Bodies of Difference: Amplifying young children's nonlingual ways of being through speculative methodologies and experiments in movement

Ruth Churchill Dower

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Abstract

For some nonlingual young children, for whom speaking is only possible within familiar environments, their bodyminds take on the mantle of a non-speaking identity, that is, an identity conferred on them by a society that values words above all else as a marker of knowledge and being in the world. Language, as a measure of normativity, seems to dominate ecologies of early childhood practice and ways of relating. This is especially true of the education and health domains which promote language as an autonomous mode of expression, as if words exist on their own without recourse to the myriad nonlingual expressions that happen within and across human-nonhuman bodies. As a result, nonlingual ways of being are often considered 'abnormal', or 'lacking' the qualities of the 'ideal' human and, therefore, 'in need' of rescue.

A growing body of sensory and sensing practices in the arts and early childhood domains, specifically within movement (e.g. Olsson, 2009), craft (e.g. Kind, 2020), art (e.g. Kind, 2023a; Trafí-Prats & Schulte, 2022), photography (e.g. Hultman & Lenz Taguchi, 2010) and film (e.g. MacRae, 2019a; Trafí-Prats & Caton, 2020) are helping to reconfigure these reductive narratives and open possibilities for valuing otherwise expressions. These practices are founded in posthuman, feminist new materialist theories that foreground relations across human-nonhuman matter using speculative approaches to attune to what becomes possible through divergent relations. Thinking-with this scholarship and diffracting it through Barad's (2014) agential realism, Haraway's (2016) oddkin relations and Manning's (2020a) concept of bodying, this research focusses on what nonlingual ways of being make possible and how attuning to their vital forces and flows might allow a different kind of listening to their divergent expressions.

In this thesis, I argue that nonlingual expressions can be mobilised generatively through movement; that movement is of the world, existing in more-than-bodies as they relate; and that nonlingual ways of being matter. Putting synaesthetic sensing practices to work, I attend to nonlingual bodyings as part of a rich web of more-than-human connections and possibilities that nourish, compel, disrupt and reframe different ways of being and knowing. Using speculative methods of research-creation, including contact improvisation, Zoom™, GoPro™ video and Electrodermal Activity (EDA) bio-sensors, I explore how gestural, haptic, synaesthetic and affective knowledges might foreground different ways of knowing within an ethics of care. In doing so, this research seeks to reconceptualise alternative, transdisciplinary narratives, challenge pathologised tropes and generate new, care-full ecologies of practice around nonlingual ways of being.

Keywords: *agential realism, diffraction, ethico-onto-epistemology, movement improvisation, nonlingual bodying, speculative fabulation, transcorporeality, young children*

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Chapter One

1.1. Setting the scene

'All that you touch you change. All that you change changes you' (Butler & Jemisin, 2019).

The purpose of this research is, through improvised movement, to explore a speculative approach to nonlingual expression that might reconfigure ideas around not-speaking. I use a posthuman paradigm to frame my research methodology, focusing on Karen[1] Barad's *agential realism* and I argue that the *always-becoming* nature of this theory requires an experimental methodology to become mobilised. Within this, I introduce feminist new materialist theories, thinking-with postqualitative educational researchers who also explore the conditions (or speculative practices) for nonlingual, sensory expression.

Agential realism is fundamental to my speculative research practice for three reasons. First, when it was first published in 2007,[2] Barad's theory pioneered a transdisciplinary fusion of quantum physics, feminist and social sciences that intertwined epistemologies and ontologies. For me, these blended ways of knowing and being have the potential to describe the relations between young children and the world around them. It seems almost impossible to distinguish between *what* and *how* children learn. For instance, elements of literacy and numeracy are understood as much through movement, vibrations and sensations as through cognition. Perhaps more so for young bodies.

Second, as a posthuman theory agential realism proposes that agency is 'cut loose from its traditional humanist orbit' (Barad, 2007, p. 177) whether it is assigned to individual people, objects or things. Barad suggests that 'objectivity' as understood in classical Newtonian

[1] Throughout the thesis I will be 'enacting an affirmative ethics' (Strom, 2021, p.4) by introducing key scholars using their first as well as last names on first citation. This divergent citation practice is intentional activism to counter the 'patterns of marginalization' (Truman, 2019, p.10) that have emerged in empiricist citation practices which seek to erase/exclude certain scholars.

[2] What is even more astonishing is that Barad had, in fact, finished a version of this manuscript in 1991. It was so ahead of its time, it took another six years for a publisher to put it out into the world (Barad, 2014, p.185, n.21).

physics is an unworkable concept. If nothing exists in isolation from anything else then matter cannot make claim to having determinate boundaries, assigned agency or singular properties that could be fixed and measured externally. Rather than knower and known being separate and having pre-existing values, Barad argues that 'neither discursive practices, nor material phenomena are ontologically or epistemologically prior […]; matter and meaning are mutually articulated' (2007, p. 152). If nothing can be determinately fixed, then the classical principles of cause-and-effect must be in question since the original referent of any one thing is indistinguishable. Rather they are entangled '*phenomena*[3] *in their ongoing materialisation*' (2007, pp. 151, original emphasis).

This fundamentally changes the way truth, justice and responsibility are viewed and, as I will unpack in this thesis, this opens up a complex understanding of how things are and how they can be known as being *always in relation*. Agential realism recognises agency as distributed across all relations and acknowledges, therefore, that no one person or thing exists separately or is entirely responsible for themselves (I will discuss the posthuman ethical implications of agential entanglements in Chapter Three).

Third, whilst everything cannot be known, Barad asserts that there is nevertheless an accountability to marks of difference left on bodies by a particular configuration of entanglements in each situation (e.g. the combination of biology + environment + genetics + politics + education) and therefore a 'responsibility to the entanglements of which we are a part' (Barad, 2012, p. 52). These can be experienced through what Barad refers to as the '*agential cut*' (2007, p. 148) which is a temporary separation of entangled elements in order to reveal the agencies/relations emerging within (I discuss this further in section 1.5.). Agential realism is a relational ontology which holds that 'relata do not preexist relations' (Barad, 2007, p. 140), in other words, nothing exists before molecules meet and every meeting constitutes a change in relations. That is to say, relations are in continual iterative

[3] Phenomena is, Barad claims, what is created through relational-becomings. This is at the core of posthumanism and how it positions itself apart from humanist, positivist or social constructivist theories which have specific, often colonialist, implications for the trajectories of power around 'given' representations of what things are and how we know. Indeed, Barad heralds the end of these theories since, 'science and technology are actively remaking the nature of the "human" [through] the recent convergence of biotechnologies, information technologies, and nanotechnologies' (Barad, 2007, p.27).

change (Barad, 2007, p. 74). So, an agential cut temporarily determines the boundaries of specific changing relations, which are otherwise indeterminate.

In this thesis, I employ the agential cut as a research 'device', using the apparatus of my methods to enable an artificial exploration of the human and nonhuman participants coming into relation with each other in specific instances of the data produced. In a series of dances with apparatus such as wool, pegs, tents, sock-puppets, paint, lycra, bubbles, legs and giggles, excerpts of data are cut *together-apart* (Barad, 2014, pp. 176, original emphasis) to explore an intertwining of dynamic epistemologies and ontologies, different ways of knowing and being, that not only offer new perspectives but also pose significant ethical challenges for how nonlingual ways are viewed. Resonating with Donna Haraway's concept of 'situated knowledge' (Haraway, 1997), this doesn't mean that myself as researcher, or any reader of this thesis, could observe these agential cuts from a distance and judge what is happening - what Haraway calls the 'god trick' (Haraway, 2016, p. 40). Relational ontologies imbricate every reader in their material engagement with these cuts not to observe differences but to be a part of making them, since humans and nonhumans are already 'a part of that nature that we seek to understand' (Barad, 2007, p. 67).

Therefore, as I will argue in this thesis, there are no grounds for a single truth or universal fact in what humans know of the world and how. Due to the world's complex liveliness, even so-called grand theories are never fixed but remain experiments in being/knowing/doing as different relations materialise (Barad, 2007); another agential cut, or a mark laid down from which to move in another direction. Similarly, I argue, many species can never be fully encapsulated in the categories by which they are described, such as genera, gender, race, or ability but have indeterminate identities that are intra-dependent, hybrid and sympioetic (Gilbert et al., 2012; Haraway, 2016). This is why it feels important to explore nonlingual ways of being through a posthuman frame in order to open ideas beyond the deficit categorisations that tend to determine identities of young, nonlingual children only by what *cannot be said or done*.

In the rest of this chapter, I will articulate these issues in the rationale for this study, the three key research objectives and the research questions that guide this thesis. Following this, I will

clarify my theoretical and methodological positioning, the structure of the research design and a glossary of key terms which re-turn throughout the study as important refrains.

1.2. Rationale for study

The idea for this study emerges originally from having experienced throughout my 30-year arts education practice nonlingual children *spontaneously* verbalising whilst absorbed in arts exploration, especially movement. These events often seem to occur when conventional expectations for speaking are put aside, leaving space for what might seem like extraordinary expressions to emerge. Perhaps there is nothing extraordinary going on except for those with normative expectations; simply a becoming of multiple, divergent bodies, human and nonhuman, expressed in different ways, generating different understandings of what expression is/does, and what nonlingual bodies can do.

Young children who sometimes do not speak are often described in deficit terms as being non-verbal, non-communicative, naughty or having a problem (Goodley et al., 2016; Hackett, MacLure, et al., 2020) and in need of 'fixing'. Social, educational and healthcare interventions tend to situate this problem within homogeneous, normative concepts of what communication means, how it should happen and how a young child should be. These concepts often underpin early education and arts education practices to redress what are seen as non-normative behaviours because their disciplinary frameworks are grounded on uncontested developmental standards. I will argue in this thesis that these concepts situate many children within an oppressive normative ideology which places a burden of responsibility to be 'better' by speaking 'properly' on the child and their family.

This study brings together research from the interdisciplinary fields of arts, disability and early childhood studies and engages them through the theoretical lens of posthuman feminist new materialisms. It addresses key issues that move beyond the existing categorising of nonlingual bodies by theorising the rich expressions and relations of nonlingual lives. Existing studies in the bespoke fields (e.g. Flinker et al., 2015; Oerbeck et al., 2018; Vogel et al., 2019; Wong, 2010) align not-speaking with specific perspectives often based in a psychological framing of what matters and why. For instance, most studies relating to selective mutism focus on the causes and effects of not-speaking, the implications for social interaction and the possible hereditary responsibilities. The dominant narrative in the criteria for diagnosing and labelling

nonlingual children is that they are 'malfunctioning' and require 'saving' from social, educational and economic exclusion.

Such an approach animates pathology-focussed practices that guide families, educators and clinicians around the social obstacles associated with not-speaking whilst reinforcing a singular narrative of *lacking* in relation to children's abilities (Douglas et al., 2019). They open doors to clinical support to 'solve the problem' of not-speaking but in doing so, they run the risk of closing doors to different, nonlingual ways of being through sensory or affective expressions which are creative, relational and productive of what a body *can* do (Goodley et al., 2016; Lenz Taguchi et al., 2016). Epistemically, a medical approach dominates the existing research, conceiving non-speaking as a problem that requires clinical treatment. This can include the arts (music/drama/movement/art) but only as a form of therapy (e.g. Jones & Odell-Miller, 2022; Lebedeva, 2012; Nicholson et al., 2008) which reinforces the idea of the arts as an instrumental solution to the problem. This is *not* the approach to knowledge, practice and the arts that this research cultivates for reasons I will elaborate on in Chapter Two.

This research turns upside-down the fundamental, and seemingly unquestioned, binary notion that not-speaking is *a problem* and therefore, speaking is *the solution*. Rather, it invites parents, carers, educators, artists and clinicians to experiment with expressive and improvisatory practices that are generative of radical potentialities within the relations between children, adults and other materialities, when words are not forthcoming.

Extant studies in social sciences demonstrate the importance of acknowledging children's multimodal ways of knowing (e.g. Flewitt & Ang, 2020; Kress, 2010; Yelland, 2010), but don't attend as much to affective and sensory movement as a vital body-language (e.g. Batson & Wilson, 2014; Hickey-Moody, 2013; Sheets-Johnstone, 2011). Other studies explore the possibilities and environments for learning differently and creatively, especially for neurodivergent bodies (e.g. Craft, 2002; Runswick-Cole et al., 2016; Yergeau, 2018), but foster materialist pedagogies of co-creation and creativity that mainly revolve around the volition, desire or agency of the human.

My research explores the *intra-sections* (Leppänen & Tiainen, 2018) of these themes and aims to contribute two key elements. First, standing on the shoulders of preceding feminist new materialist scholars, I acknowledge the many affects, forces and intra-actions of nonhuman entities which position the human (child) in a relational dynamism with more-than-human expression, rather than as a solely responsible, bounded individual. In other words, I decentre the child by considering agency as distributed, situated and continually *in relation-with* (Murris, 2022). In shifting the focus towards the forceful and affective intra-agents in complex (and often unequal) relations, I show how responsibility becomes a radically shared practice where the predetermined identities assigned to children become destabilised and indeterminate, and perspectives of child-knowing-being-moving can be reconceptualised as more-than-human.

Inevitably this approach challenges humanist, equalitarian notions of 'child', with the potential to be 'given voice' or 'empowered' (i.e. independent and normalised) as long as those with more power in the relation choose to do so, thereby perpetuating ongoing power imbalances. Nonetheless, this research responds to sectors (arts, education and health) whose guiding theories and principles are grounded in humanism, making the experience of decentring human agency (especially when using online and video methods) quite challenging (Hultman & Lenz Taguchi, 2010; Murris, 2016). I try to resist humanist practices of 'making' a child more 'visible' since putting a human body in the spotlight can reinforce expectations to perform in certain ways (Mazzei & Jackson, 2017). Rather I mobilise *diffractive* practices (Barad, 2007; Haraway, 1997) where multiple constituents of bodies, expressions and situated voices can become indeterminate, spontaneous and imperceptible in their productivity (Lenz Taguchi et al., 2016; Olsson, 2009).

Second, since diffractive practices enable ways of being and knowing to be continually reshaped into irregular and unpredictable patterns, I experiment with speculative methods of movement improvisation to invite new understandings of those relations in an environment where not-speaking is cared-for and valued. Matters of care and justice based on a feminist ethics of care are a foundational element of these methods (Puig de la Bellacasa, 2017). As such, this research aims to practice (and invite others into the practice of) response-able and

activist thinking about 'which lives are worth fighting for, which lives are worth educating, which lives are worth living, which lives are worth saving' (Manning, 2016, p. 3).

Unpicking what matters for nonlingualism goes hand-in-hand with troubling pedagogical and political discourses that impose imperialist expectations for nonlingual bodies to conform to normative conceptions of being human and abled (Douglas et al., 2019; Yergeau, 2018). My study problematises this as an urgency that cannot be ignored, inciting a re-turn towards affective pedagogies (Hickey-Moody, 2013) that think-with the entanglements of multispecies bodies (Haraway, 2016). It is worth noting that the significant increase in the West in awareness and diagnoses of mental health conditions in young children over the last decade comes at a time when radical budget cuts have been made to public services.[4] Children and youth services have been systematically disbanded[5] over the last decade. Mental health, speech and language and educational psychology teams are reaching crisis points in adequately supporting different needs. Costly challenges arise for families trying to navigate opaque care pathways to make sense of their child's diagnoses (or lack of) and simultaneously manage frustrations where treatments offer 'a singular, biological, language-based solution for a complex, heterogeneous, anxiety-based situation' (Churchill Dower, 2022b, p. 142).

The dearth of research into not-speaking, the over-focus on clinical or psychological treatments for different 'neurotypes', and the increasing awareness of embodied or sensory pedagogies, means that the time is ripe for researching new ways of being and knowing; ways that might help to reframe not-speaking as 'one of the stories people tell' but 'not the only, or crucially, the most important story' (Runswick-Cole et al., 2016, p. 26). The implications of this work are 'all the more urgent in the face of increasingly compelling evidence that the social practice of science is conceptually, methodologically, and epistemologically allied along particular axes of power' (Barad, 2007, p. 40) which ensure the regulation or exclusion of certain categories of people, species, languages, nations, genders, religions, body types, memories and so forth, despite these communities being an immanent part of the becoming world. This is why this thesis is situated in agential realism, enacting a diffractive methodology

[4] See: https://www.unicef.org/reports/state-worlds-children-2021
[5] See: https://www.unison.org.uk/news/2024/06/closure-of-more-than-a-thousand-youth-centres-could-have-lasting-impact-on-society/ and https://ymca.org.uk/wp-content/uploads/2024/06/ymca-devalued-2022-1.pdf and https://www.mdpi.com/2673-995X/4/2/34

as a way of making a difference in the world. 'It is a commitment to understanding which differences matter, how they matter, and for whom. It is a critical practice of engagement, not a distance-learning practice of reflecting from afar' (Barad, 2007, pp. 90-91).

As such, this study will contribute to the arts and early education fields in suggesting transdisciplinary collaborations that recognise and support nonlingual ways of being. In reconceptualising what it means for nonlingual bodies to become valued in early childhood, I also hope this research will affect transdisciplinary discourses on speech, language, neurodiversity and dis/ability. I reflect this in my research objectives and questions below. Then, I will set out my theoretical and methodological positioning, followed by an introduction to the six participating families whose movement and material offerings helped to express some of the rich stories that have been inherited by their bodies in ways that simply cannot be spoken.

1.2.1. Aims and Research Questions

Research Objectives:

- To explore how improvised movement opens spaces for mattering beyond words where nonlingual ways of being can be sensed and encountered.
- To experiment with speculative methodologies and methods (e.g. contact improvisation, Zoom, Go Pro video software and electrodermal biosensors) that amplify nonlingual sensing practices.
- To reconceptualise alternative transdisciplinary narratives and foreground nonlingual ways of being as generative vitalities.

Research questions:

1. How do movement and sensing practices without words open up response-able spaces of mattering with young children who sometimes do not speak?
2. How are speculative methods generative of nonlingual ways of being?
3. How could nonlingual sensing practices help reconceptualise alternative narratives around not-speaking, and contribute to transdisciplinary approaches in arts and early childhood education?

1.3. Theoretical and methodological positioning

As I discussed in section 1.1., I have positioned this research within Barad's (2007) frame of agential realism which offers vigorous conceptual tools to resist reductive tropes around 'child' and 'not-speaking' and instead reconfigure what it means to move-in-relation-with multispecies matter. It provides an important way of accounting for the intra-dependent, ever-changing mesh of materials, forces, ideas, bacteria, technologies, histories and possibilities that are productive of all ways of being, including those that are often 'othered'. It invites me to reconfigure what it means to be human, as Rosie Braidotti (2013) explores, not as a (pre)defined body made up of faulty parts, incapable of living well in given social identities (Haraway, 2016), but as a component of the multispecies materialisations of the world. Karen Barad's posthuman theory enacts this using key feminist new materialist concepts which stem from quantum mechanics sharing a petri dish with the social and life sciences.

In this section I will position my research amongst some concepts central to agential realism and argue that putting them to work requires speculative methodologies in order to loosen some of the reductive tropes around being and knowing without words (Manning, 2016; Murris, 2016) and to create a research space where the complexities of nonlingual ways of life can flourish (Mazzei & Jackson, 2012). But where to start?

Diffracting the starting points

At the core of agential realism is not individualism but the inherent entanglement of agential relations meaning that nothing begins or ends but is in iterative transformation. According to Barad (2014), being response-able means going forward to the past by re-turning to its thick tangles again and again in order to respond to the infinite multiplicity of ideas and potentials that are threaded through us (2014, p. 184). Thus, in this section, I begin in the middle, with the help of Barad's (2007) notion of diffraction;

> *'…diffraction involves reading insights through one another in ways that help illuminate differences as they emerge: how different differences get made, what gets excluded, and how those exclusions matter' (Barad, 2007, p. 30).*

Reading 'something' (materials/ encounters/ theories/ methodologies/ atmospheres/ sensations) diffractively through a different object/ influence/ concept means relinquishing a particular set of boundaries that hold the 'something' as fixed. This transversal reading (knowledge-making) practice creates interferences that might have otherwise been obscured, opening the 'something' to other possibilities beyond its original 'meaning'. It is in these revelations, experienced in each agential cut, that the predefined understandings of what matters in linear, 'truth-based' concepts are troubled (Gullion, 2018). In diffraction, it is interference, rather than unquestioning acceptance, that leads to enlightenment in the form of a rich becoming-with the world.

I use diffractive practices to re-purpose matter and meaning, to re-think what matters, how this research might make a difference, and how it might be implicated across the intra-sections of the arts and early education. I try to enlist new imaginaries that interfere with creativity, philosophy, arts and science fields through diffractive and transcorporeal thinking, introduced by Stacy Alaimo (2008). Through these interferences, I hope to defamiliarise, perhaps even unlearn, the silo-thinking that has sometimes straight-jacketed conventional qualitative methodologies based on individualism and invite 'actualizing alternatives to the dominant humanistic vision of the subject' (Braidotti & Hlavajova, 2018, p. 341). I practice diffraction in this research by 'start[ing] from difference, instead of identity' (Murris, 2020, p. 7). I am not looking to evaluate how many children speak (or not), how this differentiates across social categories such as gender, what might cause not-speaking, or how it might impact on their literacy and numeracy targets at school. Instead, I intend to create spaces where we (relating bodies, cultures, movements, desires, politics and mycorrhizal networks) can express our entangled ways of being at different frequencies, such as running, dancing, growing, jumping, condensing, dissolving, shouting, vibrating, contaminating, rooting or being still. In this research, these are important ways of knowing through becoming-with the other.

