & Nxumalo, F. (2018). Rethinking nature-based approaches in early childhood education: Common worlding practices. *Journal of Childhood Studies*, *43*(1), 4-14.

Noddings, N. (1986). *Caring: A feminine approach to ethics and moral education*. Oakland, CA: University of California Press.

North American Association for Environmental Education (NAAEE). (2010). Guidelines for excellence: Early childhood environmental education. Retrieved from https://naaee.org/our-work/programs/guidelines-excellence

North American Association for Environmental Education (NAAEE). (2017). Nature preschools and forest kindergartens: 2017 national survey. Washington, DC: NAAEE. Retrieved from https://naturalstart.org/sites/default/files/staff/nature_preschools_national_survey

2017.pdf

North American Association for Environmental Education. (2019, March 22). *What is environmental education*? Retrieved from https://naaee.org/about-us/about-ee-and-why-it-matters

Nucci, L. P., & Nucci, M. S. (1982). Children's responses to moral and social conventional transgressions in free-play settings. *Child Development*, *3*(5). 1337-1342.

Nxumalo, F. (2015a). Forest stories: Restorying encounters with "natural" places in early childhood education. In V. Pacini-Ketchabaw, & A. Taylor (Eds.) *Unsettling the colonial places and spaces of early childhood education* (pp. 31-52). New York, NY: Routledge.

Nxumalo, F. (2015b). Touching place in childhood studies: Situated encounters with a community garden. In H. Skott-Myhere, V. Pacini-Ketchabaw, & K. Skott-Myhre (Eds.), *Youth, work, early education, and Psychology: Liminal Encounters* (pp. 131-158). New York, NY: Palgrave-Macmillan.

Nxumalo, F. (2016). Storying practices of witnessing: Refiguring quality in everyday pedagogical encounters. *Contemporary Issues in Early Childhood*, *17*(1), 39–53. doi: 10.1177/1463949115627898

Nxumalo, F. (2018). Stories for living on a damaged planet: Environmental education in a preschool classroom. *Journal of Early Childhood Research*, *16*(2), 148–159. doi:10.1177/1476718X17715499

Nxumalo, F., & Pacini-Ketchabaw, V. (2017). 'Staying with the trouble' in child-insect-educator common worlds. *Environmental Education Research, 23*(10), 1414-1426. doi: 10.1080/13504622.2017.1325447

O'Neil, J. M., & Egan, J. (1992). Men's and women's gender role journeys: A metaphor for healing, transition, and transformation. In B. R. Wainrib (Ed.), *Gender issues across the life cycle* (pp. 107-123). New York, NY: Springer.

Oakley, J. (2011). Animality and environmental education: Towards an interspecies paradigm. *Canadian Journal of Environmental Education, 16*, 8-13.

Oakley, J., Watson, G., Russell, C., Cutter-McKenzie, A., Fawcett, L., Kuhl, G., Russell, J., van der Waal, M., & Warkentin, T. (2010). Animal encounters in environmental education research: Responding to the "question of the animal." *Canadian Journal of Environmental Education, 15*, 86-102.

Ogden, L., Hall, B., & Tanita, K. (2013). Animals, plants, people, and things: A review of multispecies ethnography. *Environment and Society, 4*(1), 5-24. Retrieved from JSTOR

Orr, D., (1993) Love it or lose it: The coming biophilia revolution. In St. R. Kellert & E. O. Wilson (Eds.), *The Biophilia Hypothesis* (pp. 415-440). Washington, DC: Island Press.

Orr, D. (2004). *Earth in mind: On education, environment, and the human prospect.* Washington, DC: Island Press.

Pacini-Ketchabaw, V., & Nxumalo, F. (2015). Unruly raccoons and troubled educators: Nature/culture divides in a childcare centre. *Environmental Humanities, 7*(1), 151-168.

Pacini-Ketchabaw, V., & Taylor, A. (2015). Unsettling pedagogies through common world encounters: Grappling with (post)colonial legacies in Canadian forests and Australian Bushlands. In V. Pacini-Ketchabaw & A. Taylor (Eds.), *Unsettling the colonial places and spaces of early childhood education* (pp. 43-62). New York, NY: Routledge.

Pacini-Ketchabaw, V., Taylor, A., & Blaise, M. (2016). Decentering the human in multispecies ethnographies. In C. Taylor & C. Hughes (Eds.), *Posthuman research practices* (pp. 149-167). Hampshire: Palgrave Macmillan.

Parshall, D. P. (2003). Research and reflection: Animal-assisted therapy in mental health settings. *Counseling and Values, 48*(1), 47-56.

Patrick, P., & Tunnicliffe, S. D. (2011). What plants and animals do early childhood and primary students' name? Where do they see them? *Journal of Science Education and Technology, 20*(5), 630-642.

Payne, P. G. (2016). The politics of environmental education. Critical inquiry and education for sustainable development. *The Journal of Environmental Education, 47*(2), 69-76. doi: 10.1080/00958964.2015.1127200

Plumwood, V. (2002). *Environmental culture: The ecological crisis of reason Environmental philosophies series*. New York: Routledge.

Plumwood, V. (1993). *Feminism and the mastery of nature.* New York: Routledge.

Poresky, R. H. (1990). The young children's empathy measure: Reliability, validity and effects of companion animal bonding. *Psychological Reports*, *66*(3), 931-936.

Power. (n. d). Retrieved from Merriam-Webster online. Retrieved from https://www.merriam-webster.com/dictionary/power

Radon, K., Windstetter, D., Poluda, A. L., Mueller, B., von Mutius, E., & Koletzko, S. (2007). Contact with farm animals in early life and juvenile inflammatory bowel disease: A case-control study. *Pediatrics, 120*(2), 354-361.

Rautio, P. (2013a). Being nature: Interspecies articulation as a species-specific practice of relating to environment. *Environmental Education Research*, *19*(4), 445-457.

Rautio, P. (2013b). Children who carry stones in their pockets: On autotelic material practices in everyday life. *Children's Geographies*, *11*(4), 394-408.

Rautio, P., Hohti, R., Leinonen, R. M., & Tammi, T. (2017). Reconfiguring urban environmental education with 'shitgull'and a 'shop.' *Environmental Education Research*, *23*(10), 1379-1390.

Reynolds, M. A., Jackson Cotwright, C., Polhamus, B., Gertel-Rosenberg, A., & Chang, D. (2013). Obesity prevention in the early care and education setting: successful initiatives across a spectrum of opportunities. *The Journal of Law, Medicine & Ethics, 41*(2), 8-18.

Rice, S. (2013). Three educational problems: The case of eating animals. *Journal of Thought, 48*(2), 112-127. Retrieved from https://link.galegroup.com/apps/doc/A394183514/EAIM?u=clic_hamline&sid=EAIM&xid=61b7409a

Rissotto, A. & Giuliani, A. M. (2006). Learning neighborhood environments: The loss of experience in a modern world. In C. Spencer & M. Blades (Eds.) *Children and their environments: Learning, using and designing spaces* (pp. 75-90). Cambridge: Cambridge University Press.

Roelvink, G., Gibson, K., Rose, D. B., & Fincher, R. (2015). *Learning to be affected by earth others*. Goleta, CA: Punctum books.

Rose, D. B. (2015). The ecological humanities. In K. Gibson, D. B. Rose, & R. Fincher (Eds.), *Manifesto for living in the anthropocene* (pp.1–5). Brooklyn, NY: Punctum Books.

Ruid, A. G., & Beck, A. M. (2000). Kids and critters in class together. *The Phi Delta Kappan, 82*(4), 313–315. doi: 10.1177/003172170008200417

Russell, C. (2005). 'Whoever does not write is written': The role of 'nature' in post-post approaches to environmental education research. *Environmental Education Research, 11*(4), 433-443. doi: 10.1080/13504620500169569

Russell, C. R. (1999). Problematizing nature experience in environmental education: The interelationship of experience and story. *Journal of Experiential Educatio*n*, 22*(3) 123-128, 137.

Russell, J. (2017). Everything has to die one day: Children's explorations of the meanings of death in human-animal-nature relationships. *Environmental Education Research*, *23*(1), 75-90.