Within this relational ontology, the term 'more-than-human' is used by feminist new materialist scholars (e.g. Braidotti & Bignall, 2019; Hackett, 2021; Hackett & Rautio, 2019; Haraway & Goodeve, 2000; Springgay, 2019; Taylor et al., 2012) to decentre anthropocentric

theorising and amplify the multitude of relations agenting in the world besides (and despite) the human. Haraway (2016) uses the term 'multispecies' to re-turn thinking to the intra-connections of worldly ecologies, posing radical questions such as, '[w]hat must be cut and what must be tied if multispecies flourishing on earth, including human and other-than-human beings in kinship, are to have a chance?' (2016, p. 2). This is a key question for this research. To explore relational ontologies further, I will interweave the terms 'more-than-species' and 'more-than-human' in recognition not only of the above activisms but of the many other forces, affects, technologies and atmospheres that create relations than can be classified scientifically (Gilbert et al., 2012).[6] From this point on, several **formative themes** emerge, connect and thread their way through the design and materialisation of this research which I will summarise here (emphasised in bold) followed by specific definitions in section 1.5.

Situating the study in what matters

Previously, I outlined the relevance of agential realism to this research in terms of the ways in which **diffractive practices** can be used to mobilise new insights into the complex matters of relations. I also discussed the core idea of **agencies as intra-active and distributed**, and how each intra-action effectively cuts matter '*together-apart*' (Barad, 2014, pp. 176, original emphasis) in each **agential cut**. In other words, the specificity of the relations within the agenting matter determines what matters and what is excluded from mattering (Barad, 2007). Exclusions are more of a conceptual term - nothing is ever really 'outside' in the entanglements being reworked, and the effects of being excluded are still keenly felt. There is only 'agential separability' which creates 'contingent rather than absolute separations' as particular phenomena materialise instead of others (Bozalek and Fullagar, in Murris, 2021, p. 30).

[6] Braidotti (2018) notes that posthuman critical theory interweaves the post-anthropocentric rejection of species hierarchy and human exceptionalism (hence my emphasis on 'more-than-species') and the post-humanist rejection of 'Western Man' as the centre of all things (hence the emphasis on 'more-than-human'). As Braidotti confirms, whilst both positions bring different political standpoints and theoretical genealogies, 'their convergence in posthuman critical thought produces a chain of theoretical, social and political effects that is more than the sum of its parts and points to a qualitative leap in new conceptual directions' (2018, p.339).

Underpinning this research is a **feminist new materialist** politics committed to dismantling the structures that limit, pathologise and oppress through racism, misogyny, ableism and multiple social and cultural injustices. Whilst materialist theories have been used to upturn positivist models of qualitative research for centuries (Truman, 2019), the turn towards feminist politics re-awakens the vitality and agencies within ordinary, everyday experiences to transform social injustices and inequalities (Osgood & Robinson, 2019; Stewart, 2007). However, re-positioning materialisms to take account of feminist politics is not without its problems, which several scholars draw attention to (Ahmed, 2017; Åsberg et al., 2015; Fairchild, 2024; Mohandas & Osgood, 2023; Ringrose et al., 2020; Springgay & Truman, 2018; St. Pierre et al., 2016; Todd, 2016), and which I unpack further in section 2.2. The very problematising of theories and methodologies characterises feminist new materialism as an activist practice. It disrupts and reimagines ontologies that present theory, methods, data, analysis and publishing in an Anthropocentric system that favours 'Eurocentric, masculinist universalism' (Braidotti & Bignall, 2019, p. 2).

Immanent in this work to 'trouble masculine citation practices and genealogies' (Ringrose et al., 2020, p. 11) is myself as the researcher and my movements to either uphold 'dominant systems of power that determined these agential cut lines historically – or cut them anew in ways that […] create positive *difference* in becoming with the world' (2020, pp. 12, original emphasis). Therefore, I cut my data together-apart as they become-with the world by questioning 'what "counts" as knowledge, who is included or excluded in knowledge making, and how this knowledge is produced' (Fairchild, 2024, p. 3). I also consider what alternative, hybridised accounts might be used to foreground the complex relationality at play in '**embodied and embedded**' ways of being (Braidotti & Bignall, 2019, p. 4). To amplify these ways, I invoke Erin Manning's scholarship on the multiplicitous, often imperceptible, sensations that emerge through intra-actions of movements and environments. What Manning calls **minor gestures** become a central theme in my analytical methods. Manning's focus on how neurodivergent bodies might always be in excess of neurotypical languages of expression means trying to locate 'a new ecology of orientations that make felt what otherwise would not register' (2020a, p. 1). I propose sensing practices as a useful method of diffractive analysis, where minor phenomena are rendered capable of resisting the major registers that dominate particular cuts as to what (and who) counts, as I discuss in section

3.1.3. Cutting with the minor is a process of defamiliarising and reconceptualising the transcorporeal entanglements of bodies, spaces and 'vast networks of power' (Alaimo, 2010, p. 17). This is neither easy to do nor describe. It requires a divesting of human essentialism and, as such, leaves marks of vulnerability on this research into nonlingual ways of being, whose troubles are always already perpetuated by humans.

More-than methodologies

As other scholars have done before (Åsberg et al., 2015; Springgay & Truman, 2018; Truman, 2022), I argue in Chapter Three that the divesting of human essentialism requires a **speculative methodology** where 'problematizing is a mode of defamiliarization that ruptures taken-for-granted habits, tropes and common assumptions' (Springgay & Truman, 2018, pp. 208). Speculative methods and methodologies help to experiment with the generative potentialities of nonlingual ways that occur in movement without reducing them to words or defining them in relation to the human. These are more-than methodologies that enact relations, mobilising agential realism and enabling a more nuanced approach 'for studying pluralist posthuman ecologies and new forms of worldly belonging' {de Freitas & Truman, 2021 #2637).

From this position, I explore **research-creation** (Manning, 2016) as a method of generating unpredictable data using contact improvisation, dances with EDA sensors, Zoom™ and Go Pro™ video. This method mobilises agential cuts by making strange the movement of data (Marks, 2000) and spotlighting the porous, entangled matter with leaky residues that defies 'interpretation, classification and representation' (MacLure, 2013c, p. 228). Research-creation can be thought of as 'the complex intersection of art, theory, and research' (Truman & Springgay, 2015, p. 152), a transcorporeal (Alaimo, 2010), interdisciplinary intra-sectional (Leppänen & Tiainen, 2018) approach.

Drawing from Stephanie Springgay (2020) and Sarah E. Truman (2018) I put research-creation to work in two ways. First, I use this method to resist delineating subjects/objects within humanist power relations and use it as a process of 'thinking-with and -across techniques of creative practice' (Manning & Massumi, 2014, p. 88). Second, I employ research-creation

because, as a 'problem–making' (Manning, 2016, p. 11) process, it disrupts the definition of 'knowledge', positioning it not as the end result of **experimental practices** but as an integral part. Experimenting is as much about knowledge-making because there is no 'end result', only the ongoing material practice of '*intra-acting* from within, and as part of, the phenomena produced.' (Barad, 2007, pp. 56, original emphasis). Springgay (2018) and Derek McCormack (2014) refer to research-creation as 'thinking-in-movement', describing the process of **attuning to the affective forces** which foreground the ephemeral nature of nonlingual expressions. This is a theme I explore in Chapters Two and Three, re-turning to Haraway's inquiry into 'what must be cut and what must be tied?' (2016, p. 2) or, in other words, what 'conditions' might enable these expressions to emerge 'through the skin' (Lenz Taguchi, 2010, p. 48) of entangled early childhood practices.

Entangled ethics

One possible condition involves the destabilising of conventional thinking about ethics, which forms the basis of my '**ethico-onto-epistemology**'. This crucial phrase, coined by Barad (2007, p. 185), signals the irreducible entanglements of the material-discursive, nonhuman-human practices of being and knowing which are always 'mutually implicated' whilst 'part of the world is making itself intelligible to another part' (2007, p. 185). As Barad emphasises; '[n]either discursive practices nor material phenomena are ontologically or epistemologically prior. Neither can be explained in terms of the other. Neither has privileged status in determining the other.' (Barad, 2003, p. 822). The enactment of this intertwined onto-epistemology is threaded through with matters of ethics and justice that are not found in the coded rules of humanist, representational or interpretative practices but from a more-than-species responsibility within.

Therefore, in Chapter Three, I dive into the theme of '**response-ability**', to borrow Haraway's (2016) term. Through this neologism, Haraway describes how generative forces and different ways of being might be '**rendered capable**'. I put this concept to work (Jackson & Mazzei, 2012) to help reconceptualise how nonlingual beings might be rendered capable through response-able practices. I challenge what counts as 'ability' and trouble ableist notions such as the idea that 'rights are attributed to persons who have a 'voice'' (Murris, 2021, p. 28)

through which a coherent narrative is expected to form, demonstrating their capacity to act (Mazzei & Jackson, 2012). As Bozalek and Fullagar remind us (in Murris, 2021, p. 2), 'Disability/ability does not reside in bounded individual humans but comes into being through intra-actions. It is relational, political and material-discursive.' This research will outline how participants/ things/ ideas/ becomings can render each other capable by sensing the other in each situation or practicing the 'arts of noticing' (Tsing, 2015, p. 17).

In line with the relational dynamism of this theoretical framing, I set out my position not as ~~stand-~~points (which henceforth are put under erasure) but as *moving-points* (illustrated below in *Figure 1*), which reflect the constantly changing nature of my own learning experience as a doctoral researcher. With a long training in physical theatre, music and dance, and a professional background in arts education at both practice and policy levels (running the research and training company, Earlyarts, for the last 22 years), I offer a discreet set of experiences, skills, biases and languages that produce specific agential cuts and through which I seek to further relational feminist, anti-racist and anti-ableist practices.

Figure 1: The author's ontological and methodological ~~stand~~/moving-points

From these intra-sectional (Leppänen & Tiainen, 2018) ~~stand~~/moving-points, I engage in generating ontologies of movement, investing in 'ethico-political' (Springgay & Truman, 2018, p. 208) practices that inquire as to how bodies which carry genealogies of reductive identities might become and be known differently. This research challenges me to move beyond Anthropocentric ways of being and knowing towards an understanding of becoming-with more-than-species' intra-actions and enacting response-abilities to other futures (Haraway, 2016).

1.4. Research design and participants

In the autumn of 2020, six families began their contribution to this research by exploring the possibilities of contact improvisation (a touch-based, relational form of dance between two or more bodies) to reveal intimate and vital body languages that may otherwise be publicly closed or hidden beneath the performance anxiety sometimes experienced by the children. These children, aged between two and five, were amongst the 1% of the population who had received diagnoses of 'selective mutism'. This is often described in reductive language as being a 'condition' based on having levels of anxiety so high that their bodies sometimes become immobile and unable to speak in unfamiliar environments (e.g. Poole et al., 2021). To counter these medicalised identities, the families and I experimented and improvised with a series of playful experiments, responding to different materials with movement, through which the families could attend to haptic, sensory and kinaesthetic ideas emerging across the many bodies involved without reliance on words. During each session, I reiterated that, even though I might ask questions or chat during our movement-play, the children and their parents were free to respond (or not) in any way, with no need to talk. Their responses were always generative, often unexpected and touched me deeply.

The original research design was due to take place in a Yorkshire school with a reputation for supporting creative pedagogies with children who have different ways of communicating. However, since the Covid-19 pandemic enforced a national lockdown just as the fieldwork was about to begin, it became clear that the research could not take place in the school and the project was redesigned to work directly with families, re-gaining ethics approval. The research families were recruited online through a network run by the Selective Mutism Research and Information Association (SMIRA[7]) and invited to work with me in two stages. Stage One involved spending an hour each week moving together over Zoom for a period of six weeks followed by an online feedback session. Stage Two involved four of the families meeting together as a group in a light and spacious art gallery, once lockdown had been lifted, whilst observing social distancing rules to keep everybody safe.

[7] SMIRA is the Selective Mutism Information and Research Association, providing information and support for parents and professionals across the UK and internationally: http://www.selectivemutism.org.uk.

For different and surprising reasons, both the virtual and physical sessions opened spaces for affective resonances to take place between bodies, raising questions around the neuro-bio-sociological complexities of embodied knowing and how these are articulated, which I will discuss in the course of this thesis. The finer details of the research design can be found in Chapter Three, where my endeavour to ground the research in a speculative methodology will be expanded upon. In the next section, I outline some of the key terms that pop up throughout the thesis which I hope will welcome a settling into the posthumanist, feminist new materialist bodyings from within which this writing emerges.

1.5. Key terms

Several recurring terms are outlined below to introduce them in relation to this research.

1.5.1. Agential cut

In a relational ontology such as agential realism, agency is not assigned to individual bodies but distributed across indeterminate movements of matter, which Barad calls *intra-actions* (Barad, 2007). Sensing intra-actions helps to decentre humans by attuning to nonhuman and more-than-human encounters (Ash & Gallacher, 2015, p. 70). Intra-actions are caused not by an external cause-and-effect situation but from the dynamic movement unfolding *within* relations, which Barad refers to as 'performativity'. I argue that this radically reconfigures the notion of agency from a noun to a verb as intra-actions are enfolded into and transforming each other, or *agenting*, in every moment; agency is not what things *have*, but what things *do* (Barad, 2007, p. 178). The agenting within entanglements is recognised in slightly different ways by other theorists, such as *agencements* (Deleuze & Guattari, 2004; Manning, 2016), *contaminations* (Tsing, 2015), *transcorporealities* (Alaimo, 2010), *actants* (Latour, 2004), *assemblages* (Bennett, 2010; Loveless, 2020) and *chthulucenes* (Haraway, 2016).

The way matter is continually agenting means its constituents cannot be represented as *things* but *phenomena* because 'to be entangled is not simply to be intertwined with another, as in the joining of separate entities, but to lack an independent self-contained existence' (Barad, 2007, p. ix). Therefore, the boundaries around phenomena in agential cuts are only temporarily determinate to show the relations happening across (not between, which would still suggest independent entities) their material and discursive dimensions. But as soon as an agential cut has been made, and the relations within experienced, they have already changed, reconstituted by the very intra-action of who or whatever is involved in making the cut. Every agential cut implicates humans because, as Barad clarifies, '[w]e are not merely differently situated in the world; ''each of us'' is part of the intra- active ongoing articulation of the world in its differential mattering' (2007, p. 381). And each intra-action leaves its mark (which Barad calls *sedimentation*), showing the effects of difference every change makes, thus the marks

made by these quantum molecular transformations become important indicators of new possibilities in the world. Because of this continual, iterative transformation of matter, boundaries (physical or theoretical) are not fixed as we might perceive, but porous, fluid and in ongoing re-constitution[8], which makes for an interesting analysis of this research when apparently fixed meanings around not-speaking are actually moving, agenting and being diffracted by whomever or whatever is involved. This is why agential cuts are described as a '*cutting together-apart*' (Barad, 2014, pp. 176, original emphasis), since every *cut* creates another intra-action, another range of possibilities and impossibilities, where the molecules of all matter in that relation are changed by each other. 'Breathing becomes our world as we breathe the world molecules and inhale past, present, and future data-breath-data- of ourselves and others.' (Koro-Ljungberg et al., 2017, p. 6).

While it can never encapsulate every perspective and possibility of relations happening, the cut is nevertheless 'a particular instance of wholeness' (Barad, 2007, p. 119) because whatever happens at the point of the cut includes everything that is possible within those relations. Enacting different cuts (such as changing the apparatus, materials or conditions of the experience) will alter the phenomena being created but the instance is still a whole experience. At the same time, a cut creates exclusions (things that don't materialise) enabling certain possibilities to unfold, and an exclusion effect continues to exist as it leaves its trace on what is included. Barad emphasises this has political implications, 'not in simply recognizing the inevitability of exclusions, but in insisting on accountability for the particular exclusions that are enacted and in taking up the responsibility to perpetually contest and rework the boundaries' (2007, p. 205). In this research, I ask how the ongoing exclusions of nonlingual bodies and expressions can be accounted for, and countered, through enacting cuts differently.

[8] The famous 'Power of Ten' short film by Charles and Ray Eames in 1977 (the first of many films in this vein) zooms between the macro and the micro to put the world into perspective and examine the multitude of possible relations at molecular or multi-universal levels. What is interesting is that the film shows how all matter is in continual movement without any hard boundaries, no matter how it appears on the 'outside': https://aeon.co/videos/the-classic-1977-film-that-put-the-vastness-of-the-universe-into-perspective.

1.5.2. Affective Attunement

More than individual emotions or feelings, affecting and being affected is how bodies/matter sense, perceive, engage with environmental forces and *become* (Massumi, 2002). Stern's notion of 'vitality affects' (Stern, 1985, p. 54) is helpful in describing how the bodymind[9] is not a self-contained, stable entity but an assemblage of differently affected and expressive senses as they fold into each other. Manning emphasises that 'these foldings bring into appearance, not a fully constituted human, already-contained, but co-constitutive strata, of matter, content, form, substance and expression' (2009b, p. 35). However, such affective agenting can go unnoticed without attunement, which is defined as 'the capacity to sense, amplify and attend to' the *becoming* of difference (Ash & Gallacher, 2015, p. 73). Contrary to conventional qualitative methods and their use of observation, affective attunement often happens on a sensory level. For instance, affect can be sensed as a 'visceral prompt' (Hickey-Moody, 2013, p. 79) through electrical forces, feelings, physical frictions, galvanic skin responses, molecular vibrations, neuronal registers or sonic frequencies that are multiply constituted and often beyond interpretation (de Freitas, 2018; MacLure, 2013b). Manning coins Stern's term 'affective attunement' to describe material, virtual and sensory relating (or *agenting*) as it emerges pre-consciousness, before any sense of self, i.e. the co-constitutive sensations of becoming-different. In this research I emphasise the potential to attune with more-than-human bodyminds by attending to the multiplicity and intensity of forces within relations. Affective attunement is 'a particular kind of listening', of being attuned to the virtual, or 'what is not 'there', yet still has the potential to be articulated' (Murris & Bozalek, 2023, p. 32). In attending to the force fields and diverse relations affecting nonlingual ways of being by embracing methods, ideas, theories and practices that sense what might exist beneath the skin or beyond the register of words, I render myself as researcher 'open to being affected […] and, in particular, to difference in all its multiplicity as it emerges' (Davies, 2014, p. 1). I elaborate on this in section 2.3.3.

[9] Following Murris (2021), I adopt the term 'bodymind' throughout my thesis, to signal an entangled and inseparable materiality, as discussed further in section 2.3.1.

1.5.3. Apparatus / conditions of possibility

Throughout the thesis I refer to Barad's concept of *apparatus* (which they also refer to as 'the condition of possibility for determinate meaning' (2007, p. 144)). I interchange this with Manning's concept of *conditions of possibility* (2016) which includes the forces and intensities of affect. Thus researcher, space, materials or objects present become part of the apparatus creating the conditions for moving/relating differently and resisting being pinned down to individual or molecular classifications. Again, I consider the apparatus as *doing* rather than *being*, i.e. phenomena that are moving and opening to possibilities rather than fixed agencies of observation or measurement. In other words, apparatus/conditions are always agenting or, *in relation; '*a relay of energies propagating through an excitable assemblage […], an aggregate effect of all bodies, affects and energies – an *agencement*' (Myers in, Loveless, 2020, p. 111). In this thesis, I focus on the fluid, affective and emergent nature of apparatus-in-relation, which, as Barad expresses, 'are boundary-making practices that are […] productive of, and part of, the phenomena produced' (Barad, 2007, p. 146). I elaborate on this in section 3.2.4.

1.5.4. Diffraction

In quantum physics, diffraction describes what happens when particles pass through apparatus (e.g. through an aperture or around an obstacle) unpredictably becoming wave-particle-dualities that generate overlapping diffraction patterns. This happens when the apparatus (or 'diffraction grating') interferes with the atomic nature of the particles, defying the expected behaviours of particle physics and becoming otherwise (both wave and particle), thus negating the notion of individual boundaries (Barad, 2007, p. 156). The emergent diffraction patterns mark the interferences, multiply overlapping to amplify greater peaks and troughs in proportion to their combined frequency (or 'superposition') or cancelling out each other's amplitude at the mid-point between phases. By detecting and measuring these microscopic peaks and troughs, it is possible to determine how the increased amplitude of the diffracted wavelengths has made a difference to the nature of the matter. Haraway (2013) and Barad (2014) use diffraction to read ideas of different theories/methods/disciplines through one another to attend to their microscopic differences

and thus reveal new approaches through relational ontologies, an important characteristic of posthuman feminist new materialisms (Bozalek & Zembylas, 2016). In my research, I use diffractive analysis in an 'ethico-political' manner (Springgay & Truman, 2018, p. 208) exploring where minor differences reveal what has been historically excluded from mattering, and inviting me to consider 'which differences matter, how they matter, and for whom' (Barad, 2007, p. 90). I elaborate on this in section 2.3.4.

1.5.5. Ethico-onto-epistemology

Cutting together-apart in one movement the philosophical concepts of axiology, ontology and epistemology amplifies the fundamental values of agential realism. The neologism of ethico-onto-epistemology, referred to as a 'post-philosophy' (Kuby and Zhao in, Murris, 2021), situates knowing and doing as intimately connected, underscoring the inseparability of scientific theories and knowledge production practices. It challenges interpretivist theories and methodologies that assume 'an inherent difference between human and nonhuman, subject and object, mind and body, matter and discourse' (Barad, 2007, p. 185). Barad positions *being* and *knowing* as inextricably yoked and 'mutually implicated' in the matterings of the world since, 'we don't obtain knowledge by standing outside the world; we know because we are *of* the world' (Barad, 2007, pp. 185, original emphasis). Ethico-onto-epistemology is exemplified in my exploration of nonlingual ways of knowing and being with arts materials and movements, as I consider the divergent expressions produced and their ethical implications for future material-discursive early childhood environments. I elaborate on this in section 3.2.3.

1.5.6. Minor gestures

Manning (2016), introduces the minor gesture as a subtle, often imperceptible, yet significant movement shaping emergent relations. Not dissimilar to expression, minor gestures, forces or frequencies serve as performative acts expressing the continual process of becoming. They foreground the micro-dynamics in expression and disrupt established norms, 'inventing languages that speak in the interstices of major tongues', (2016, p.2) which affect the

intricate fabric of embodied experience. Beyond words, these are languages of emergent field effects, sensations of the shape-shifting within a more-than-human world, which some neurodivergent bodyminds might feel more intensely through synaesthetic experiences (see section 2.3.3.). Recognising the productivity of the minor gesture can 'provide the means to view children and their entangled place more generatively' (Osgood & Robinson, 2019, p. 9). Therefore, I highlight the minor dynamics of nonlingual modes or what Riikka Hohti calls, '*becoming-minor* within language' (2021, pp. 12, original emphasis), attending to how their divergences disrupt and reorient majoritarian (neurotypical) identity politics that may classify them as 'less worthy' (Manning, 2016, p. 4). I engage speculative practices to ensure the process 'remains open to the more-than, and pragmatic in the sense that it is completely invested in its "something doing" ' (2016, p. 33). In doing so, the minor gesture becomes a dynamic political agent by problematising the homogenisation of diversity in early childhood and countering the increasing invisibility of multimodal differences. In other words, minor gestures redefine value beyond majoritarian definitions. I elaborate on this in section 3.1.3.

1.5.7. Divergence, non-neurotypicality and nonlingualism

Neurodivergence as a term is gaining social and political traction with the intention of queering ableist structures built on the premise that *neurotypicality* is the 'governing definition of what counts as human' (Manning, 2020a, p. 2). These terms are problematic on a number of levels. First, they suggest being human is made up of two opposing neurotypes, a binary logic that does little to support the fluid diversity of all bodyminds. Second, this binary has the effect of fixing and reducing identities to ensure that the structural precedence and stability of neurotypicality is not threatened (for instance, most neuropsychology literature about situational mutism positions not-speaking as a deficit situation against the norm of speaking - see section 2.2.2.). Third, the prefix of 'neuro' relating only to the brain and nervous systems does not account for the generative transcorporeal, more-than-human relations that are entangled with nonlingual ways of being. Manning calls for the '*diversity in diversity*' (2020a, pp. 2, original emphasis) using the term *non-neurotypical* as a slightly less violent determinant but acknowledges the inadequacy of language that positions difference against a standard of typicality (see section 2.2.1.). Therefore, in a bid to refuse neuro-reductionism, I refer to *divergence*, but with caution as I do not want to suggest that

bodyminds diverge from a 'norm', implying abnormality. By *divergent* I mean *nonconforming*, as in, que(e)rying[10] the normative, homogenous, oppressive classifications of different neurotypes which can reinforce ableist practices.

Throughout the thesis, I become entangled with important questions about whether situational mutism is a dis/ability[11], how nonlingualism can be productive and powerful in its divergence, and what can emerge from moving beyond languages that limit, oppress and reinforce identity politics (see Manning's quote at the top of 2.2.2.). Recognising the troubling limitations of a word-based language to 'accurately represent its referent' (Barad, 2007, p. 47), I open my research to the possibilities of *not knowing* through words but simply *being-with* through movement, since 'nonlinguistic practices are forms of knowledge in their own right' (Manning in, Colin & Sachsenmaier, 2015, p.138). As such, I avoid labelling children who sometimes do not speak as 'non-verbal' since bodies are always already making sounds, moving, resonating, vibrating and expressing at frequencies often beyond human perception. This helps to 'trouble the notion of *voice* as an indicator of authenticity, immediacy, or narrative authority in qualitative inquiry' (MacLure et al., 2010, pp. 498, original emphasis). My naming of nonlingual ways as *divergent* aims to disrupt deficit tropes, shift the spotlight of developmentalist expectation away from not-speaking, and invite a broader conceptualisation of the multiple agencies, matters, affects, histories and futures entangled in divergent ways of knowing. I elaborate on this in section 2.2.2.

1.5.8. Oddkin

Haraway challenges essentialist ideas of blood-relations, or 'godkin' (Haraway, 2016, p. 3), by introducing the wild category of 'oddkin', which extends to more-than-human, non-

[10] I introduce the term que(e)rying to mobilise not only the subversion (queering) of conventional discourses and practices surrounding nonlingual ways of being, but also the curious experiments (querying) emerging in speculative expressions without words. This is aligned with Barad's emphasis on diffraction as a process of interference which troubles representational, fixed identities, and que(e)ries entrenched forms of knowledge production.

[11] I put the word 'dis/ability' under caution by employing the slash coined by Goodley et al (2016) as a reminder of the conflict between nonconforming bodies being rendered both incapable and disabled in orthodox terms, yet capable and abled in new materialist terms. By attending to alternative ways of describing nonlingualism, my research attempts to foreground other modes of becoming capable, many of which we humans do not yet have a language for.

biogenetic kin. Haraway emphasises that, for oddkin to live well together, new kinds of speculative fabulations are needed with possibilities-to-come in the '…so far'. This research embraces Haraway's argument for making oddkin 'in unexpected collaborations and combinations' where 'we become-with each other or not at all' (2016, p. 4) as a necessity to eradicate Anthropocentric practices. Yet, I also acknowledge the tensions of navigating everyday lives whilst othered as oddkin within pathologised, developmentalist worlds. Amongst these tensions, I appreciate Taylor and Giugni's queering of kin 'to indicate the heterogeneous array of significant others in our common worlds, relations that are characterised by both intimacy and difference and that require constant ethical consideration' (Taylor & Giugni, 2012, p. 112). In my research, oddkin include not just 'things' that intra-act such as a sleeved sock-puppet dancing to a violin's tune, a twirling pair of tights becoming intimate with a slippy floor, or erratic torchlights darting within the folds of a tent. I also attune to the affective 'stuff' of nonlingual oddkin such as expectations, atmospheres and unpredictabilities - tensions that the research families live with day by day. It is precisely because of these uncomfortable proximities of oddkin that Haraway invites me to stay with the troubles, sticky knots and asymmetries to find ways of 'living and dying well together' (Haraway, 2016, p. 29) in nonlingual practices. In this research, oddkin seem to come to life in the liminal interstices of agenting relations, exemplifying how everything is intertwined with its entangled kin materially and discursively (Barad, 2007, p. 393). I elaborate on this in section 3.2.2.

1.5.9. Response-ability / Rendering capable

As I described in section 1.5.1., agenting is a 'phenomenon that *performs*' its entanglements (Murris, 2021, pp. 28, original emphasis), highlighting the vitality of matter that is always becoming and que(e)rying new possibilities for being. Entanglements imply that all matter is in a *mutually responsive relation* whether 'responsibility' is taken or not. In an interview with Dolphijn & Tuin (2012), Barad explains that this 'is not to deny, but to attend to power imbalances because agenting is about possibilities for worldly re-configurings' (2012, p. 55), introducing response-ability as a molecular concept that enables mutual response, rather than a social obligation or choice.

Haraway advances the notion of *response-ability* as a means of attuning to and 'staying with the trouble' (2016, p. 12) caused by discourses that render *some* humans capable of response and *others* not. This research does not seek to fix these troubles since to do so would negate the 'possibilities of mutual response' and return to 'agency localized in the human subject' (Barad in Dolphijn & Tuin, 2012, p. 55). By staying with these troubles, often not speaking, I attend to the differences within that render bodyminds capable. Here, I am held accountable since '[w]e are responsible for the cuts that we help enact not because we do the choosing (neither do we escape responsibility because ''we'' are ''chosen'' by them), but because we are an agential part of the material becoming of the universe.' (2007, p. 178). In trying to honour complex forms of being and knowing, my privilege as a white, first world researcher is challenged by the question of *who* renders *whom* or *what* capable, and *how*? Even whilst moving towards decentring, human supremacy remains stubbornly embedded and embodied in transcorporeal relations that continue to be rendered through forces particular to power imbalances (Barad in Dolphijn & Tuin, 2012). Furthermore, whilst this research foregrounds nonlingual ways of becoming-capable, many of these are inarticulable through 'linguistic expression' (Manning, 2016, p. 11). 'Rendering capable' can continue to perpetuate a false binary by assuming bodies can become whole, or fully capable (Murris, 2016). Therefore, rather than considering humans or nonhumans as 'having' (cap)ability, as if it were a fixed status, I focus this research on the dynamic 'doing+becoming' of responsive relations, considering the ambiguity and complexity of these terms and the inextricable entanglement of conflicting situations. I elaborate on this in section 3.2.3..

1.6. Thesis structure

In exploring how sensory bodies might respond and become responsive, I have structured the thesis as follows (subsequent to the introduction in Chapter One):

Chapter Two – Thinking-with posthuman theories - a literature review

In this chapter, I examine the relevant literature relating to speculative posthuman and feminist new materialist approaches in exploring the themes of dis/abled, psycho-pathologised, developmentalised and represented (voiced) bodies of difference. The first half of this chapter is a critical literature review, and the second half is a conceptual review which expands my thinking-with response-able, transcorporeal, synaesthetic sensing, affective and diffractive processes of bodying, exploring how nonlingual expressions might be reconceptualised in transcorporeal worlds. Together they offer a comprehensive framing for this research.

Chapter Three – Speculative Methodologies

This chapter takes a deeper dive into the speculative methodological framework shaping and moving through the research. I consider how this methodology can render capable experiments with nonlingual, transcorporeal bodies. I detail the benefits of using research-creation as a sensory mode of inquiry, how this feeds into the divergence of my research design, recruitment and fieldwork sessions, and what implications this has for speculative data creation. I consider how these methodologies support attuning to the minor, open up relations between divergent oddkin and spaces, and help to set up apparatuses as conditions of possibility. I examine the importance of intertwining my researcher responsibilities through enacting an ethics of care throughout, amplifying how my speculative methodology becomes embodied and embedded and is affected by what is produced through this study.

Chapter Four - Methods-as-apparatus for dancing-with data

Following on from Chapter Three, I use this chapter to explore how more-than-human relations might intra-act through four speculative methods-as-apparatus. These enable me to literally and metaphorically dance-with the data and attend to what is produced that makes a difference. Working with nonhuman and human participants, I mobilise contact improvisation, Zoom™, Go Pro™ video software and EDA bio-sensor techniques to create the conditions for nonlingual ways of being to flourish. I elaborate on the ethical responsibilities involved in these approaches and the limitations discovered by taking a diffractive, experimental approach to handling the data.

Chapter Five – Diffractive Analysis

In unravelling some of the exciting discoveries made using video-sensing plus software-as-apparatus, this chapter focuses on the unusual perspectives gained through a diffractive analysis of the data. The intimate details of how data were produced by more-than-humans, diffracted, sensed and shared will be revealed (acknowledging my onto-epistemic bias), along with some thoughts on how a body of data attracts, embodies and releases its own sensibilities, regardless of my (im)positions as researcher.

Chapter Six – Discussion on nonlingual diffractions

In this chapter, I think-with the relationalities that have emerged from the fieldwork to explore how nonlingual bodies of difference move, become entangled and embedded in complex, emerging worlds. I re-turn to addressing the three research questions and consider what the implications are for practice in the emerging arts and early childhood field as well as for evolving theories and methods relating to sensory or synaesthetic practices in early childhoods. Finally, I consider the ongoing ethical implications for sectors involved in continuing this area of research.

Chapter Seven - Conclusion

The final chapter will identify the main contributions of this research to different fields of knowledge and practice, including how this work might help to reconceptualise alternative notions of not-speaking. I acknowledge both the limitations that have been discovered on the journey and the potential opportunities for future research of this nature. I end with some closing remarks on the vitality of scholarship that has gone before, has informed and inspired my research and will no doubt continue to metamorphose far beyond this project in the future.

Chapter Two

2.1 Introduction to the literature review

In Chapter Two, I integrate key concepts from feminist new materialist theories using Barad's agential realism to animate them. Whilst materialist theories are not new (as I mentioned in section 1.3.), feminist new materialisms have marked a renewed attention to matter as vibrant, intra-active, indeterminate and inseparable from the discursive (Mohandas & Osgood, 2023). These theories focus on deconstructing the structures that perpetuate multiple forms of identity-based oppression and power asymmetries (Malone et al., 2020; Osgood & Robinson, 2019), often entrenched in humanist, colonialist and representationalist theories (Truman, 2019). I draw attention, however, to the risk of inadvertently re-centering the human by attaching identities to a concept that is intended to dismantle humanist exceptionalism. An exceptionalist gaze easily ignores ways that feminists, too, are constituted of many multiples, species, histories, affects and powers beyond the individual, gendered, racialised human. To navigate this, I employ diffractive approaches by reading theories through one another, recognising the agencies, forces and affects of the ordinary materalities of the world (Stewart, 2007). This helps me avoid positioning feminist new materialisms as a *fixed* class of theories, allowing them to remain in perpetual motion; re-materialising, emerging and becoming.

While feminist new materialisms are not constituted as a homogenous group, acknowledging the 'lineages and inheritances' of feminist new materialist scholars helps to disrupt 'the epistemic violence and erasure that have occurred' (Fairchild, 2024, p. 3) through the marginalising effects of Enlightenment thinking (Braidotti & Bignall, 2019). I commit to this through critical positioning, embodied re-membering, diffractive analyses and divergent citation practices (see footnote 1) that emphasise minority scholarship (Barad, 2014; Mohandas & Osgood, 2023; Reynolds, 2022; Truman, 2022). Practising response-ability for these 'entanglements' (Barad, 2007, pp. 453, n.451), I mobilise a feminist new materialist frame to explore *relational becomings*. This approach blurs the categories created by dominant, representational pedagogies, rendering multiple agencies capable without trying

to fix or foretell their future possibilities (Nxumalo, 2012). Focussing on the affective intensities, relations and movements emerging in the intra-activities of the continually becoming nonlingual bodyminds in this research, I aim to stay attuned to their embodied multiplicities (Braidotti & Bignall, 2019). In this way, I engage in 'micropolitical acts' (Nxumalo, 2012, p. 283) trying to unsettle the fixities perpetuated in representational practices that assign certain identities to non-speaking bodyminds.

This chapter opens in section 2.2. with a critical literature review that gives an overview of how nonlingual bodyminds are profiled in society, especially within the education and health sectors. I explore the material and sensory natures of entangled bodyminds and argue for a more intra-active understanding of nonlingual bodyminds, both human and nonhuman, and how they might work generatively to create and produce knowledge. In exposing the marginalisation and pathologisation of nonlingual bodyminds, I introduce the work of key contemporary feminist new materialist scholars to briefly explore some pertinent issues in the field of critical dis/ability studies. I explore how the ecosystems designed to support children's healthy development can result in imposing ableist and reductive exclusions on bodyminds that are different or divergent, and how the psychologisation of non-normative behaviours renders less-than-human non-speaking bodyminds. I move on to examine the disciplining of young bodyminds against developmentalist educational standards, followed by thinking through how the notion of 'giving voice' might manifest differently in the nonlingual body. Finally, I explore how voice works beyond the biological to effect dynamic ways of becoming-with the world (Mazzei & Jackson, 2017), described by Manning as 'bodying' (Manning, 2016).

In section 2.3., I introduce a conceptual literature review, where the conceptual connections that sustain the concept of nonlingual bodyminds are mapped. I explore some of the different ways of nonlingual bodying in the world, drawing on feminist new materialist notions of response-able bodying (Barad, 2007; Murris et al., 2018), embodied and embedded (Braidotti & Bignall, 2019), symbiopoieitic (Haraway, 2016) (Gilbert et al., 2012), transcorporeal (Alaimo & Hekman, 2008) and diffractive (Barad, 2007) sensing languages. I consider how different bodyminds affect and are affected by their attunements in the world, emphasising the vitality of even the most minor attunements (Manning, 2020a) and synaesthetic affects (Massumi,

2002), and what this might mean for adults who live, care for and work with young, nonlingual children. With the guidance of these scholars, I aim to establish the framing of my research in ways that generatively animate nonlingual ways of being. This will prepare the ground for using a speculative and diffractive approach to data creation and analysis, which will be appraised in the ensuing chapters, moving beyond the material to the virtual, and accounting for the manifold ways nonlingual bodyminds might relate, affect, express and entangle differently in different conditions.

2.2 Critical perspectives on lingual and nonlingual normativity

In the first half of the literature review, I address four perspectives that position nonlingual bodyminds as non-normative. The first two sections outline the ways in which not-speaking is pathologised variously as a dis/ability, an incapability or a psychological 'disorder' and is seen as inadequate. I examine how it is described in language as a problem (intentionally nonconforming) or as evidence of an abnormality in the human bodymind and consider how this frames young bodyminds as being solely responsible for fixing their own 'shortcomings' as communicative humans. I expose what I consider to be institutionalised and homogenised notions of 'child' and unpack how social, political and cultural environments and expectations (rather than a lack of ability) can render bodyminds incapable of speaking. I consider how this contributes to the work of selective mutism agencies to change the diagnostic label to *situational* mutism in recognition of how bodyminds are shaped by different environments, and I highlight the tensions that arise from positioning situational mutism in a humanist frame.

The third section outlines the ways in which early childhood narratives founded in developmentalism serve to render young bodyminds incapable against what I argue are idealist and unachievable developmental standards. I highlight how non-normative bodyminds are othered through dominant, representational pedagogies that limit their potentiality by disciplining them into particular cultural and social norms (Nxumalo, 2012), standardised languages and neurotypical ways of being and knowing (Manning, 2020a; Osgood & Robinson, 2019). I trouble the normative focus on language production and communication as marks of 'being human' and the territorialising ways of 'being known' (Murris, 2016).

Finally, I attend to the erasure of nonlingual bodyminds when identities of 'damage' are attached to them in ways that invisibilise divergent modes of being and knowing in the world (Nxumalo, 2012). I argue that the humanist notion of 'giving voice' to young bodyminds perpetuates ageist and ableist power structures and reifies verbalisation in social hierarchies. I look to alternative notions of 'voice' that are generative of different cultures, relations and responsible practices for making meaning (Mazzei & Jackson, 2012, 2017; Murris, 2021). I also

explore the potentiality of divergent body languages, including gesture, sound, intensities, vibrations, movement and touch (Fullagar, 2021; Gullion, 2018; MacLure, 2009; MacLure et al., 2010), with view to decentring speech and re-turning towards sensory ways of worlding or 'bodying' (Manning, 2016).

2.2.1. Dis/abled bodies

> *'The fast-changing field of disability studies is almost emblematic of the posthuman predicament. Ever mindful that we do not yet know what a body can do, disability studies combine the critique of normative bodily models with the advocacy of new, creative models of embodiment' (Braidotti, 2013, p. 146).*

Splitting the dualistic atom

In this section I put to work Braidotti's posthumanism which emphasises an ethical 'respect for the non-human, as the vital force that cuts across previously segregated species, categories and domains' (Braidotti & Hlavajova, 2018, p. 340). This reorientation of the human subject as *one of many* bodies involved in the world's multimodal expressions, always already affecting each other's well-being and relational capacities, has radical implications for nonlingual bodyminds which are often marginalised when considered as individual subjects (Manning, 2013). Non-speaking that is diagnosed as selective mutism or autism, as for some of this study's research participants, often falls between the fields of dis/ability and psychology. Braidotti's posthuman perspective helps me to challenge the abelism in dominant pedagogies that view a dis/abled human as an incomplete individual (Goodley et al., 2014; Yergeau, 2018). The foregrounding of individualism, which prioritises the intrinsic worth of the human individual over all else, gathered force with the establishment of the Enlightenment in the eighteenth century and remains at the root of modern-day anthropocentrism (Braidotti & Hlavajova, 2018). Individualism is continually reified and ingrained through language when it is reduced to partial, often dualistic explanations of how the world works in a 'dialectics that pitches self-versus-other' (2018, p. 221). Indeed, posthuman scholar, Karin Murris (2016) notes; 'This dualism is 'deep' […] because it has created binaries that are now part of the structure (including grammar) of the everyday […] languages we think, feel and live with […], for example, nature/culture, mind/body, emotion/ cognition, inner/outer, girl/boy, teacher/learner' (2016, p. 45). Lingual structures appear to become increasingly definitive and limiting in direct proportion to life's increasing complexity. Murris emphasises this through the discreet components of the word 'indivi-dualism' (2016, p. 46) highlighting how such complexities are, in fact, *indi*-visible. Examining the implications of this for early education, Murris argues that the net result of setting nuanced, entangled bodyminds in binary oppositions like this is to discriminate against minorities as they become

culturally, economically and linguistically 'othered' against dominant majority cultures. This cultural evolution seems to happen almost imperceptibly, where conditions become more conducive to some ways of flourishing over others, and it has significant implications for nonlingual ways of being.