Russell, J., & Fawcett, L. (2018) Childhood animalness: Relationality, vulnerabilities, and conviviality. In A. Cutter-Mackenzie, K. Malone, & E. Barratt Hacking E.

(Eds.), *Research handbook on childhoodnature*. Springer International Handbooks of Education. Springer doi: 10.1007/978-3-319-51949-4_64-1

Saldaña, J. (2016). *The coding manual for qualitative researchers*. London, UK: SAGE.

Sauvé, L. (1999). Environmental education between modernity and postmodernity: Searching for an integrating educational framework. *Canadian Journal of Environmental Education*, *4*, 9–35.

Sauvé, L. (2005). Currents in environmental education: Mapping a complex and evolving pedagogical field. *Canadian Journal of Environmental Education*, *10*, 11–37.

Selly, P. B. (2015). *Connecting Animals and Children in Early Childhood.* St Paul, MN: Redleaf Press.

Serpell, J. (1986). *In the company of animals: A study of human-animal relationships.* Cambridge: Cambridge University Press.

Shapiro, K. (2002). Editor's introduction: The state of human-animal studies: Solid, at the margin! *Society and Animals*, *10*(4), 331-337.

Shapiro, K. J. (2010). Psychology and human-animal studies: Roads not (yet) taken, In M. DeMello (Ed.) *Teaching the* a*nimals: Human*-a*nimal* s*tudies across the* d*isciplines* (pp. 254-280). Brooklyn, NY: Lantern.

Shlomo, R. & Schmida, M. (2009). Non-formal education: A major educational force in the postmodern era. *Cambridge Journal Of Education (39)*2. 257-273. doi.org/10.1080/03057640902904472

Smeds, P., Jeronen, E., & Kurppa, S. (2015). Farm education and the value of learning in an authentic learning environment. *International Journal of Environmental and Science Education, 10*(3), 381-404.

Smetana, J. G. (1981). Preschool children's conceptions of moral and social rules. *Child development*, *52*(4) 1333-1336.

Smith, G., & Sobel, D. (2010). *Place- and community-based education in schools. Sociocultural, political, and historical studies in education*. New York: Routledge.

Sobel, D. (1996). *Beyond ecophobia: Reclaiming the heart in nature education.* Great Barrington, MA: Orion Society.

Sobel, D. (2007). Climate change meets ecophobia. *Connect Magazine*, *21*(2), 14-21.

Sobel, D. (2015). *Nature preschools and forest kindergartens: The handbook for outdoor learning.* St Paul, MN: Redleaf Press.

Sobel D. (2017). *Outdoor school for all: Reconnecting children to nature. In: EarthEd. State of the World*. Washington, DC: Island Press. doi:10.5822/978-1-61091-843-5_2

Spannring, R. (2017). Animals in environmental education research. *Environmental Education Research, 23*(1), 63-74. doi: 10.1080/13504622.2016.1188058

Stephens, L. & Oberholtzer, L. (2018). Opportunities and challenges for farm to early care and education in settings serving low-income children. *Journal of Hunger & Environmental Nutrition.* doi: 10.1080/19320248.2018.1547670

Stevenson, R., & Robottom, I. (2013). Critical action research and environmental education. In R. Stevenson, A. E. J. Wals, J. Dillon, & M. Brody (Eds.), *International handbook of research on environmental education* (pp. 469-479). New York: Routledge.

Stevenson, R., Wals, A. E. J., Dillon, J., & Brody, M. (2013). An orientation to environmental education and the handbook. In R. Stevenson, A. E. J. Wals, J. Dillon, & M. Brody (Eds.), *International handbook of research on environmental education* (pp. 1-6). New York: Routledge.

Stevenson, R., Wals, A. E. J, Heimlich, J., & Field, E. (2017). *Critical environmental education.* In A, Russ & M. E. Krasny (Eds.), *Urban environmental education* (pp. 51-58). New York: Cornell University Press

Storksdieck, M., Ellenbogen, K., & Heimlich, J. E. (2005). Changing minds? Reassessing outcomes in free-choice environmental education. *Environmental Education Research*, *11*(3), 353-369.