According to Barad (2007) and Yergeau (2018), the dominance of language reinforces ableist boundaries of 'unacceptability' around not-speaking and, in so doing, reduces the agential productivity and power of non-speakers. These boundaries contribute particular labels to children's 'non-normative' behaviours (such as dis-abled, nonverbal, refuser, being naughty, unable to self-regulate, overly anxious, vulnerable) as if they are matters of fact (Latour, 2004; Puig de la Bellacasa, 2017), providing an apparently indisputable rationale for regulating behaviours which are not yet understood. Maggie MacLure et al (2010) tell the story of a young girl called Hannah who cannot speak during morning register, and whose silence 'produces fear, perplexity, anxiety, excitement, blame. It prompts diagnoses, for there must be something wrong with Hannah: she must be timid, or recalcitrant, or attention-seeking, or abnormal' (2010, p. 493). Despite various interventions, Hannah's silence is never 'resolved' in ways that would be deemed 'acceptable', in other words, her teacher, parents and classmates cannot make her speak. The dominance of spoken language as the arbiter of meaning continues to define Hannah as lacking. Barad (2007) emphasises how this dualist discourse engenders discriminatory practices as 'it then becomes clear that "able-bodiedness" is not a natural state of being but a specific form of embodiment that is co-constituted through the boundary-making practices that distinguish "able-bodied" from "disabled"' (2007, p. 158).

The problem with measuring divergent bodies by standards of typicality

Goodley et al (2018) highlight positive opportunities for asserting dis/abled people's rights and humanity exemplified by initiatives like the United Nations Convention on the Rights of Persons with Disabilities.[12] Whilst selective mutism and autism are clinically classed as dis/abilities, the neurodiversity movement resists further categorising autism as a dis/order,

[12] See: https://social.desa.un.org/issues/disability/crpd/convention-on-the-rights-of-persons-with-disabilities-articles

reframing 'intellectual' dis/abilities as inherent biological differences where brains are differently wired but not dis/ordered or dis/abled (Runswick-Cole et al., 2016; Walker, 2021). However, M. Remi Yergeau (they/them) argue that the concept of neurodiversity does little to dismantle the social stigma around 'intellectual differences' when neurodivergent people are 'conditioned to believe that our selves are not really selves, for they are eternally mitigated by disability, in all of its fluctuations' (2018, p. 10). In other words, even when the dis/abling functions of the environment are acknowledged, a bodymind marked as non-normative is never considered fully human. Even the prefix 'neuro' in discussions about divergent ways of being can be problematic. It seems to position intelligence as the sovereign attribute of the brain and embodied knowledge as scientifically inferior. It denies the infinitely diverse ways of experiencing the world beyond the neurological for an expanding community whose sensory practices and embodied intelligences cannot be measured or valued against normative standards (Manning, 2016). Like Manning, I have been trying to imagine 'another term that carries the force of the nonneurotypical without including the "neuro" as the marker of its difference […]. We need a concept of diversity in diversity that isn't measured by the standard of typicality […], that senses fully and differentially, that lives and participates in a world still defining itself according to measures not yet in place' (Manning, 2020a, p. 263).

Yergeau note that the bodily expressions of autistic people (autists) have long been considered in/human and meaningless because they cannot be understood or sensed in the same way by non-autistic people (allists). They argue not just for a political levelling up of the dis/ability playing field, where neuro-atypical identities are considered *de rigeur*, but for a que(e)rying of its boundaries so that people with divergent ways of being are in charge of the rhetoric, agency and humanity of their own experiences. Yergeau challenges the conventional view of dis/ability as an impairment, and proposes a neuroqueer, transcorporeal narrative, expressing the multiplicities of a dis/abled person's identities, which aligns with the values in this research. However, since the framing of capability underpins problematic identitarian politics (Nxumalo, 2012), my research aims to move away from human-centred representations of what a bodymind can do towards what more-than-human relations make possible. This is not to ignore the important work of critical dis/ability studies to engage in activist and affirmative interventions that 'work the edges of posthumanism and humanist politics' (Goodley et al., 2018, p. 345), and to acknowledge the desires of dis/abled people to

be recognised as 'regular' human beings, particularly when 'denied access to the category of being human' (2018, p. 345). Indeed, this resonates with the experiences of families participating in this study who grapple with less-than generative situations on the edges and margins of their lives. However, this thesis will focus on specific cuts that amplify the human-nonhuman entanglements in not-speaking, and the generative possibilities these might produce.

Categorisation and accommodation dilemmas

Mis/understandings of nonlingual ways of being are compounded by being defined variously as a physical or intellectual dis/ability, a neurological dis/order, a (non-normative) neurodivergence, a developmental issue, a mental illness or a behavioural / psychological problem, all of which invite ableist discriminations. Terms like 'disability/ability' already carry ableist connotations, judging bodyminds capable (or not) against universal norms, holding them solely responsible for fixing perceived deficits, and requiring accommodations by 'capable' humans to achieve normative standards which, ironically, are unsustainable for most bodyminds whatever their capabilities. It is important however to acknowledge that accommodations for differently capable bodyminds can enable identities, economies and ways of participating in the world that might not otherwise be possible. Nonetheless, accommodations often reinforce binary concepts of entitlement based on the idealistic abilities of so called 'normal' bodyminds. Goodley et al describe this as a colonisation of the body where "'The disabled'… become known in terms of what they are not' (2014, p. 3). Just as children who sometimes do not speak tend to be universally grouped as 'nonverbal', as if speaking is the only valid way to communicate and their lack of talk is a generic problem. I argue that the 'nonverbal' and 'selectively mute' labelling that tends to follow nonlingual children contributes to a deficit narrative that disregards multimodal languaging and reinforces stereotypical, dominant modes of expression - something to which this research hopes to propose alternatives.

Furthermore, the assignation of labels can exacerbate othering by authorising care givers to keep nonlingual children physically, psychologically and politically separate from speaking children. Deficit narratives are perpetuated and psychologised by the interlinking of the

'suffering' child and the range of professionals around them whose raison d'etre is to 'cure' or fix the problem. As Goodley et al (2014) note, 'People with physical, sensory or cognitive impairments are plugged into a myriad of cultural, professional, disciplinary and political practices that shape their embodied selves and interrelationships with the world' (2014, p. 9). In seeking support, families can experience conflicting feelings between having the mysteries around not-speaking rendered intelligible by professional diagnoses, whilst simultaneously feeling the injustices of being rendered less-than capable (Murris, 2021). Goodley and Runswick-Cole (2016) admit that 'we hate having to use these labels at all, and worry that they violently mark our children, peers, friends and allies' (2016, p. 1).

Yergeau (2018), Runswick-Cole (2016) and Goodley et al (2014) argue that considering dis/abled people as *fully human* is an important social justice movement against oppressive and abusive practices. These complexities bring ambiguities and tensions into this research which challenge my desire for 'justice' for differently capable bodyminds and often result in re-centering the agency of the human. To avoid colluding and embedding further the oppressions inherent within neurological or developmental definitions, I use *divergent* and *nonconforming* throughout this study to reference alternative ways of being. This is not a labelling 'solution', as Barad (2007) demonstrates, in every bodymind there is such a manifold assemblage of encounters, forces, histories, genealogies and apparatus at work that even in trying to name the constitutional elements, 'the labels don't do justice to the nature of these different and differently connected changing materialities' (2007, p. 389). And, despite thinking-with an ethics of care for bodyminds of difference, the terms I use still imply measurement against covert, dualistic and often moving, neurotypical goalposts, as discussed above. However, hopefully my alternative terms will also remain fluid enough focussing on alternative ways of being-in-relation-with the world to honour diversity.

Names-in-motion

Anna Lowenhaupt Tsing (2015) acknowledges the tensions of trying to work with labels which identify groups, but which do little to honour the specificities of differences within groups. But rather than swap one taxonomic order for another, Tsing encourages the 'arts of noticing' (Tsing, 2015, p. 17) how encounters with things change their specificities and help to trace the

'assemblages in which [they] gain a momentary hold', because then 'we are left imagining that all trees, or Asians, look alike. I need names to give substance to noticing, but I need them as names-in-motion' (2015, pp. 293, n.294).

Although selective mutism is not universally considered a dis/ability, posthuman dis/ability studies is a useful framework through which to reframe mutism labels as 'names-in-motion'. This definition-fluid approach, whilst enacting an exclusion on the surface, also unfolds other possibilities to que(e)ry the political, cultural and economic stability held within labels. It invites health and education practitioners always already entangled in its web to start troubling the narrow, idealised theories of humanness and childhood which serve to oppress different ways of being and knowing. Such an approach also engages transdisciplinary (often including artistic) methods of research to challenge disciplinary orthodoxies and further 'a posthuman politics of affirmation' (Goodley et al., 2018, p. 345). I propose in Chapter Three that this is the productivity that speculative practices can bring - unearthing the agential dynamism entangled within multiply-named transcorporeal relations.

Names *are* in motion as selective mutism agencies (such as the SMIRA network[13]) advocate for a change of label to 'situational mutism', to better reflect the environmental stresses affecting not-speaking and reduce common misconceptions of defiance or oppositional behaviour (Johnson & Wintgens, 2016; Kovac & Furr, 2019), which I will discuss in the next sections. However, it still feels like this generative motion, even with a groundswell of support behind it, may still be inadequate for what is at stake here whilst situational mutism remains delineated by pathologising behavioural theories, continuing to place the burden of change on the child. This thesis tries to resist the injustices of disabling labels and emphasise the entangled relations, or agential cuts, produced in alternative 'somatic, psychic, technical and historical' ways of being and knowing (Murris and Fullagar in Murris, 2021, p. 63) that nonlingual bodyminds are familiar with.

[13] See: http://www.selectivemutism.org.uk.

2.2.2. Psycho-pathologised bodies

> *'Neurotypicality is as much a construct as any other identity politics, and yet it is perhaps even more insidious for, in most cases, it remains almost completely backgrounded in experience. We learn so early that body and world are separate, that intentionality trumps mutual determination, that intelligence is defined by rationality, that thought is conscious and ideally linguistically articulated, that sitting still is necessary for learning, that daydreaming is a waste of time, that the edgings into perception that distract us (or, more likely, attract us) are hallucinations, that the act belongs to a subject, that we often don't realise to what degree neurotypicality works as the very definition of human existence.' (Manning, 2016, p. 129).*

The defining straitjacket of the diagnosis

Having explored the perspectives of nonlingualism as a dis/ability, I now turn to examine how the psycho-pathologisation of situational mutism plays out in young bodyminds. Around 1% of the population is diagnosed with selective/situational mutism (Oerbeck et al., 2018), rising to 2.2% in bilingual children from migrant backgrounds (Elizur & Perednik, 2003) where mutism is experienced in both languages. Classified in psychology as an 'anxiety disorder', selective/situational mutism is defined in the Diagnostic and Statistical Manual of Mental Disorders (DSM-5) as a 'consistent *failure to speak* in specific social situations in which there is an *expectation for speaking* (e.g., at school), *despite speaking* in other situations' (APA, 2013, pp. 8, emphasis added). Diagnoses are considered after at least one month of non-speaking, excluding the first month of school, and cannot be attributable to learning a new language or another 'disorder', such as autism.[14]

It seems that, by positioning not-speaking as a binary opposite to becoming *fully human*, situational mutism is cast in one foul swoop as an anti-social state that is undesirable by 'normal' humans. Not-speaking is outcast. Furthermore, I suggest, the idea of not speaking 'despite' speaking elsewhere infers the fault and responsibility of the (non)speaker for not squaring up to the 'expected' state. I argue that, in one sentence this official definition, with its three-fold emphasis on 'speaking' and not one recourse to the entangled roles of

[14] Studies on the biological heredity of SM suggests that there is often a family history of mutism over more than one generation, although SM is considered genetically complex and shares parts of its aetiology and genotypes - especially around social anxiety - with some autism constellations. Some recent studies also show significant correlations between 'susceptible' genes across both SM and autism (Muris, 2021; Stein, 2011; Wong, 2010).

environments, cultures and politics in manifesting nonlingualism, becomes a damning indictment of bodily difference, and one that is found to be universally acceptable in the fields of health and developmental psychology. But, as Walker articulates, '[t]he choice to frame the minds, bodies, and lives of […] any neurological minority group in terms of pathology does not represent an inevitable and objective scientific conclusion. It is merely a cultural value judgement' (Walker, 2021, p. 126).

Oddkin stories of nonlingual ways

Situational mutism is commonly thought to begin between ages two to five (Muris & Ollendick, 2021), triggered by transitions like starting nursery or school (Johnson & Wintgens, 2016) and may also have genetic predispositions linked to social anxiety disorder and autism (Muris & Ollendick, 2021). In addition, despite the 'the artificial boundary that classification systems have placed between both disorders' (2021, p. 289) several studies show that up to 80% of children diagnosed with situational mutism 'scored above the cut-off on the autism probability index' (2021, p. 299) and that, genetically, situational mutism, social anxiety disorder and autism appear to share the same susceptibility gene, CNTNAP2[15] (Stein et al., 2011). The over-focus in clinical studies on individual biological or genetic susceptibility coupled with a dearth of political ambition for changing the environments occupied by young bodyminds during those susceptible ages, suggests that the 'anxiety disorder' classification for situational mutism only tells a partial story.

According to Vogel et al (2019), children with situational mutism have high levels of social fears, fears of making mistakes, language-related fears and voice-related fears. They experience heightened sensations that leave them feeling exposed in social environments, sometimes resulting in a frozen posture. I am struck here by the rhetorical 'catch-22' nature

[15] Interestingly, whilst autism is defined as a neurodevelopmental disorder (not an anxiety disorder, as with selective mutism), it has a wealth of funded research and economic drivers behind it. Yergeau describes how large-scale pharmaceutical, tech, education and policy-based projects have a vested interest in retaining the status quo of diagnosable dis/abilities, citing the value of the autism care industry in the US alone at $3m per person (for lifetime care) and noting the close association between this and the *600% increase* in diagnoses in recent years (Yergeau, 2018, p.10). This is in stark contrast to the dearth of selective mutism research, despite selective mutism being almost half as prevalent - whilst autism affects 1 in 68 children (Yergeau, 2018, p.11), selective mutism affects 1 in 140 (APA, 2013).

of anxiety where the bodymind's autonomic response to the initial fear, a chameleonic attempt to become less visible, often attracts yet more uncomfortable attention to its extreme stillness. This seems to be a common story of nonlingual bodyminds standing out despite trying to blend in. It begs the question, in what ways could health, education and social systems operate to render a nonlingual bodymind productive of what it can do rather than othered for what it can't?

Gensthaler et al (2016) and Vogel et al (2019) demonstrate that anxiety responses manifest physiologically, sensorially and emotionally, with an intense over-stimulation of the sympathetic nervous system leading to a shutdown of the speech centre in Broca's area of the brain. According to psychologist Van der Kolk (2015), 'without a functioning Broca's area, you cannot put thoughts and feelings into words' (2015, p. 43). The importance of this is stressed because Broca's area acts as an intermediary between the temporal cortex, which organises incoming sensory information, and the sensory-motor cortex, which carries out the movements of the larynx, pharynx, palette, tongue and mouth (Flinker et al., 2015). It seems the tools of social interaction and collaborative attunement - both verbal and sensory - become inaccessible to a nonlingual child at the very time they are considered indispensable, like kin becoming estranged. With vital organs missing-in-action, divergent bodyminds sometimes become more attuned to sensory oddkin which manifest in repetitive movements or intimate touch such as with hair, shoe rubber, tactile objects, jumping or rocking actions, oddkin which become animated through sensing practices, as I will explore later in this thesis.

Not only is the world leaking into the nonlingual, sensing bodymind but, according to Van der Kolk (2015), the effect of anxiety on the gut, brain, muscular, psyche, sensory and nervous systems curtails the leaky extension of intra-actions into the world. In this situation, the opposite of self-regulation is happening, which isn't de-regulation but oppression. This is why I contest the practice of categorising anxiety-defined behaviours in nonlingual children as symbols of 'non-compliance', marking a child out for treatment as if they alone could 'resolve' the worldly leakages affecting nonlingual ways of being. For instance, despite the strangeness of the research environment during my fieldwork sessions, one nonlingual child's enthusiasm to participate seemed so fearless, joyful and productive that the use of typical behavioural descriptors, such as 'non-compliant', 'reticent' or 'refusing' would seem far from apt. There

seems to be so much more to not-speaking than can be encompassed in psychologised terms. Perhaps the lack of a taxonomy to describe the oddkin stories of nonlingual ways of being is what prevents certain fields moving beyond ideas of enforced self-mastery to 'overcome' the 'undesirable'.

Problematising therapeutic treatments

Speech and language therapists (SLTs), Johnson and Wintgens (2016) enjoy a dominant market position having produced treatment guidelines for situational mutism that are widely used on a commercial basis by SLT professionals across the UK and internationally. Johnson and Wintgens argue that early intervention by teachers, parents, SLTs and psychologists effectively *reduces* situational mutism symptoms and *increases* speech. However, 'progress' is not universal, and it remains unclear whether increased speech is due to learned coping strategies, environmental changes or the 'overcoming' of speech-related anxieties. Johnson and Wintgens strongly endorse speech-focussed strategies, asserting that arts-based therapy, whilst providing temporary enjoyment, often '*delays, rather than facilitates,* progress' (2016, pp. 25, emphasis added). Despite this bold claim, recent studies on situational mutism and arts therapies (Erickson, 2012; Fernandez et al., 2014; Jones & Odell-Miller, 2022; Lebedeva, 2012; Petrenko & Filippov, 2017) attest to highly generative conclusions for non-speaking children. These conclusions do not revolve solely around speech outcomes but emphasise the inseparability of other, equally important, parameters for measuring 'progress' in nonlingual lives. This leaves me curious as to whether the broadly uncontested DSM-5 diagnostic criteria[16] coupled with Johnson and Wintgens' (2016) single-focus treatment guidelines, along with a dearth of broader research avenues other than SMIRA's well-established work, might overshadow alternative possibilities for nonlingual ways of expression?

Whilst arts-based practices can cultivate speculative conditions for different ways of being, this research is not designed to offer a therapeutic approach with the underlying purpose of

[16] The DSM-5 has been put together by many specialist clinicians and is internationally recognised by medical and health professionals as the point of reference for universally identifying and treating psychological symptoms. It is the benchmark by which 'experts' tell a singular story of others' multiple identities (Yergeau, 2018). However, individual 'disorders' are only reviewed sporadically and take many years to be updated as research advances.

'fixing' a bodymind. Which is not to say that the activities the children and families engaged with during this research were not helpful – or even therapeutic. But that the pathologisation of situational mutism treatments can create an expectation of reverting divergent behaviours to a clinical 'norm'. This assumption of working towards a neurotypical bodymind that often aggravates a divergent bodymind stands in opposition to my values as a researcher, artist, pedagogue and parent. Indeed, '[s]ymptoms only take us so far – and the landing point is generally a sterile one. When I describe my bodily comportment in terms of symptoms, I reduce how I move through physical space to a mere check box on a patient intake form' (Yergeau, 2018, p. 13).

Differently describing divergent ways of being

If nonlingual bodyminds can never be considered *fully human* using terms such as dis/abled, neurodivergent, atypical or having a 'dis/order', how should we talk about what is happening here? This is a question that continues to bubble away at the heart of this research; one that is not necessarily resolvable but seems important in relation to how expressive bodies-without-words are described and valued. In their research into the categorising affects of silence in early childhood settings, Watson et al (2020) similarly remove references to the 'discursively produced labels and associated homogenising characteristics' that mark a child as less-than, because '[m]aking no mention of the diagnosis is one way of disrupting acknowledgement of it, of refusing to be 'in the know' ' (2020, p.105). Actively not being 'in the know' also suggests being open to 'not knowing' which is, paradoxically, how many divergent bodyminds feel when navigating normative worlds designed for non-divergence. With this in mind, I focus on the productivities of bodyminds intra-acting through nonlingual ways of being, charting a different kind of 'progress' that has little to do with diagnostic assessments. I harness Manning's idea of bodying (more of which in section 2.3.1.) which is also a refusal of body-defining knowledge. Rather, bodying 'encourages a living in the register of the more-than, a living beyond a dichotomy of the human and the nonhuman and all the categories that maintain the whiteness of neurotypicality as the baseline of existence' (Manning, 2020a, p. 219).