Tammi, T. (2019). What if schools were lively more-than-human agencements all along? Troubling environmental education with moldschools, *Environmental Education Research 1-16.* doi: 10.1080/13504622.2019.1584881

Tammi T., Rautio P., Leinonen R. M., & Hohti R. (2018). Unearthing withling(s): Children, tweezers, and worms and the emergence of joy and suffering in a kindergarten yard. In A. Cutter-Mackenzie, K. Malone K., & E. Barratt Hacking (Eds.), *Research handbook on childhoodnature* (pp.1-15). New York: Springer. doi.:10.1007/978-3-319-51949-4_68-1

Taylor, A. (2013). *Reconfiguring the natures of childhood*. New York: Routledge.

Taylor, A. (2017) Beyond stewardship: Common world pedagogies for the Anthropocene, *Environmental Education Research*, *23*(10), 1448-1461. doi: 10.1080/13504622.2017.1325452

Taylor, A., & Giugni, M. (2012). Common Worlds: Reconceptualising Inclusion in Early Childhood Communities. *Contemporary Issues in Early Childhood*, *13*(2), 108–119. https://doi.org/10.2304/ciec.2012.13.2.108

Taylor, A., Blaise, M., & Giugni, M. (2013) Haraway's 'bag lady story-telling': relocating childhood and learning within a 'post-human landscape.' *Discourse: Studies in the Cultural Politics of Education, 34*(1), 48-62. doi: 10.1080/01596306.2012.698863

Taylor, A. F., Kuo, F. E., & Sullivan, W. C. (2001). Coping with ADD: The surprising connection to green play settings. *Environment and Behavior*, *33*(1), 54-77.

Taylor, A., & Giugni, M. (2012). Common worlds: Reconceptualising inclusion in early childhood communities. *Contemporary Issues in Early Childhood*, *13*(2), 108-119.

Taylor, A., & Pacini-Ketchabaw, V. (2015). Learning with children, ants, and worms in the anthropocene: Towards a common world pedagogy of multispecies vulnerability. *Pedagogy, Culture, & Society, 23*(4), 507-529. doi: 10.1080/14681366.2015.1039050

Taylor, A., & Pacini-Ketchabaw, V. (2016). Kids, raccoons, and roos: Awkward encounters and mixed affects. *Children's Geographies*, *15*(2), 131-145.

Taylor, A., & Pacini-Ketchabaw, V. (2019). *The Common Worlds of Children and Animals*. London: UK Routledge.

Teterina, M. (2012). The use of gendered pronouns with animal referents in English. *Speech and context*, *2*, 1-10.

Thomas, N. (2016). *Animal Ethics and the Autonomous Animal Self*. London: Palgrave MacMillan.

Timmerman, N., & Ostertag, J. (2012). Too many monkeys jumping in their heads: Animal lessons within young children's media. *Canadian Journal of Environmental Education*, *16*, 59-75.

Tipper, B. (2011). 'A dog who I know quite well': Everyday relationships between children and animals. *Children's Geographies*, *9*(2), 145-165. doi: 10.1080/14733285.2011.562378

Torquati, J., Gabriel, M. M., Jones-Branch, J., & Leeper-Miller, J. (2010). A natural way to nurture children's development and learning. *Young Children*, *65*(6), 98-104.

Torquati, J., & Ernst. J. (2010). Beyond the walls: Conceptualizing natural environments as 'third educators'. *Journal of Early Childhood Teacher Education* 34 (2), 191-208

Trout in the classroom. (2019). Retrieved from http://mntu.org/trout-in-the-classroom/

Tsing, A. (2010). Arts of inclusion, or how to love a mushroom. *Manoa*, *22*(2), 191-203.

Tsing, A. (2013). More-than-human sociality: a call for critical description. In Hostrup, K. (Ed.), *Anthropology and nature* (pp. 37-52). New York, NY: Routledge.

Tsing, A. L. (2015). *The mushroom at the end of the world: On the possibility of life in capitalist ruins*. Princeton, NJ: Princeton University Press.

Triebenbacher, S. (1998). Pets as transitional objects: Their role in children's emotional development. *Psychological Reports, 82*(1), 191-200. doi: 10.2466/pro.1998.82.1.191

Ulrich, R. S. (1993). Biophilia, biophobia, and natural landscapes. In S. R. Kellert, E. O. Wilson, (Eds.), *The biophilia hypothesis* (pp. 73-137). Washington, DC: Island Press.

Uttley, C. (2013). Animal attraction: Including animals in early childhood classrooms. YC Young Children *68*(4) 16-21.

United States Environmental Protection Agency (EPA). (2018). What is environmental education? Retrieved from https://www.epa.gov/education/what-environmental-education

Van Dooren, T. (2014). *Flight ways: Life and loss at the edge of extinction*. New York, NY: Columbia University Press.

Vinig, J. (2003). The connection to animals and caring for nature. *Human Ecology Review. 10*(2). *87-99.*

von Mutius, E., & Vercelli, D. (2010). Farm living: effects on childhood asthma and allergy. *Nature Reviews Immunology, 10*(12), 861-868.

Walker, P. (2011). Winning the war against childhood obesity: The role of teachers and schools in early childhood education. *Perspectives in Learning, 12*(1), 40-45.

Warkentin, T. (2010). Interspecies etiquette: An ethics of paying attention to animals. *Ethics & the Environment*, *15*(1), 101-121.

Warkentin, T. (2011). Interspecies etiquette in place: Ethical affordances in swim-with-dolphins programs. *Ethics & the Environment*, *16*(1), 99-122.

Whatmore, S. (2006) Materialist returns: Practising cultural geography in and for a more-than-human world. *Cultural Geographies*. 13(4), 600–609.

Wells, N., & Lekies, K. (2006). Nature and the life course: Pathways from childhood nature experiences to adult environmentalism. *Children, Youth and Environments, 16*(1), 1-24.

Wells, N. M. (2000). At home with nature: Effects of "greenness" on children's cognitive functioning. *Environment and Behavior*. *32*(6), 775-795.

Wikelski, M. (2016). Living sentinels for climate change effects. *Science. 352*(6287), 775-776.

Wishart, L. & Rouse, E. (2018) Pedagogies of outdoor spaces: An early childhood educator professional learning journey. *Early Child Development and Care.* 1-15. doi: 10.1080/03004430.2018.1450250

Wilson, R. A. (1993). The importance of environmental education at the early childhood level. *International Journal of Environmental Education and Information*, *12*(1), 15-24.

Wilson, R. A. (1997). The wonders of nature: Honoring children's ways of knowing. *Early Childhood News*, *9*(2), 6-9, 16-19.

Wilson, E. O. (1984). *Biophilia: The human bond with other species.* Cambridge, MA: Harvard University Press.

Wolfe, C. (2010). *What is posthumanism?* (Vol. 8). Minneapolis, MN: University of Minnesota Press.

World Wildlife Foundation. (2017). How much is being lost? Retrieved from http://wwf.panda.org/our_work/biodiversity/biodiversity/

Yin, R. K. (2015). *Qualitative research from start to finish*. Los Angeles, CA: Guilford Publications.

Zhang, W., Goodale, E., & Chen, J. (2014). How contact with nature affects children's biophilia, biophobia and conservation attitude in China. *Biological Conservation*, *177*, 109-116.

APPENDIX A

Emergent Themes

Table 1: Second cycle coding: emergent themes

Descriptor	Total observed or identified instances	Total subthemes	Subtheme descriptor	Total observed or identified instances of subtheme
Power and agency	**116**			
		3	Rules, safety, consequences and discipline	21
			Children's expressions of power	56
			Animal agency	35
Fear, uncertainty, vulnerability	**85**			
		3	Sensory inputs	40
			Children's concern for animal/self well-being	10

			Animal expression of FUV	25
Identity	**124**			
		5	Gender/sex	51
			Family structures and relationships	25
			Names	17
			Embodiment	14
			Alive, dead, real, fake	11
Teacher Talk	**129**			
		2	Describing or interpreting	41
			Asking questions, prompting	23
Total	454			