In my subversive refocussing on nonlingual ways of being, I am reminded of what Braidotti terms the 'posthuman condition' which 'urge[s] us to think critically and creatively about who and what we are actually in the process of becoming' (Braidotti, 2013, p. 12). This is not a 'condition' in the medical sense but a series of spaces, apparatus, desires and forces for reimagining the taken-for-granted ideologies of ableism by prioritising *relations-between* elements rather than *abilities over*, where 'competence is a distributed phenomenon rather than an individualised trait' (Goodley et al., 2014, p. 10). Thinking with nonlingual bodyminds as distributed, situated, relational, porous, differentiated and intra-sectional, this research looks beyond the human condition that continually psychologises and pathologises divergent ways of being and knowing. In the next section, I delve into critical posthuman early childhood studies to examine how decolonising the divergent bodymind requires a 'call for an antipsychological approach' (Burman, 2012, p. 433).

2.2.3. Developmentalised bodies

> *'In the preschools there is an ongoing struggle to regain movement and experimentation in subjectivity and learning […] there is a need to work out how to turn the focus on positions […] into a focus on movement as something that forgoes positions and thereby opens up possibilities for collective and intense experimentation' (Olsson, 2009, p. 48).*

Disrupting colonial developmentalist narratives

While the focus of this research is on more-than-human, relational ontologies, it builds on feminist poststructuralist research in early childhood, which disrupts 'taken-for-granted truths about children, childhood innocence, developmentalism, and heteronormativity' (Osgood & Robinson, 2019, p. 6) and demands a more agentially-distributed view of children. Feminist postdevelopmental thinking destabilises the taken-for-granted narrative about homogenised bodyminds that underpins historical frames, such as cognitive developmental theory (Piaget, 1973), biological maturation theory (Gesell, 1971), socio-developmental theory (Bruner, 1996; Vygotsky & Cole, 1978), experiential learning theory (Kolb, 1984), multiple intelligence theory (Gardner, 2011), and other psychology-based models that largely underpin Western teaching and learning frameworks (Kromidas, 2019). Postdevelopmental scholars note that the application of these 'developmentalised' theories in educational policy have led to homogenised, normative assessment-based practices which establish fixed precedents of what a child *should* be capable of (Burman, 2017), a theme that resonates closely with the pathologising tropes I have already discussed.

Maria Kromidas (2019) applies the work of black studies scholar, Sylvia Wynter to demonstrate the stark details of colonialism in curricular structures and content. Kromidas' research shows how educators are tasked with responsibility as a 'civilising agent' (2019, p. 66) who must apply the foundational elements of biology, psychology, sociology and anthropology to grow, develop, socialise and enculture children's minds and bodies, in preparation for continuing the evolutionary baseline as an adult. This baseline might sound innocuous but is far from it. As Kromidas highlights, the practice of becoming a fully 'developmentalised' human requires evaluation and ranking within a hierarchy of ethnicity, gender, class, ability, and many invisible criteria that 'regulate and fashion [children] into a

pre-established Western bourgeois template […] defined by the rigid biologized demarcations of race' (2019, p. 72) that have already condemned Black, brown and poor children. I wonder how children of colour who attend early years settings and are taught through the same curriculum as the white participants in this study are expected to 'develop'. This seems a valid question since this study was not able to recruit black and brown children (which I address in section 7.3.) despite that the diagnoses of nonlingualism appear to be higher in marginalised families (Elizur & Perednik, 2003). Perhaps this belies a deeper systemic racism where all children are exposed to an educational model of language which 'assesses a narrow subset of language skills, fails to value cultural diversity, downplays the importance of culturally relevant texts and measures all children against the linguistic forms of the white, middle classes of the global North' (Hackett, MacLure, et al., 2020, p. 915).

Building on Wynter's insights, Kromidas offers two productive paths to counter the institutionalised white supremacy within curricula and 'dismantle the power of this [*developmentalising*] apparatus' (Burman, 2017, pp. 289, emphasis added). The first is to invite children's accounts of worlding experiences on their terms, which offer a different, nuanced and situated sense of being and becoming 'child'. This is not to downplay the embedded damage already wreaked across generations of marginalised communities, but to reverse the developmentalist shaping 'in a way that allows us to be *affected* by children. Such portraits centre children's perspectives and capture their exuberance, alterity, playfulness and incommensurability' (Kromidas, 2019, pp. 83, original emphasis), which I hope to do in the agential cuts of this thesis. Secondly, Kromidas urges a radical reconceptualisation of Black, brown and poor children's worlds, to acknowledge children's ways of being as more-than the socially constructed, deficit categories in place 'that reveal the poverty of white Western bourgeois values, ethics and ideals' (2019, p. 83).

Positioning educators as guardians of civilising ideologies

Kromidas' work signals ways that developmental approaches position the teacher's role as chief judge and jury, not only of progress made, but of a child's '*capacity* to develop.' Accordingly, '[b]oth the right and duty to issue such a decree and the notion of capacity itself were shot through with white supremacist ideology' (2019, pp. 72, original emphasis).

Furthermore, in interrogating several mainstream syllabi, Kromidas exposes the dangers of such authoritative curricula frameworks in presenting normative notions as rational to the (developmentalist-trained) educator, firmly placing the responsibility for not meeting those standards on the shoulders of the teacher for failing in their duty as a 'civilising agent' or on the differently capable child for lacking something or, worse, being genetically *defective*, the implication being that these children are 'uneducable and destined for marginality' (2019, p. 75).

As an example, the US model of Developmentally Appropriate Practice (DAP)[17] is widely used in education settings and has influenced curriculum design globally towards an 'international mainstreaming' of DAP (Lenz Taguchi, 2010, p. 7). It promotes a linear progression towards the achievement of 'natural' and 'universal' milestones of learning which assume that *each stage of maturity is better than the last.* Through this approach, a child is taught, observed and assessed by adults (assumed to be fully 'matured' themselves when they reach the 'legal' age of adulthood) as if the child is a passive, dependent, not yet 'fully-formed-human' (Murris, 2016, p. 80). The same child is also expected to be autonomously accountable for their own learning (ignoring the entangled agencies of materials, spaces, histories and other nonhumans) and for their failure to 'develop appropriately' against these age-related milestones, as if there is 'a supposedly coherent narrative that represents truth' (Jackson & Mazzei, 2012, p. viii) about children's development and learning. Moreover, each developmental 'stage' is further divided into social, physical, emotional, moral and cognitive categories, so that each can be measured for 'progress'. This standardised model, underpinning many education policies, can result in viewing complex processes in isolation rather than as 'intrinsically interrelated functions that all work together in the production of change' (Dahlberg et al., 2013, p. 46).

This simplifying of complexity, which seems to have become so endemic in early education, either invisibilises children's differences, turning 'the Other into the Same' (Moss, 2014, p. 42), or marks differences out for being 'inappropriate' and unacceptable. In so doing, these grand narratives serve to perpetuate systems of homogeneity, inequality, racism, ableism, gender and other oppressions which engender exclusivity (Murris, 2016, p. 78),

[17] See: https://www.naeyc.org/resources/position-statements/dap/purpose

neurotypicality (Manning, 2016, p. 3) and disembodiment (MacLure, 2016, p. 180), implicating some children as 'suffering' from 'developmental delay' before they have even started school. This is the story that several of my research participants were absorbing into their bodyminds as they approached the research sessions.

As Gallacher (2020) reflects, developmental milestones have become so deeply embedded in the human psyche that 'we do not tend to think of [them] as a developmental theory at all, but as the natural truth of childhood growth and change' (2020, p. 5). This presents challenges for the early childhood sector in aligning the heterogeneous, more-than-human knowing and being that children engage in with the homogenous developmentalist theories, practices and infrastructures in which educators, artists, special educational needs and dis/ability (SEN-D) support staff are expected to work. Dalhberg, Moss and Pence encourage educators to resist essentialist truths and consider the many constructions of the notion of 'child' in all its different contexts, to ask whether the main purpose of early education might not be about achieving outcomes, and if quality should be a choice rather than an imposition (Dahlberg et al., 2013). Educators and carers are frequently positioned in a double-bind where their own ethics, values and passions for teaching and care are in conflict with hegemonic systems designed to 'schoolify' young bodyminds. I found the same to be the case with the parents in my research families, all degree-educated professionals, who reported their struggles in feeling inadequate to support their children through such developmentalist systems which seemed to categorise their child as 'disadvantaged' before they had even stepped foot inside the school gates.

The schoolification of divergent bodyminds

One example where UK educators have loudly vocalised their resistance is towards the recently implemented Reception Baseline Assessment (RBA)[18] introduced to prepare educators to 'schoolify' young children entering school (Roberts-Holmes, 2015). The RBA involves literacy and numeracy targets being measured in four-year-olds through a 20-minute test in the first six weeks of school, with answers required verbally in English. The

[18] See: https://www.gov.uk/government/collections/reception-baseline

prioritisation of verbal modalities seems biased against nonlingual children, or children without English as a first language who might harvest somatic, ludic, gestural or haptic knowledge more readily at that point (MacLure, 2016). It also privileges children who have the reading skills required to understand the tasks, and appears open to teacher interpretation, skewed data, unethical methods and a lack of inclusivity (Moss et al., 2016).

The test seems wholly inadequate to account for the many diverse ways of creating knowledge with 'the body that the child not just has but also *is*' (Murris, 2016, pp. 88, original emphasis). Nor does it use methods that might foreground children's multimodal or sensory capabilities, such as using objects, stories, music, drawing, dance or roleplay, which might better mobilise their ideas than a rational, verbal narrative. This is one example of the incipient ways in which the *uncontested* purpose of education appears to be to discipline non-normativity through the 'schoolification' of bodyminds, trying to 'tame' them into particular cultural and social norms with standardised languages and neurotypical ways of worlding (Osgood & Robinson, 2019). Murris (2016) emphasises how 'schoolification' contributes to 'ontoepistemic injustices' against the child on three counts: 'ethically for being wrongfully excluded, epistemically for being wrongfully mistrusted, and ontologically for being wrongfully positioned as a lesser being' (Blyth, 2015, p.145 *as cited in* Murris, 2016, p.37).

To resist or reconceptualise developmentalist pedagogies, this research follows Moss's call for posthuman praxis to move away not only from human-centredness but also from child-centredness, 'turning away from the idea of the child as autonomous agent and turning towards the idea of the child enmeshed in an immense web of material and discursive forces' (in Murris, 2016, p. xi). Hillevi Lenz Taguchi also calls for the notion of standardised 'best' practices to be rethought since teaching practices are inherently embedded with the material-discursive conditions of socio-historical and political circumstances. She invites educators to critically analyse their habitual practices and actively 'find ways to make use of the complexities, differences and diversities of the material-discursive contexts we inhabit.' (Lenz Taguchi, 2010, p. 50).

Reconfiguring relational pedagogies

Developmentalism as a measure of being 'fully human' is also problematic in its overfocus on the 'discursive performativity of the body' (Lenz Taguchi, 2010, p. 14) whilst trying to move away from a solely biological stance because, '[w]hen positioning of any kind comes a determining first, movement comes a problematic second' (Massumi, 2002, p. 3). I discuss this in more detail in section 2.3.1. but the danger of losing the sense of what an *entangled* bodymind can do is what this research tries to address by shifting the focus towards the relational ontologies emerging between distributed agencies (Barad, 2007). Contemporary early childhood scholars (e.g. Burman, 2012; Davies, 2014; Fairchild, 2024; Horton & Kraftl, 2006; Murris, 2016; Osgood, 2017; Kromidas, 2019; Lenz Taguchi, 2010) put posthumanism to work to reflect the more enmeshed, distributed ways in which knowledge and meaning are created as 'an enactment, a matter of possibilities for reconfiguring entanglements' (in, Dolphijn & Tuin, 2012, p. 54). They propose intra-active pedagogies as spaces where 'children create an emergent curriculum rather than a curriculum that is 'done to' them, with all the profoundly problematic ethical and political dimensions that entails' (Murris, 2016, p. 213).

These are spaces where learning happens *between* 'the person as embodied organism and the material world' (Murris, 2016, p. 6), where it becomes possible to experience 'the liveliness of indeterminacies that bleed through the cuts and inhabit the between of particular entanglements' (Barad, 2012, p. 222). In my research, these spaces are opportunities to experience bodyminds as more-than-homogenous, without a definitive language, neither standardised by labels nor scrutinised for successes. They offer an alternative sense of growth and development towards a more heterogeneous, non-binary narrative of simultaneously being (fully human) and becoming (more-than-human) in each moment. By decentring the human, exploring the liveliness of matter and becoming open to sensory ways of being and knowing, this research contributes to the feminist new materialist discourse on what moving, relating, unbounded, sympoeitic bodyminds are generative of, opening up 'non-dichotomous understandings of child' (Murris, 2016, p. 91). As Osgood (2019) points out, where early childhood is concerned, this isn't just about reconfiguring ideas of movement. This is, in a political sense, 'a shift away from simply being concerned with supporting a child's linear growth and development towards rethinking movement itself' (2019, p. 15).

2.2.4. Represented (voiced) bodies

> *'Not being able to speak is not the same as having nothing to say, and not being able to show one's knowing in conventional ways is not an inability to communicate or an absence of knowing' (Kind, 2020, p. 55).*

The more-than-spoken of language

Subverting Haraway's famous question, 'why should bodies end at the skin?' (1991, p. 178), I ask in this section, 'why should languages end at the voice?'. In this discussion, I explore some of the problems raised by ethical practices that emphasise 'giving voice' as a means of amplifying a child's perspective. This move continues to centre the 'meaningful individual' by assuming that there is a single truth to be spoken by a single bodymind which must be 'heard' to be fully 'understood' (Viruru, 2001). This insistence on being deemed rational by being heard raises concerns about the treatment of nonlingual bodyminds. It highlights 'the crisis of representation' (Gullion, 2018, p. 78) arising from Barad's assertion that '[l]anguage has been granted too much power' (Barad, 2007, p. 132) when bodily relations become reduced to lingual descriptors in a bid to understand the meaning of everything. Paradoxically, such representations can silence young bodyminds by perpetuating social and educational inequalities (Burman, 2017) when boundaries are created between who does or does not *have* a voice. I argue later in section 2.3.3. that language does not, in fact, have enough power to unfold the diverse sensory responses and incommensurate feels of synaesthetic bodyings that are nevertheless vital in nonlingual ways of being. Meanwhile, this focus prompts me to question whose voices and interests are being represented through language (Viruru, 2001) and how speaking on others' behalf can be troublesome. It also makes me wonder, by what languages, effects, sensations or marks of alterity could nonlingual expressions be known, bearing in mind the troubling incapacity of language to 'accurately represent its referent' (Barad, 2007, p. 47)? In what follows, I explore how voice might be attended to differently as a more-than-human phenomenon, and consider what affects this produces when it exceeds the boundaries of sound, language and the human bodymind (MacLure, 2013b; Mazzei & Jackson, 2017).

Despite its democratising intentions, the practice of 'giving voice' positions adults in a power dynamic where judgements and assumptions are made at a distance from the more complex entanglements of voice (or its absence). These assumptions fix voice as a representational phenomenon that belongs to an individual, something someone *has*. Lisa Mazzei and Alecia Jackson invite me to, instead, consider voice as an enactment of multiple reverberations, revealing it as a generative accounting of relations unfolding across bodies. Here, voice cannot but defy attempts to be liberated from its 'constraints' enforced by well-meaning humans/policies/codes of conduct which deem the absence of voice as inferior. In such normative politics both speaking and hearing are privileged, authorising speech as a worthy representative of human knowledge, trustworthiness and coherence (Mazzei & Jackson, 2017). MacLure (2009) argues that the demand for voice imposes a form of signification by which a person must say what they mean and mean what they say, as if every utterance has a singular, unchanging sense. Erica Burman (2017) agrees, contesting that the assumption that a heard voice equates to a representative meaning fails to acknowledge that 'meaning is not only a free-floating linguistic array, but is also irreducibly tied to material, political structures' (2017, p. 224). In other words, meaning is not generated through linguistics alone.

To acknowledge the intricate interplay of material and discursive complexities tied up in notions of voice, Mazzei and Jackson (2017) refuse to calibrate voice to human intentionality or treat it as a binary of 'either pure cause or pure effect' (Barad, 2007, p. 136). They argue that voice is one element within an 'agentic assemblage' of social, cultural, environmental and technical components - both human and nonhuman - which are never fully constituted but always in motion. Thinking-with the forces produced in such motion makes it easier to grasp the agential inseparability (Barad, 2007) of vital materialities that constitute nonlingual modes exceeding language or meaning, such as gestures, utterances, histories, environments, atmospheres, and socialities.

Mazzei and Jackson (2017) emphasise the importance of acknowledging the dynamic forces 'of all sorts of voices (human and otherwise) that attach in an agentic assemblage to mark new territories and to create new becomings and different conceptions of voice' (2017, p. 1093). This articulates the crux of my research: rather than constraining speaking or silence to rigid categories of adequacy, I am interested in how nonlingual ways of being can function

generatively when thought of as exceeding the individual, in other words, co-composed with other vital materialities (Kind, 2020). Sylvia Kind talks about the act of joining in with the co-motion and co-compositions of children's ideas as living inquiries and ethical processes 'where we are learning to move together in a responsive and ongoing exchange' (2020, p. 52). Thus, I think about the idea of voice as a co-composition of more-than-human, entangled bodies and ask, what does it produce? And what does not-speaking do to the idea of adults longing for children to have a voice - what is being co-composed here?

Barad urges posthuman practices to work at the 'limits of humanism' (Barad, 2007, p. 428) by disrupting normative assumptions around language. This research aims to do this by reconfiguring what more-than-spoken language does, exploring voice as both material and discursive, human and nonhuman, and a producer of many kinds of entanglements. I interrupt this literature review with an example of this in practice and how it informs the study. During the fieldwork, one of the participating mums spoke of when an unfamiliar adult attempted to alleviate her daughter's anxiety assuming that, since speaking is the 'norm', not-speaking is merely a puzzle to solve. She related her concern about well-meaning adults assuming it would just take the right question, smile, eye contact, head rub, knowing look, or other reassurances to boost a nonlingual child's 'confidence' enough to talk. This mum shared how they even altered their route to nursery to avoid an enthusiastic neighbour's insistence that 'one day, I'll get her to talk!' What appeared as a gesture of friendliness and eagerness to engage seemed to produce many conflicting intensities revealing a tangled web of developmental expectations, emotional affects and awkward responses.

Thinking of Mazzei's call to 'interrogate our own interaction with voices' (Mazzei, 2009, p. 79), I kept in mind this example as a basis for 'listening to' what both the lingual and nonlingual voices produced in this research. I was aware that I could never quite grasp what was meant by the neighbourly gesture since, '[v]oice always evades capture. Something is *always* lost in translation' (MacLure, 2009, pp. 98, original emphasis) and I let my hunger for understanding the situation fall away. With this fell judgement, measures of acceptability, objectivity, and - to a degree - my sense of self as other. Rather than focussing on the potential injustices of who said what, I tried to sense beyond the voice and imagine networks of intensities across the more-than-human bodies present. I attended to their material, visceral, emotional,

atmospheric, historic and social effects, imagining how these implicate nonlingual bodyminds in histories of awkwardness and exclusion. I considered how a neighbour's minor gesture of care could be tangled up with broader historical assumptions about the incompetence of divergent bodyminds (Braidotti & Bignall, 2019; Manning, 2020a), revealing matters of concern that nonlingual behaviours might not be representative of rational bodies (Yergeau, 2018). Also wrapped up in these tentacular threads was a mum's act of care to make life liveable and render nonlingual ways once again *response-able* by re-routing their walk to nursery. These minor gestures were imperceptible to the other and yet changed the course of life events. They were also micro-politics, continuations (in different directions) of many histories, manifesting in the ordinary performative relations experienced by families every day. These were important indicators of nonlingual ways functioning at the limits of language (MacLure, 2013b), and on the edges of practice (Mazzei, 2014).

I was also implicated in this example not just through my social identities as a researcher and a parent, but also as a synaesthetic bodymind that already sensed the jarring vibrations of social awkwardness. I felt-with the alterity of these reverberations and considered how this research could afford space for not-talking to open-up and dwell more easily within the world (Kind, 2020). Encouraged by MacLure's call to resist the temptation to revert to social or philosophical scrutiny, I tried to 'cultivate instead an alertness to the vitality of small, energetic events and the transversal associations that these might afford' (MacLure, 2024, p. 247). During the telling of the *friendly neighbour* event above, and whilst listening to mum's stories, I became aware of her little girl watching my face with a vitality of small gestures appearing on hers. We began to create odd facial gestures together, screwing up noses, making wiggly mouths and going cross-eyed; perhaps an oddkin response to accompany the awkward feelings that were produced through these entangled voices. It reminded me that, as a bodymind present in the retelling of this story, I was also included and implicated in its entanglements (Barad, 2007). I felt like Holmes (2016) who, in resisting the humanist framing of an unexpected event in the playground, 'traces a transversal path set in motion by the felt violence of the data event as it "gnawed" at her body, fabricating a "monstrous" synaesthetic creation of "fibre-flesh-effect"' (MacLure, 2024, p. 247). Questions about whose world is privileged here became acute, knotty and too fast to parse, their complexity blurring clarity of thought. The entangled voices of social, political and colonialist pasts produced intensities

which already existed within the patterns of diffractive forces where not-speaking is already of the world.

> *'Bodily yet linguistic*
>
> *Articulate yet intimate*
>
> *Explicated yet ambivalent*
>
> *Specific yet multiple stories*
>
> *Non-linear yet written in sentences' (Osgood & Hackett, 2024, p. 12).*

Therefore, having read this participant's story diffractively through the work of Mazzei (2017) and Barad (2007), I propose to think of voice not as as biological but as an intra-active phenomenon moving through the multitude of possibilities unfolding in each agential cut, each one of which produces intensities that require anything but language to parse. Perhaps sitting with such intensities, letting them move me without words, helps to create new languages that rely less on what I think is being represented and 'cultivate instead more haptic or synaesthetic modes of sensing' (MacLure, 2024, p. 247). Nonlingual ways of being become generative by thinking of *voice as always more-than-human* and entangled with the already circulating forces emanating from the sensory and ecological relations within their orbit (Massumi, 2002).

Working with the alterity of silence

The example in the story above amplifies MacLure's account that 'silences confound interpretation and manifest, intolerably, the illusory status of speech as full "presence," as living voice' (MacLure et al., 2010, p. 495). Without this 'living voice', a child is perceived as incapable of bringing to bear any valuable intelligent or sensory contribution to the situation. By this, children may be judged uncivilised and unsocialised (Viruru, 2001), incomplete humans (Murris, 2016), or 'incompetent as communicators and ineffectual as agents of their own well-being' (MacLure, 2009, p. 109). Perhaps positioning silence not as absence but as presence (Mazzei, 2007), becomes a powerful way of knowing, a presence with other ways of bodying, rather than as 'less-than' language. Perhaps this might help the notion of voice to

become co-constituted within alternative bodyings, exceeding the boundaries of pedagogically territorialising forces (Murris, 2021), and imagining what bodies-without-voices can do. In considering the many ways in which nonlingual gestures can be expressed, MacLure et al ask how education practices can 'work with the alterity of silence, rather than seeking to cure or compensate for its necessary insufficiencies?' (2010, p. 492).

Mazzei and Jackson (2017) encourage three moves when considering voice differently. First they emphasise paying attention to the diverse spatial and temporal dimensions of voice, including the entanglements within its enactments as they re-territorialise the space, for nothing exists separately since 'relata do not preexist relations' (Barad, 2007, p. 140). Second, they propose resisting over-simplified representations of voice by adopting diffraction in data analysis, seeking points of intra-action that produce different becomings rather than interpretation of fixed ideas. Third, they suggest reconsidering research methodologies to generate a broader range of questions and practices that are open to 'the present-ness and potentialities of that which did not unfold lineally via neat and tidy causality' (Mazzei & Jackson, 2017, p. 1096). Through these moves, silent or silenced bodyminds become uncontainable because 'The performance of silence draws its power, as we have seen, from its ambivalent status and location - between sincerity and mockery, between the offering, and the withholding of meaning' (MacLure et al., 2010, p. 498). While I have explored the encounter above using these three moves, I also suggest that sensing the entanglements through a synaesthetic mode opens voice to a multitude of experiences, agencies and connections that may not be articulable nor interpretable but nevertheless emerge within intra-actions (see section 2.3.3. for more discussion on synaesthesia).

To further explore these issues, I will outline the complexities of these entanglements in Chapter Three, illustrating the necessity of a speculative approach to fragment, un-see, un-hear, and un-learn the established narratives and images of the speaking, self-contained individual. Mapping the affects of entanglements responds to Barad's (2007) call for a 'methodology that is attentive to, and responsive/responsible to, the specificity of material engagements in their agential becoming' (2007, p. 91). My mapping will aim to open material-discursive intra-actions that language cannot represent but are immanent in the relations, movements and sensations manifesting within each cut (and what is excluded from the cut).

This approach allows for an exploration of agential forces and intensities beyond intentionality, rationality or representation, where voice (or, nonlingualism) is not extractable as a stand-alone attribute of a human subject, but as a doing - an agenting - of manifold constituents. Animating the vital materialities affecting voice, such as tones, textures, rhythms, relations, affects, spaces, politics, privilege and critiques, fosters a closer attentiveness to everything in play, 'especially the fragility and failure of voice to provide coherence, comfort, and presence' (Mazzei & Jackson, 2012, p. 750). Through these efforts, this research seeks to disrupt orthodox concepts of the essentialism and sovereignty of the human voice and challenge the identifying marks of voice as the only way humans and non-humans can be 'known'.

2.3 Conceptual perspectives of nonlingual bodying

Following on from my thinking about how divergent ways of being are othered, this second half of the literature review delves into the intricate dynamics of how nonlingual bodily expression is produced across more-than-human relations, offering alternative views of what an *entangled bodymind* can do. To underpin the notions of entanglement and fluidity in all movement, I explore how these dynamics intertwine modes of relational becomings (Nxumalo, 2012) which embrace sympoietic (Gilbert et al., 2012; Haraway, 2016) and embodied and embedded (Braidotti & Bignall, 2019) becomings. I focus on Erin Manning's (2020a) concept of *bodying* to think beyond human bodyminds and acknowledge that a body is always *more than one*, which implicates all entangled constituents in rendering each other response-able for bodying as well as possible.

As Alaimo (2008) reminds me, it is not just language that determines how bodyminds are and what they can produce. She argues that an over-reliance on lingual descriptors, classifications and measures of 'identity' can lead to an erasure of the relationalities and movements that make up the complexity of bodyminds. To be clear, I am not examining sociolinguistic models or factors influencing communication flows. Such an approach would re-turn the discussion to anthropocentric theories which centre speech as the defining essence or function of being 'fully' human, often portraying nonlingualism in deficit terms. Instead, I continue to play in the posthuman pluriverse (Fairchild, 2024) where bodying (Manning, 2016) through transcorporeality (Alaimo & Hekman, 2008) and sensing practices (Gabrys and Pritchard in Braidotti & Hlavajova, 2018) can be generative of different ways of being across human and nonhuman bodies. I consider how material, sensory and transcorporeal practices go beyond social constructions of identity, opening up possibilities for what nonlingual ways of being can do within collective, transcorporeal relations, and their potential for creatively supporting synaesthetic ways of becoming. I turn to the subject of synaesthesia as a nonlingual way of being with the world or, as Brian Massumi describes it, 'a body directly absorbing its outside' (2002, p. 29) and consider what synaesthesia produces when considered the dominant language of nonlingual and divergent bodyminds. Finally, I introduce diffractive approaches to bodying that offer alternative ways to put to work these relational, embodied and embedded becomings (Braidotti & Bignall, 2019).

2.3.1. Response-able bodying

> *'A body is a field of relation out of which and through which worldings occur and evolve. We know neither where a world begins nor where a body ends' (Manning, 2016, p. 191).*

From individual embodiment to distributed bodying

Throughout my research I have considered how nonlingual bodyminds intra-act and articulate in manifold, intricate and responsive relations. Although we often think of nonlingual bodyminds as human bodyminds which do not speak, I want to focus on how these relations can be considered as more-than what a human bodymind *is* or *does*. In what follows, I consider how the notion of human bodyminds can be reconfigured as a more-than-human *bodying*, in other words, 'a prelinguistic […] process of becoming' (Manning, 2016, p. 189) or as *embodied* and *embedded* worldings (Braidotti & Bignall, 2019). As such, bodyminds become implicated in response-able bodyings, rendering each other responsive, as I will unpack below.

I begin by setting out two different viewpoints on what a bodymind can do, founded in the concept of embodiment. In the 1990s, neuroscientists Francisco Varela and Humberto Maturana challenged Cartesian dualisms by coining the term 'embodied cognition'. They posited that cognition is the *product* of embodied action, encompassing a (human) bodymind's *distributed* and *situated* sensorimotor experiences. In his theory of autopoiesis, Varela (in Maturana & Varela, 1992) demonstrated how knowledge emerges through the interplay of bodily (human) and worldly (nonhuman) systems to form a lived experience shaped by attunement and self-regulatory dynamics. Their ideas significantly advanced developmental perspectives on embodiment, moving beyond a technique-based understanding where motion is solely viewed as locomotion from one point to another, and the bodymind merely as a means of transport for the brain (Batson & Wilson, 2014).

In the early 2000s, phenomenologist Maxine Sheets-Johnstone expanded this perspective asserting that movement, beyond physical action, embodies a primal intentional consciousness (2015, p. xxiii) which is not about cognitive matter *per se* but about 'dynamic energy' (2011, p. 401). She proposed that invisible or imperceptible forces inside living bodies

and organic systems are in 'a process of becoming […] a concept of living matter, that is, matter in motion' (2011, p. xxiii). Sheets-Johnstone suggested this complexity underscores the primacy of the corporeal, kinaesthetic, proprioceptive and sensory dimensions of living matter, contending that 'rather than speak of the period before language as the *pre-linguistic*, we should speak of the advent of language as the *post-kinetic*' (2011, pp. xxxi, original emphasis). However, this significant insight tends to be overlooked by western curriculums, as previously discussed in section 2.2.3., where milestones are presented as 'natural' biological developments or 'corporeal matters of fact that define our lives from infancy onward' (Sheets-Johnstone, 2011, p. xvii).

Entangled with the corporeal multimodal dynamics inherent in bodies-in-motion, comes the 'engage[ment] of all cognition: perception, attention, intention, intuition, decision-making, memory and more' (Batson & Wilson, 2014, p. 37) through intra-actions in the world. Here, Sheets-Johnston posited that being 'embodied' encompasses the being and becoming of ideas as experiences through more-than-human relations, beyond a fixed state of mind or body, because 'thinking in movement is not an assemblage of discreet gestures happening one after the next but an enfolding of all movement into a perpetually moving present' (Sheets-Johnstone, 2011, p. 425). This resonates with my research, prompting me to explore the movements of the research participants not in a linear fashion as a cognitive response to the materials, spaces, and atmospheres present, but as a continual folding and unfolding of relations between them all, as 'bodies-in-motion'.

Nonetheless, this phenomenological perspective neither accounts for the ways bodyminds matter beyond the container of the skin (Manning, 2009b), nor does it engage their ongoing mutations with worldly matter. As I have previously discussed, a posthuman new materialist account disrupts the individualist notion of humans as agents with their own volition and reconfigures embodiment as a 'relational materialdiscursive worlding process in-between human and nonhuman bodies' (Murris et al., 2018, p. 29). I take this to mean that all matter remains lively (Bennett, 2010), due to the myriad relations occurring at material (organismic, atomic, atmospheric, affective, spatiotemporal) -discursive (historical, conceptual, cultural, genealogical, symbolic) levels. Therefore, it is not the ability to breathe but the very *embodying* and *embedding* of the material-discursive that animates a bodymind's liveliness;

its agenting and intra-acting (Braidotti & Bignall, 2019). This is important because when human and more-than-human ecologies are separated, 'language can have limitations in flattening out the mind-body binary' (Murris, 2021, p. 13). For instance, studies in dance, movement, somatic and health use terms such as 'embodied minds' and 'mindful bodies' which can reinforce the Cartesian separation of 'mind' and 'body'. Moving away from this tendency, Murris suggests the term 'bodymind', which I adopt throughout my thesis, to signal an entangled and inseparable materiality, where 'body' and 'mind', as with 'material' and 'discursive', are simultaneously produced (2021, p. 7). That said, there is a tension in *how* to practice thinking-with bodyminds-in-motion, and que(e)ry individualist or representational approaches, in research which directly engages young humans at the heart of its recruitment, fieldwork and ethics practices, of which I remain mindful.

Bodying as always more than one

Manning (2020a) offers another way of thinking beyond human bodyminds through the idea of *bodying*. In using a verb, Manning reminds us of the field of forces affecting a bodymind's 'individuations', composed of its circumstances, ecologies, histories and 'futurities that give it potential or unmoor it from the grounds of its participation in the world' (Manning, 2020a, p. 218). By 'individuations', Manning is referring to a process of always becoming-different from a position of the preindividual rather than a sense of individualism. This is about a force of living which exits *a priori* a human bodymind, or 'the more-than of human life where the body is but one verging surface on the field of experience, where the body is always more than One' (Manning, 2010, p. 117).

Aligned with Barad's theory of agenting as a *doing*, bodying helps me to consider bodies-in-motion as distributed *agential doings* or, 'a congealing of agency' (Barad, 2007, pp. 183-184), in continual, iterative transformation. Bodying seems to encompass a continual diffraction process where skin is not the mark of a border but of 'a territory […] of interference' (Lenz Taguchi, 2010, p. 48) at the intra-action of material-discursive phenomena. This is especially true when divergent bodyminds are organised and defined by reductive classifications, 'imposing an identity onto them that cannot be assimilated […] precisely because of the threat of bodying' (Manning, 2020a, p. 218). Manning emphasises how any referencing to

humans as a singular "we" that can be identified and measured 'would be to underestimate the creativity of our movements. It would make us human, all too human, when in fact our bodyings are transversal, collective before they are individual, more-than' (Manning, 2020a, p. 216).

Similarly, Haraway (2008) posits that categories of knowing based on ethnic and geographic embodied divisions appear inadequate for the posthuman endeavour of multiplicitous bodying, where 'to be one is always to *become with* many' (2008, pp. 4, original emphasis). Haraway's (2016) notion of *sympoiesis* amplifies the sense of 'making-with' matter in the world, unfolding and extending the 'made-by' stance of Maturana and Varela's *autopoiesis*. Scott Gilbert et al (2012) extend this with a thorough account of how we have never been individuals with determinable origins despite that animals, plants and most cellular matter are categorised and characterised in that way. In gathering evidence of life forms evolving across the social, political and virtual as much as the genomic and organismic fields, Gilbert et al stress the significance of sympoiesis: 'it is evident that organisms are anatomically, physiologically, developmentally, genetically, and immunologically, multigenomic, and multispecies complexes' without any possibility for 'classic notions of "individual selection"' (2012, p. 331). Thus, bodying exceeds bodily classifications by making the different matters of worldly bodies intelligible to each other (Barad, 2007). As Anna Tsing (2015) affirms, 'The evolution of our "selves" is already polluted by histories of encounter; we are mixed up with others before we even begin any new collaboration… Contamination makes diversity' (2015, p. 29). A nonlingual sympoietic bodying exemplifies the complexity of bodies-in-motion, never becoming a complete form but always 'exploring new and other possibilities of what a body might be and become productive of' (Lenz Taguchi et al., 2016, p. 710).

Bodying as a response-able practice

Wrapped up in the notion of sympoiesis are sensing practices; an affective, sensory bodying that makes meaning through the 'sensorial reframing of becomings' (Malone & Fullagar, in Murris, 2021, p. 116) beyond lingual definitions. I discuss further in section 2.3.3. how sensing practices are an important element of de-categorising and de-territorialising nonlingual ways of being. Sensing practices are a response-able bodying, a way of practicing 'better care of

kinds-as-assemblages (not species one at a time)' (Haraway, 2008, p. 103). Haraway's notion of response-ability suggests not a privileging of who is able to respond (as subject/object), but an ethical and fundamental commitment to be open to others' responses (agenting).

Gilbert et al (2012) ask a poignant question; 'is the fittest in life's struggle the multispecies group, and not an individual of a single species in that group?' (2012, p. 331). This chimes with Barad's (2007) and Bennett's (2010) notions of the liveliness of distributed agencies and I wonder, what if 'fitness' is not as important as 'responsiveness' for more-than-human, nonlingual entanglements? I propose that agential bodying is not about survival of the fittest but *a flourishing of the most responsive/response-able*. Thus, flourishing requires asking *how best to serve-with the other* in matter's mutual vitality, not just in its viability. This is another core thread running through my study and it is clear that to move from *survival of the fittest* to *flourishing of the response-able/ive* requires a collective, intra-agential, multi-species ecosystem that acknowledges and values the 'delicate tissue of ethicality [that] runs through the marrow of being' (Barad, 2007, p. 396), which I will discuss further in section 3.2.3.

Bodying accounts for the transformations between past and future which momentarily allow for the present to be felt and a form to be created in an agential cut with 'the background of other shapings still resonating in and across it' (Manning, 2020a, p. 154). What becomes clear in this notion of *bodying* is how the bodymind is not just an object, nor a subject, but both, in relation with all other objects / subjects in its/their orbit. Bodying is a process of relational becomings (Nxumalo, 2012) where bodyminds are shaped by their affective relations as much as shaping those in relation with it. To put this into practice, Lenz Taguchi suggests 'read[ing] the event from its multiplicity – from the perspective of the water, or cotton balls, or the hand of the child' (Lenz Taguchi, 2010, p. 88). Such a perspective avoids the question of what a *child's* body can do, Instead it opens encounters to their relational, *more-than-human bodying*.

The enactment of different bodyings is a response-able practice which requires a reconfiguring of how humans understand their relationship with the world. The improvisational movement in this research is where families' bodying and languaging is reconfigured by engaging nonlingual bodyminds in relational becomings. This is where

nonlingual languages become meaningful by being 'differentially enacted' (Barad, 2007, p. 139). As I articulate in Chapter Three, my methods explore bodyings, as a way to differentially enact more-than-human relationality 'by producing different ways of knowing-relating, sensing and enfolding naturecultures and bodyminds' (Fullagar & Taylor, in Murris, 2021, p. 39).

These notions of bodying contribute to the research questions by attending to the more-than-human and divergent qualities of nonlingual 'voice', resisting simplified representations by exploring the different cuts becoming-with every nonlingual intra-action, and investigating how bodying-with produces response-abilities beyond individual autonomy. I have discussed how bodying (Manning, 2020a) takes bodyminds beyond the boundaries of the skin (Lenz Taguchi, 2010) or notions of embodiment (Maturana & Varela, 1992) towards embodied and embedded becomings (Braidotti & Bignall, 2019) whose bodies-in-motion (Sheets-Johnstone, 2011) are indeterminate, unpredictable and not individually categorisable things (Gilbert et al., 2012; Haraway, 2016). In the next section I explore how transcorporeality extends the global possibilities for nonlingual ways of being, and how it can help embodied, embedded and symbiopoietic bodying to travel beyond the individual.

2.3.2. Transcorporeal bodying

> *'It's important to realize that there's no nature that we just act upon. Instead, it's also acting back upon us, as we are always already the very substance and the stuff of the world that we are changing' (Alaimo in Kuznetski & Alaimo, 2020, p. 139).*

Incorporating the biological into the transcorporeal

Continuing on this journey of embodied, embedded and symbiopoietic bodying which travels beyond the bodymind and voice, I turn to Alaimo (2008) who works to resist Western humanist exceptionalism yet cautions against the loss of the biological body. Exploring Alaimo's theory of *transcorporeality*, where becoming bodies and virtual senses extend beyond the skin as expressions of worlding, I posit this concept as an alternative, differential enactment of bodying (Manning, 2020a) whilst attending to the biological as intelligible, relational materialities. I also consider how Alaimo's concept of *maps of transit* provides a useful framework for understanding the movement and circulation of sometimes imperceptible energies, forces and relations across multiple scales and dimensions during the dynamic processes of nonlingual intra-actions.

In her argument against individualism, Alaimo (2010) emphasises 'how profoundly the sense of selfhood is transformed in recognising that the very substance of the self is interconnected with vast biological, economic, and industrial systems that can never be entirely mapped or understood' (2010, p. 95). Poststructuralist feminism brings the myriad relations across bodyminds and environments to the fore but with a tendency to focus on how various bodyminds have been discursively produced. In refocussing on the complexities of this discussion, Alaimo (2008) expresses concern that the *material* is being de-commissioned in favour of the *discursive*, rendering bodyminds increasingly *abiological*. In other words, theories around social construction, poststructuralism and feminism are perhaps beginning to define the entangled practices of new materialisms. Rather than a return to the individualist straitjacket of biological determinism that we see in developmental accounts of what a bodymind can do, Alaimo proposes *transcorporeality* as a site where human corporeality and more-than-human environmental ethics mingle to produce 'rich, complex modes of analysis

that travel through the entangled territories of material and discursive, natural and cultural, biological and textual' (2008, p. 238). The focus on the mutual constitutions of transcorporeal matter(s) emphasises their porous boundaries and processes of hybridisation (akin to Haraway's sympoiesis) in their agential intra-actions. Not only are transcorporeal relations creating new transformations as they become entangled, but always already bringing with them the traces (sometimes unwanted) of old memories, ideas, environments, ecological systems and sensations across ('trans') many genealogies, bodies and sites[19] (Alaimo, 2010).

Like Haraway, Alaimo argues that 'nature' is culturally appropriated by humans to serve capitalist, colonialist logics by clinging to a constructed nature/culture binary for political ends, as she stresses in the quote at the start of this section. This is where transcorporeality works to understand the biological body as transformable and transforming in the enmeshing of human+more-than-human forces and the superposition of social+cultural+body+environmental sensing practices. This is important because, '[s]ince biology, like nature, has long been drafted to serve as the armory for racist, sexist, and heterosexist norms, it is crucial that feminists invoke a counter-biology to aid our struggles' (Alaimo & Hekman, 2008, p. 241). To do so requires tracing the relations of things through their specific agential cuts, where agency is 'cut loose from its traditional humanist orbit' (Barad, 2007, p. 177). This is where Alaimo's *maps of transit* framework is useful. These are not literal maps but conceptual tools that trace how diverse bodies, memories, materials, histories, politics and ideas flow and intersect within and across different environments, from the molecular to the virtual, across constructed boundaries and hierarchies. Maps of transit reveal the complex superpositions of seemingly unrelated lives as 'relata-within-phenomena emerge through specific intra-actions' (Barad, 2007, p. 140). Alaimo invites a critical engagement with the ethical and political implications of posthumanism, highlighting the ways in which human bodyminds are entangled in environmental processes and how these processes, in turn, shape human identities, practices and politics. By tracing nonlingual maps of transit, the transcorporealities of young nonlingual bodyminds are brought into view as

[19] It seems that Alaimo intends the term 'transcorporeal' to incorporate the less tangible, virtual qualities as well as the material and discursive in more-than-human relations. Thus, the main remit of this idea is not about going beyond the skin of the corporeal per se but about *de-centering the human body* in all relations. This is what the 'trans' part does. In other words, Alaimo is not saying there are different types of bodies and trying to separate the corporeal / biological from the virtual / affective but acknowledging their complete entanglement and inseparability.

they reveal what other 'models of extension, interconnection, exchange, and unraveling' (Alaimo & Hekman, 2008, p. 244) could be happening here.

Practicing defamiliarisation through maps of transit

Maps of transit can render tangible that which seems intangible and 'unmeasurable' or 'unclassifiable' yet can be forcefully experienced in nonlingual ways of being. I argue that this underpins Barad's claim that the virtual (digital, spiritual, sensorial and affective) qualities are always already material and tangible (Barad, 2015) even if human systems of categorising and measuring can't register or perceive their inherent complexity or even their existence. In section 2.3.3. I argue for mobilising sensing practices as attuned modes of diffractive analysis for charting nonlingual maps of transit. These help attune me to the minor keys of nonlingual expression; the rich, deviant, disruptive and highly competent sensory forces or affects that happen in the cracks between everyday cultures and routines of expected behaviours (Stewart, 2007). Using nonlingual maps of transit (as in my tanglegram in section 5.1.2.) as a method of habitual defamiliarisation could be 'one of the most productive points of contact' with bodies of difference (Braidotti & Hlavajova, 2018, p. 341), which is why these practices need *practise*.

Mapping nonlingual transits is one way to disrupt normative narratives about symbiotic or developmental progress which refer to fixed points on a line, to help progress (or lack of) become measurable, familiar and known. When a divergent bodymind cannot easily reach, let alone stand still in these fixed positions, they feel uncoordinated, confused and out of kilter with the world. Bodyminds trip over, feel clumsy, make mistakes, cause disruptions, lose track, heat up, melt down, break apart, malfunction and stop talking. Bodyminds that sometimes cannot make sense of language experience a dislocation of social, cultural and environmental balance. Numbers don't add up. Instructions seem to be missing key components. Familiar journeys become strange. Gestures appear ambiguous. And the movements the bodymind desires with certain materials, repetitions, sounds and textures are frowned upon. When divergent bodyminds can't coordinate, don't understand, or feel like they don't fit, their sensory systems work even harder to compensate, to make sense of ordinary everyday experiences. Divergence is always considered the wrong direction away

from a ~~stand~~point. Replacing that ~~stand~~point with moving trajectories is one way to help divergent ways become enfolded into the manifold possibilities of *spacetimemattering*. This is Barad's term for the inseparability of space, time and matter within a complex apparatus that shapes and is shaped by intra-actions amongst phenomena. Indeed, performance artist Paul Couillard proposes that, '[t]ime and space are not *containers for* matter but *conditions of* matter. Put another way, matter is the way in which we manifest *as* time and space' (Couillard, in Loveless, 2020, p. 60). Thus, divergent bodying, when viewed as generative, can encompass infinite spacetimemattering possibilities, creating many possible maps of transit. 'Transit' means passing through, not stopping or becoming known by fixed points. This research suggests that creating maps of transit towards entanglement can help to reconfigure notions of 'human', 'bodies', 'progress' and 'balance' otherwise. This process is an ethico-onto-epistemology that holds knowledge practices within, and accountable to, the world, where 'material agencies reconfigure the very boundaries of the human as such' (Alaimo, 2010, p. 154).

However, Jane Bennett (2010) cautions that mapping entanglements is not a panacea since it exposes uneven topographies where some crossings of affects and bodyminds are on paths 'more heavily trafficked than others, and so power is not distributed equally across its surface' (2010, p. 24). Furthermore, transcorporeal systems still remain permeable to 'dangerous, often imperceptible material agencies' (Alaimo, 2010, p. 146), such as reductive politics and pathologies around nonlingualism, the concerns for bodily proximity during lockdown or the regularly misinterpreted 'recalcitrance of silence' (MacLure et al., 2010, p. 492). In one fieldwork session involving masking tape stuck down in long, wavy lines around the gallery floor and an invitation to move differently along its curves, the apparatus - or conditions - of a relaxed space, lively legs, unusual momentums, a curvy line inviting unpredictable kinds of movement, and the removal of expectations for speech rendered possible multiple trajectories to be explored. By reversing the focus away from what a body 'should' do and activating new maps of transit in responding to nonlingual ways, the participants and I *practiced* defamiliarising ourselves from developmental notions and majoritarian forces, in favour of the minor, as described further in section 5.2.4.

What emerges out of these defamiliarisation practices can be surprising. During fieldwork encounters, it felt like moments, forces and affects were invoked that allowed human and nonhuman bodies to become relational, transcorporeal and productive of new bodyings. Tracing such entangled forces requires sensing practices that attune to the more-than-developmental ways of being, noticing with new tools (Tsing, 2015) the dynamic languages of 'mute matter' (Alaimo & Hekman, 2008, p. 256), such as how bodyminds move differently with different textures, materials, spaces, atmospheres or minor gestures. Mapping the transits of nonlingual bodyings helps me understand how relations move and change the narratives and boundaries around divergent ways of being in the world. In the next section, I explore how practices of sensing are always multiple processes in transition that can support nonlingual bodyminds across many sites and systems and how this can account differently for what matters in nonlingual ways of being.

2.3.3. Synaesthetic, affective bodying

> *'Sense will always escape us precisely because it is not ours alone to make' (Manning, 2020a, p. 280).*

Synaesthesia being of the world, not of the body

To further develop the transcorporeal aspects of this research, I turn towards the intra-relationality of the senses, often termed as synaesthesia. Synaesthesia can be problematic. Not because of how one sense can 'trigger' a different sense not commonly associated with its original stimulant, such as when a sound, letter, touch or smell evokes a particular colour, taste, texture or shape (van Leeuwen et al., 2020). But because, *by definition*, synaesthesia breaks bodyminds apart assuming electrical, chemical or psychic impulses can operate individually of each other or the affects of the world. The term 'synaesthesia' originates from the Greek 'syn', meaning 'union', and 'aisthēsis' meaning 'sensation' - as in 'a union of the senses' - suggesting that perception is 'the organised synthesis of this sensory surround' (de Freitas, 2018, p. 8). Rather than distinct things *uniting*, I prefer thinking of it as an *entanglement* of porous boundaries including the more-than-human, since many synaesthetes experience more than one cross-modality and some experience multiple sensations simultaneously, often with the same associations being repeated throughout life. That these entanglements are repeatedly affected by particular environments in particular ways speaks to a corresponding relationality across matter whenever they become entangled. Such relations are not just perceived in bodyminds as a one-off, random event; they continue throughout the life of relating matter and mobilise specific agential cuts of worldly experiences. For some synaesthetes, a cross-modal experience such as grapheme-colour or lexical-gustatory can have generative effects that compel repeated experiences. For others, the waves of indeterminate pain diffracted by a whole-body synaesthesia, such as mirror touch[20], can overwhelm and disable a bodymind from knowing its position in space,

[20] Mirror touch is a type of synaesthesia where a person feels on their body the touch they are observing on someone else's body, sometimes on the same side, sometimes on the opposite side. Some synaesthetes feel an intense physical response, others feel a less acute 'echo' response. Some also feel it when observing animals or objects being touched. Many mirror touch synaesthetes feel a visceral pain empathy when experiencing another person's pain, often located in specific parts of the body, sometimes to an overwhelming degree. Massumi

sometimes shutting down continued relations or abilities to respond within that environment and creating structural changes[21] in the brain.

Manning describes synaesthetic feeling-with as leaky, something that spills over, unmeasurable, 'precisely because it cannot be located in a body precontained. It is of the world. Its feeling-with shapes the conditions of experience in the very same gesture that it bodies', a shaping that 'orients, unmoors, disturbs any idea of a body as self-enclosed' (Manning, 2020a, p. 255). However, developmentalist research controversially classifies synaesthetes[22] by the same reductive theories of mind and body assigned to nonlingual or neurodivergent bodyminds (see section 2.2.1.). To contest these theories of what sense is and how it functions, and to rethink the mobilisation of unconstrained synaesthetic encounters in this research, I re-turn to Barad's notion of *entanglements*. Within this notion are enfolded some alternative theories that might be helpful to address, including:

i. the *inhuman* nature of sensing ontologies which exist as precognitive forces - or affective intensities - operating prior to human cognition or representation (Barad, 2012; de Freitas, 2018; Massumi, 2002);

ii. the *more-than* potentiality of sensing practices that invite voluminous transcorporeal entanglements between neuronal and environmental stimuli which shape all lived experience (Manning, 2020a; Massumi, 2002); and

iii. the '*irreducible complexity* of perception' (Manning, 2020a, pp. 252, emphasis added) that renders divergent bodyminds sometimes unable to exist well in worlds designed for stability, form and function.

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contests the term 'mirror', saying that the nomenclature was influenced by the discovery of mirror neurons around the same time, and that 'sight-touch' is a better way of describing the senses engaged in this phenomenon, because 'our perception participates in the world before it can be said in any way to mirror it' (Massumi, 2021, p.344).

[21] I am purposefully not engaging with essentialist neuroscientific theories in this thesis, but they do provide an interesting springboard for more-than-human thinking. For instance, van Leeuwen et al suggest that synaesthesia is considered both a 'perceptual anomaly' and 'a naturally occurring variation in human sensory experience'. The variations in experiences, intensities and consistencies are accounted for by a biological explanation of neuronal pruning (apoptosis). Whilst the authors acknowledge environmental effects, there is little regard to how these might work affectively *in relation* rather than *causally*, due to the immeasurability of affect (Massumi, 2002; 2021). For further discussion on these issues, see (van Leeuwen, 2020).

[22] For further discussion on how and why, see: https://iep.utm.edu/synesthe.

Synaesthesia as inhuman bodies absorbing the world

Research suggests that '[s]ynaesthesia is considered the norm for infantile perception. The theory is that it becomes so habitual as to fall out of perception in the "normal" course of growing up' (Massumi, 2002, p. 188). This is explained through the process of *apoptosis* where underused neural pathways are pruned, strengthening those that remain useful. It is thought that, for divergent neurotypes, apoptosis does not happen to anything like the same degree (Massumi, 2021; van Leeuwen et al., 2020), rendering divergent bodyminds host to many more neural pathways than their 'neurotypical' oddkin. This view would 'support the notion that synesthetes […] are neurologically more apt to connect to that vague essence of the world pre-categorized' (Manning, 2020a, p. 254). However, these voluminous experiences are considered at a distance from the world by ableist research that 'builds on the distantist presupposition that senses are fixed and located' (2020a, p. 220), as if a bodymind consciously chooses what it senses. For many synaesthetes, the reverse holds true; the blurred, entangled boundaries of multiple sensations which precede cognitive or verbal coherence suggest the experience is a feeling-with the world's becomings. While many accounts describe synaesthesia as cross-modal, Stern (1985) posits that the lack of assignation of this sensation to an organ or object means it is amodal, or, a pure, virtual experience of relationality.

Amodal sensations are *inhuman*[23] (Barad, 2012; Massumi, 2002). In other words, perception is precognitive, prior to volition or individual agency. This remains true for bodyminds who experience a full spectrum of sensation. However, Brian Massumi (2021) holds that, for non-divergent neurotypes (see section 1.5.7.), a dominant sense seems to enfold all others, presenting a mono-modal experience. He stresses, synaesthesia is not 'a deviation from the normal path of development. [Synesthetes] just *prune* the same developmental path less fully' (Massumi, 2021, pp. 345, original emphasis). For divergent neurotypes with voluminous neuronal vitalities, the perception of sensations happens to greater degrees of intensity,

[23] I am using 'inhuman' to mean a force of affect between bodies and worlds *a priori* the functionality of the human bodymind. As Barad articulates: 'While the nonhuman is differentially (co-) constituted (together with the human) through particular cuts, I think of the inhuman as an infinite intimacy that touches the very nature of touch, that which holds open the space of the liveliness of indeterminacies that bleed through the cuts and inhabit the between of particular entanglements' (Barad, 2012, p.222, n.19).

which are neither qualifiable or measurable because they are autonomous, outside consciousness, prior to action and expression (Massumi, 2021). Massumi describes this as 'something happening out of mind *in a body directly absorbing its outside*' (Massumi, 2002, pp. 29, emphasis added), the 'something' being a 'field' of force or affect that is 'highly differentiated' and 'out of phase' with its constituents, as if it were being diffracted into continually interrupted patterns. I read these pre-cognitive, pre-individual, inhuman affects as the intra-actions happening prior to (and after) the agential cut which manifest through movement; '[e]very movement makes a cut: it brings certain elements of experience into relief, origami-ing the continuum on the fly' (Massumi, 2021, p. 350), if only briefly, before transforming again albeit on a different scale than is available through human perception. It is during these continually changing cuts that leaky, affective intensities of nonlingual potentialities emerge. 'For affect is synesthetic, implying a participation of the senses in each other: the measure of a living thing's potential interactions is its ability to transform the effects of one sensory mode into those of another' (Massumi, 2002, p. 35).

Synaesthetic affects as more-than-languaging

Brian Massumi (2002) describes affect as '*virtual synesthetic perspectives* anchored in (functionally limited by) the actually existing, particular things that embody them' (Massumi, 2002, pp. 35, original emphasis). In other words, synaesthetic frequencies in matter are the material manifestations of affect. Whilst synaesthesia produces the visceral marks of affect, emotions are also a manifestation of affect; an expression of the relations and differences made in the shaping of experience. It is in the split-second between a coming to life (e.g. the seed of an idea), and an event (e.g. a touch) that synaesthetic affective capacities are produced 'through intensities, proximities, and viscosities circulating between, through, and transversal to individual bodies' (Truman, 2019, p. 5). According to Massumi, an affective event is virtual, happening *a priori* material sensation and is considered synaesthetic because multiple sense receptors are involved in its manifestation, in the becoming of life. Stern calls this, 'vitality affects' (Stern, 1985, p. 54) because all affects signal the ongoing vitality (movement) of life.

Philosopher, Baruch Spinoza's (1949) inquiry as to what a body *can* do is helpful here. Spinoza discusses how more-than-human bodies *become* and have the capacity to act and be acted upon, to move and be moved, to affect and be affected. In Spinoza's words, affect describes 'the modifications of the body by which the power of action on the body is increased, diminished, helped or hindered' (Spinoza, 1949, p. 128). This entanglement of relations that move a body is what Massumi calls the *autonomy* of affect (Massumi, 2002), in other words, there is no *host* body or agentic ownership of affect; no causal source. Indeterminacy is at the centre, where relations continually resonate, transform and emerge into particular expressions from within.

Massumi goes on to reason that vitality affects are preconscious and, therefore, pre-language because, 'the skin is faster than the word' (Massumi, 2002, p. 25), therefore affect registers in the human body micro-moments before it can be materially or discursively expressed. Despite its signalling of vitality, the pre-lingual nature of affect means it cannot be fully articulated because 'there is no cultural-theoretical vocabulary specific to affect. Our entire vocabulary has derived from theories of signification that are still wedded to structure' which stifles potential with its 'invariant generative rules' (2002, p. 27). It is for this reason, I argue, that majoritarian structures (e.g. early years curriculum, speech and language assessments) have a tendency to interrupt sensation, resist divergence and shut down potentiality. Language, it seems, cannot grasp the sensations and feelings of 'how the world breaks in' (Mazzei, 2021, p. 558) because affective forces are beyond the cognitive. Manning suggests, '[w]hen we position the body to signify only discursively, we often stop its movement, placing it on a grid from whence we render it intelligible. But sensation cannot be stopped, and this is the reason it is difficult to render sensation within a linguistic signifying system' (Manning, 2007, p. 20).

The irreducible complexity of synaesthesia

During the fieldwork sessions, I am struck by how the expanse of the gallery space seems to create forces for movement inside children's bodyminds that cannot be ignored. They seem compelled to run around the space, some for the entire session. As Massumi (2002) articulated above, their bodyminds are *directly absorbing* their environments. In my view,

synaesthetic responses help divergent bodyminds to function in multimodal environments. That is to say, synaesthesia, as a more-than-human transcorporeality, renders response-able nonlingual ways. Unlike a non-neurodivergent body that can parse fields of relation and differentiate itself from the world, synaesthesia can leave a divergent bodymind without a sense of 'where the body ends and the world begins' (Manning, 2016, p. 112). These effects of synaesthesia are considered constraints that 'tune a process […] to exceed its form' (Massumi, 2015, p. 73) and have implications for how divergence-affirmative bodyings need to be mobilised (Massumi, 2021). As I proposed in section 2.3.1., to live well in a sympoietic world is dependent on having the ability to respond. This does not align with the distantist (externally imposed) constraints of self-regulation, as if such constraint could mould nonconforming sensory forces into an 'acceptable' form.

When thinking of synaesthetic affects as modes of sensing, as *practices* of perceiving and responding-with the world, the idea of not-speaking starts to *make sense*. For some divergent ways of being, registers of sensing the world are highly attuned and require less verbosity to function well. Manning suggests that neurodivergent bodying is 'a field of sensation more than a locus' (Manning, 2016, p. 113) processing the very formation of experience rather than its developmental stages. In other words, the synaesthetic affecting of a talk-filled environment creates 'voluminousness […] in excess of form, in excess of geometry' (2020a, p. 247) for nonlingual bodyings that cannot easily resolve the effects of so much information being experienced simultaneously (Manning, 2016). I posit that this is a form of bodying that *needs space between words to parse their intense sensations,* before they can become response-able as a relating bodymind. Yet, the *taken-for-grantedness* that language exists *a priori* sensing masks what I consider to be one of the most important questions for nonlingual ways of bodying.

What if, in considering the vibrational forces of electromagnetic matter in the fieldwork (space, art, light, air, ground, skin, muscles, movement, temperature, materials, atmospheres, expectations…) resonating across all synaesthetic frequencies, the strength of such forces diffracting, spreading, interrupting and affecting a nonlingual bodymind overpowers any possibility for language by an order of magnitude? Words surely cannot even be formed, much less spoken, when they do not yet exist amongst these intense multimodal, sensory

currents. It is a difficult map to transit; '[b]odies that sense too much, bodies that feel the touch of the world and are moved by it, are at a loss. Their sense of agency is weakened by the pulse of what moves them, of what is moved by them' (Manning, 2020a, p. 249). This happens, Manning explains, when bodies are considered volitional agents, distinct from the world, extracted from the surrounding ecologies that constitute its complex relations, and cut off from the possibilities of extending into an expression of voluminousness. It is what happens when nonlingual bodyminds are unable to speak, managing the extremes of these forces, yet considered lacking in self-regulation. This is the effect of distantism.

Synaesthesia's irreducible, transcorporeal complexity emerges as a multiplicity of entanglements under different conditions (apparatus), meaning there are no stable developmental stages toward which biological senses can aspire, simply a mass of potential, vital becomings. This is important for rethinking nonlingual ways of being because it shows that what emerges from multimodal relations is not an individual contained, or identified, by a label 'but the dynamic form of a worlding that refuses categorization' (Manning, 2009b, p. 42). As Barad asserts, 'Indeterminacy is an un/doing of identity that unsettles the very foundations of non/being' (which could read 'non/speaking' in this case) (Barad, 2012, p. 214). The implications of this are important to consider for my research participants whose synaesthetic bodying is important for enabling oddkin relations and divergent ways of functioning well in the world (Haraway, 2016). Resisting reductive identitarian politics that *other* divergent bodying requires a que(e)rying of 'what is at stake in the belief that parsing is the key to experience' (Manning, 2020a, p. 5). An understanding of how synaesthetic practices can function differently as relational languages between nonlingual bodyminds and environments offers insights into the research questions around supporting what matters for nonlingual forms of bodying.

I explore in Chapter Three how speculative methodologies might offer the conditions to stay with those que(e)ries and value complex, indeterminate sensing practices across transcorporeal bodies. It seems only with the more-than-human that humans can become engaged in thinking and sensing practices that exceed us (Manning in Loveless, 2020).

2.3.4. Diffractive bodying

> *'Many voices speak here in the interstices, a cacophony of always already reiteratively intra-acting stories. These are entangled tales. Each is diffractively threaded through and enfolded in the other' (Barad, 2012, pp. 1-2).*

Diffraction patterns marking the effect of differences in the world

In this section, I begin with a little detail on the nature of diffraction and how this establishes 'superpositions' as patterns which amplify the effect of differences in the world. I introduce this concept with a view to thinking-with the complexities of nonlingual bodying and the effects of their continually diffracting relations. Diffraction is a unique phenomenon where waveforms interfere with an expected pattern of behaviour. Imagine a river with some boulders in. As the water courses through the gaps between the boulders, you would expect it to carry on in a straight direction, as most particles do. However, somehow water particles become waves made up of infinite oscillations that *bend around* the obstacles to their flow, overlapping neighbouring oscillations. The oscillations create a pattern of concentric rings, called a diffraction pattern[24]. The larger the diffracting objects (e.g. the boulders), the more each wave propagates (and interferes with) other waves, either amplifying or neutralising their wavelength. This is known as the Huygens-Fresnel principle[25], when every point on the wavefront produces spherical wavelets which mutually interfere (see *Figure 2*).

[24] From a physics perspective, 'diffraction' was a term coined by Italian scientist, Francesco Maria Grimaldi in 1660, taken from the Latin *diffringere*, 'to break into pieces'. This describes the way different waves (sound, water, x-ray, radio or electromagnetic waves such as light) break into different directions of travel and overlap when passed through an obstacle (See: https://www.chemeurope.com/en/encyclopedia/Diffraction.html).
[25] See: https://en.wikipedia.org/wiki/Huygens%E2%80%93Fresnel_principle

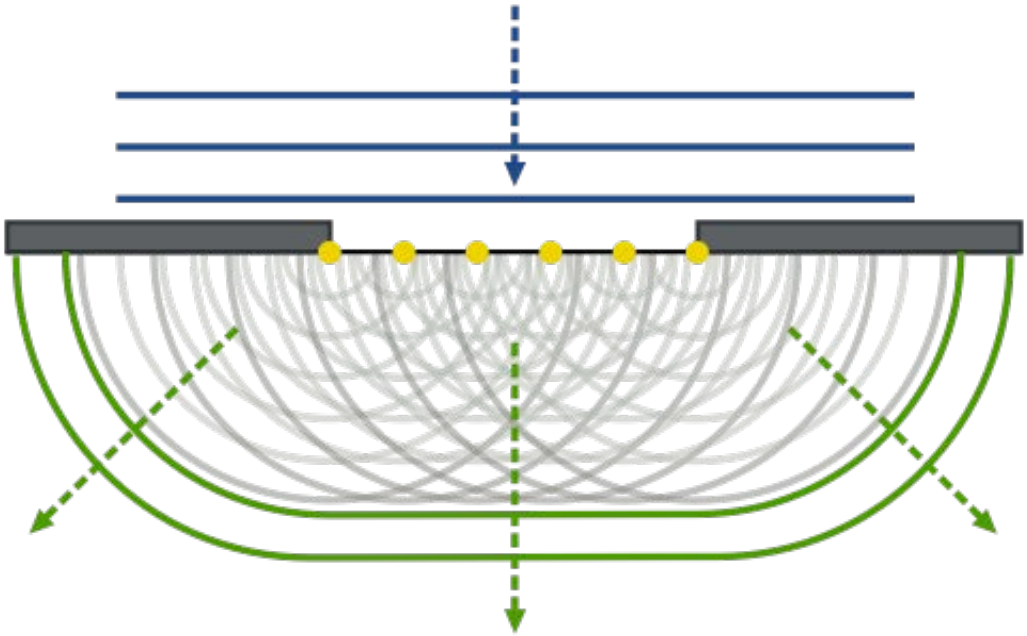

Figure 2: Wave Diffraction according to the Huygens and Fresnel principle

Whether each atom behaves as a particle of mass (determinate matter) or an oscillating frequency/wave (indeterminate matter) or *both* is crucial to how phenomena relate. Diffracted waves can overlap and entangle, defying conventional laws of science by occupying the *same space and time* (which they cannot as particles). This is because they are actually electromagnetic frequencies that can radically change their nature from particle to wave, material to virtual, *depending on what obstacles, or matter, they intra-act with* (see Gullion, 2018, pp. 115-118). This phenomenon is called *wave-particle duality* and highlights how all things, no matter how solid their edges seem, are non-binary, intra-twined and have indeterminate boundaries.

To emphasise this, Lenz Taguchi, Palmer and Gustafsson (2016) describe the more-than-human forces of techno-music that stimulate children's dancing bodyminds beyond the familiar; 'Each synthetic tone sends a diffractive wave, bumping into walls, ceiling, floor, and back into children's ears and bodies…The sound waves are the intimate dance partner in this event. Bodies and sound connect and interact in unexpected ways and compose a body without final or definitive ground' (Lenz Taguchi et al., 2016, p. 711).

Combined effects of diffractive patterns producing superpositions

In the river scenario above, the boulders are not inert matter whose differences in weight, mass and texture *cause* the flow of water to change direction around them. Rather, boulders are dynamic apparatus caught up in the entanglement of material-discursive forces that are produced in the meeting of water+boulder++. With each aqueous and mineral molecule that meet, creation and erosion takes place. Rough textures are smoothed in tiny increments, hydrogen and iron ore molecules react, oxygen is exchanged, algae are given life, colour, texture, sticking ability, powers of reproduction, protection and nutrition for other local lifeforms. River and boulder evolve together, carrying billions of years of vital lifeforms in their folds, to be unfolded and reconstituted with each over/lapping. They are part of each other - not even an 'each' or an 'other', for without 'one' the 'other' would not exist in its current form.

As discussed previously in section 2.3.1., this relationship is described by Gilbert (2012) and Haraway (2016) as sympoiesis and by Barad (2007) as intra-action. As diffracting waves overlap, the wave-particle-duality-dance increases the amplitude of each oscillation in proportion to their combined frequency. Each entangled wave, therefore, 'is a sum of the effects of each individual component wave; that is, it is a combination of the disturbances created by each wave individually. This way of combining effects is called *superposition*' (Barad, 2007, pp. 76, original emphasis).

Where there is more than one gap between boulders through which the water flows, the waves passing through each gap become superimposed onto each other as they radiate outwards, interfering with the definition at their edges and blurring the boundaries as they overlap (see *Figure 3* presented to the Royal Society in 1803 (Barad, 2007, p. 98)). Waves that are in phase with each other when they interfere increase the amplitude of the wavelength (causing peaks), whereas waves that are out of phase decrease it (causing troughs). Waves that overlap between phases balance each other out, with zero wavelength. These intra-agential superpositions provide a precedent for how thinking-with movement opens bodyminds up to the possibilities of complexity and away from simplistic representations of what they can or can't do. It is where bodyminds can become '*more* rather than less

differentiated, in order to work ourselves away from dualist categorizing and normalizations' (Lenz Taguchi et al., 2016, pp. 713, original emphasis).

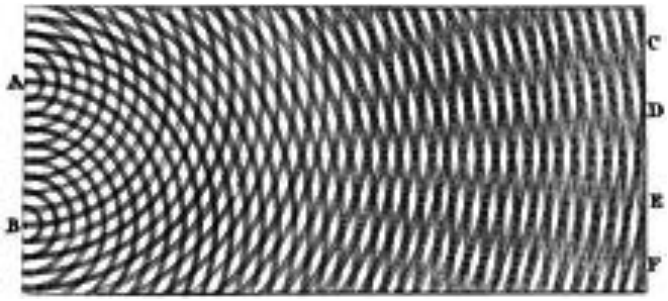

Figure 3: Thomas Young's sketch of two-slit diffraction for water waves

Patterns of superpositions can be used to identify the atomic structure of objects and are often used in industry. By detecting tiny changes in the spacing of their diffracted wavelengths, it is possible to measure the effects on materials under load (such as metals, temperatures, magnetic fields) or the transformation of properties in relation to different environments (such as pharmaceutical drugs, fossils or viruses). But it is not just science and industry that finds a use for diffraction. Superposition, as a combining of wave amplitude effects, is a useful concept to help me think about nonlingual ways of being. In both designing my research activities and in making some sense of my data, finding apparatus that are conducive to entanglements of synaesthetic movement, and responding to the participants' nonlingual ideas and the effects of their differences has helped me think-with the combined amplitudes of material-discursive possibilities. On many levels, this study is a boundary re-making practice.

2.4 Summary of the literature review

Having explored the entangled nature of matter in its ongoing, dynamic materialisations, according to Baradian agential realism in Chapter One, in this chapter I presented a selection of literature that repositioned matter from being separately fixed to being sympoietically fluid and always intra-acting. In section 2.2. I explored the reductive implications of configuring bodyminds through neurotypical, pathological, psychological, developmentalist and representational lenses. I troubled boundary-making practices that are ableist, pathologising and excluding of divergent bodyminds. I outlined how these arguments for achieving progress towards a child's so called 'natural' state of being are discriminatory and yet politically embodied and embedded within many of the structures that define value in early childhood education and care.

I then turned in section 2.3. to embrace new conceptual tools for noticing bodying differently, as divergent ways emerging within the world, rather than apart from it. I argued for different ways of describing nonlingual bodying, embracing transcorporeality (Alaimo, 2010), sympoiesis (Gilbert et al., 2012; Haraway, 2016), synaesthetic vitalities (Manning, 2016; Massumi, 2002) and diffracted superpositions (Barad, 2007) that mark the effects of difference. I considered how these complex concepts played out in my research and noticed how each instance moves towards response-able boundary re-making practices. These are practices that render capable nonlingual expressions beyond human volition by becoming open to what emerges precognitively from every more-than-human entanglement, and their agential exclusions.

Putting to work each of these concepts, I grasped towards the sensations, intensities or forces-beyond-words within *whole* encounters that emerged within my data, feeling-with the relations, emergences, and potentialities from within. This builds on the agential realist notion of causality that I discussed previously (in section 1.5.1.), where agency cannot be singularly assigned due to all bodyminds being wrapped up in the phenomena being produced, and where what materialises thus remains a *whole* experience of multiple entanglements in that instance. This *whole* (defined not by space or time but by the relational movements amongst its constituents) always exceeds the sum of its parts. In other words,

intra-active relations are always more-than what can be created, expressed, analysed or known in any empirical research.

Writing this chapter necessitated a journey away from the invariant structures that limit potential, including Cartesian essentialist epistemologies, notions of human exceptionalism, positivist classifications of everything from species to domains, and socially constructed categorisations of identity. I explored how these trajectories reinforce majoritarian tendencies that focus on ideologies of progress towards some kind of imaginary normativity and how this effects the families participating in this research through languages that isolate, reduce and pathologise difference. Acknowledging these majoritarian exclusions, I also examined the hope and potentialities of minoritarian practices through the examination of their diffraction patterns that reveal the generative effects of combined relations.

I leaned on feminist new materialist, posthuman scholars to co-create and fabulate new, wild narratives about nonlingual ways of being, such as synaesthetic sensing practices, which are strengthened by living in entangled contaminations, staying with the troubles, attending to difference, and agitating (in)tensions in becoming part of the world's kicking back. These concepts helped to de-centre the human supremacy of anthropocentrism by concluding that posthumanism might allow multi-agential-potentialities to live as well as possible through the flourishing of the response-able and responsive, which requires a re-turning away from self, towards the other. This becomes a key thread throughout this thesis. Learning to think-with the momentum of ongoing differencing by cultivating the arts of noticing divergent ways of living is, I argue, what will enable the vitalities of the minor to live well on a damaged planet (Haraway, 2016; Tsing et al., 2017) alongside new narratives of what entangled, nonlingual bodyminds can do.

In the next chapter, I turn towards a methodological focus, in which I explicate how the speculative improvisations of material-nonlingual-movements open generative spaces for ways of being different. I explore how the specific apparatus (conditions of possibility) for entanglements matter and mobilise agential cuts in ethical and affective ways in order to make sense of the research events that follow.

Chapter Three

3.1 Introduction to speculative methodologies

So far, this thesis has examined the arguments for using posthuman, feminist new materialist theory to address the research questions (see below). I have outlined the limitations and oppressions in current early education and care theories and policies which focus on individualistic views of non-speaking bodyminds. I proposed alternative, relational perspectives on nonlingual ways of being, that focus on what transcorporeal, more-than-human bodies can do.

This chapter outlines the study's methodology, detailing the research design and methods for exploring alternative ways of being in more-than-human, transcorporeal worlds. I begin by establishing the importance of a speculative approach for addressing my research questions (section 3.1.1.), how this is put into practice through research-creation (section 3.1.2.) and the minor forces produced in the interstices (section 3.1.3.). I then introduce the speculative design process, including participant recruitment (human and nonhuman) (section 3.2.1.), the role of oddkin materials and spaces in a speculative project and the impact of speculative experimentation on researcher positionality (section 3.2.2.). Following this, I discuss how my study aligns with an ethics of care (section 3.2.3.) and how a speculative orientation is pursued through the possibilities offered by agential apparatus (section 3.2.4.) prior to detailing my speculative methods in Chapter Four.

As a reminder, the research questions are as follows:

Research questions:

1. How do movement and sensing practices without words open up response-able spaces of mattering with young children who sometimes do not speak?

2. How are speculative methods generative of nonlingual ways of being?

3. How could nonlingual sensing practices help reconceptualise alternative narratives around not-speaking, and contribute to transdisciplinary approaches in arts and early childhood education?

3.1.1. Why speculative methodologies?

> *'If the intent of inquiry is to create a different world, to ask what kinds of futures are imaginable, then (in)tensions need attend to the immersion, tension, friction, anxiety, strain, and quivering unease of doing research differently' (Springgay & Truman, 2018, p. 204).*

Speculative methodologies as transversal inquiries

This chapter lays out the speculative methodologies informing this research, drawing on Haraway's (2016) concept of *SF* which enacts, 'science fiction, speculative feminism, science fantasy, speculative fabulation, science fact, and also, string figures' (2016, p. 10) as well as relations happening *so far*… SF is a process of tracing threads, tangles and patterns to understand human+nonhuman entanglements and become responsive within them; how we are 'becoming-with each other in surprising relays' (Haraway, 2016, p. 3). Given that not-speaking is often mapped according to reductive theories and methods, this methodology is useful to explore alternative, generative ways of mapping divergent modes of 'voice'.

Speculative methodologies explore the '*what-if*' of thinking. They harness imaginaries that consider knowledge-making as an event emerging from within practice (Springgay in, Loveless, 2020, p. 226). Stephanie Springgay and Sarah Truman describe the event, or 'middle', as 'not a place, but an event [*where*] (in)tensions, concerns, and gnawings continually emerge' (Springgay & Truman, 2018, p. 207) eliciting new speculative propositions. Speculative methodologies pursue experimental configurations of fieldwork, assembling bodies, questions, techniques, and technological prostheses in novel ways that provoke new onto-epistemological configurations, or 'ontological choreographies' (Myers in, Loveless, 2020, p. 107).

Given the dynamic nature of this study's data and aligning with Barad's ethico-onto-epistemology (section 1.5.5.), I adopt Natasha Myer's dance metaphor to describe their creation and analysis. I experiment with ontological choreographies using four apparatuses - contact improvisation, Zoom, GoPro video editing software and electrodermal activity (EDA) sensors - to speculatively figure (craft) the strings, threads, affects and networks that traverse

nonlingualism. Haraway describes these configurations as tentacular webs where the 'tentacular ones' (entangled humans and nonhumans) co-create in complex networks (sympoiesis) to find ways of living well together. Experimenting with ontological choreographies to produce tentacular webs is important to show how tentacular ones become enfolded in each other's lives where 'they make cuts and knots; they make a difference; they weave paths and consequences but not determinisms; they are both open and knotted in some ways and not others' (Haraway, 2016, p. 31).

The knotting and un-knotting of the threads of this project reveals different patterns and possibilities that cut across normative constraints, termed 'transversal' inquiries. These practices, which hold potential for unexpected connections (MacLure, 2024, p. 243) thrive through divergence and defying interpretation. Haraway uses string figures (or *cat's cradles*) as a transversal inquiry to analyse the lively excess of diverse living patterns and the knots and shapes of histories across many possible futures (see *Figure 4*). Haraway considers the 'passing on and receiving, making and unmaking' (Haraway, 2016, p. 3) of string figures as crucial for revealing new possibilities in everyday patterns.

In my experience, the arts of envisaging new string figures is knowledge learned through practice, otherwise each move can end up returning to the same two or three repeating patterns. Perhaps habit keeps players stuck in their *known moves*? Advanced string figures require many hands to carefully knot and unknot, make complex transformations and sense possibilities differently. As Haraway's sympoiesis (2016, p. 58) tells us, no-one holds all the strings. Thus, I propose in section 3.1.3. and section 4.1.1. that divergent practices like improvising and attuning to minor forces take *practise* in order to unlearn habitual ways, making transversal inquiry valuable for cutting across those habits. This focus on divergent patterns, minor connections and knottings of sensory ways helps enable other ways of being and knowing (Kind, 2020), because '[i]t matters what matters we use to think other matters with; it matters what stories we tell to tell other stories with; it matters what knots knot knots, what thoughts think thoughts, what ties tie ties. It matters what stories make worlds, what worlds make stories' (Haraway, 2016, p. 12).

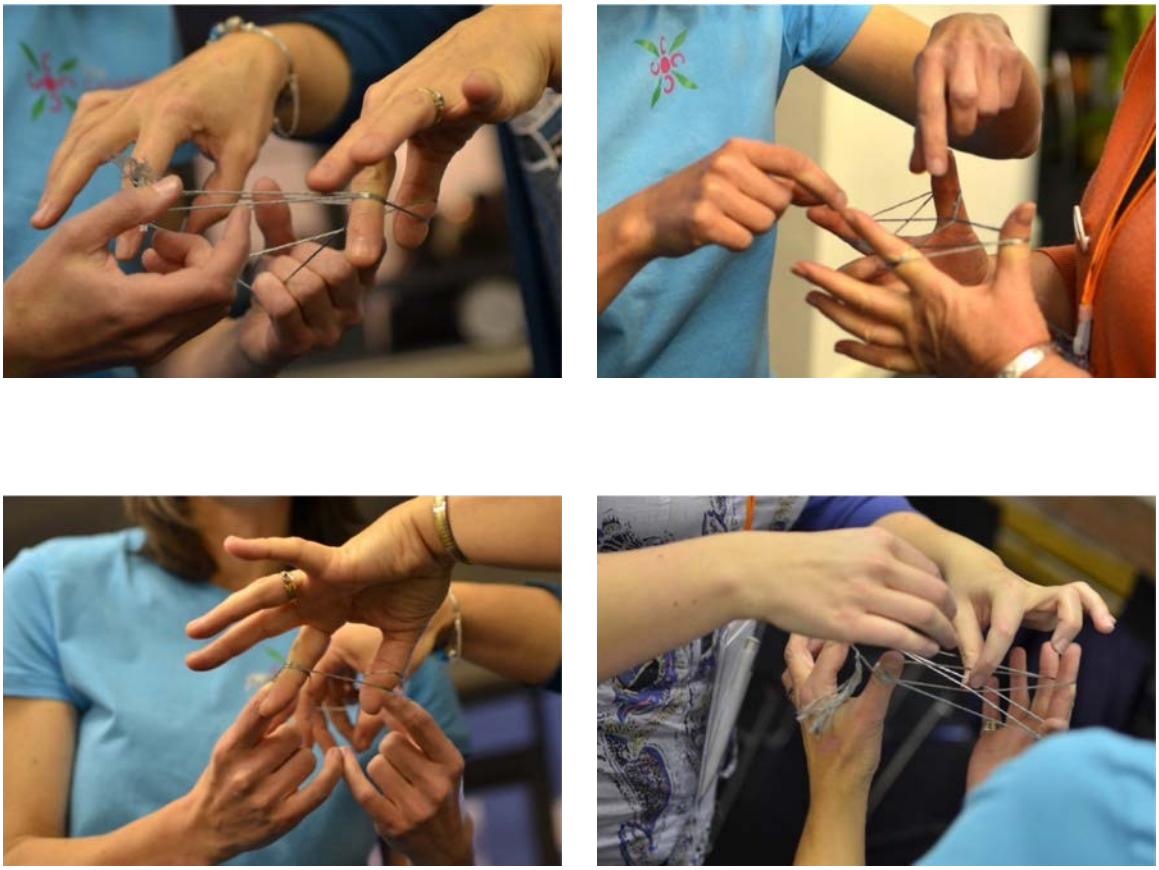

Figure 4: Figuring out new patterns in a cat's cradle

With regards to my research questions, speculative methodologies allow me to experiment with movement and sensing practices in choreographies that dance to the generative tunes of nonlingual bodyminds. By embracing uncertainty and unpredictability, these methodologies keep alternative scenarios, futures or realities open, including the possibilities for transverse fields and disciplines, politics and practices (Åsberg et al., 2015). Experimenting with alternative scenarios is a generative way to notice and resist deficit narratives or pathologising positions, promoting nonlingual ways of knowing in arts and early childhood, and contributing new methodological ideas to the field that reconceptualise approaches to not-speaking. Thinking speculatively, I can imagine that ways of listening differently to divergent bodyminds using movement and materials might also be productive for non-divergent bodyminds in early childhood environments.

Speculative experiments can be risky, fabulating a new idea or practice which, like the game of cat's cradle, is 'about giving and receiving patterns, dropping threads and failing but

sometimes finding something that works, something consequential and maybe even beautiful, that wasn't there before' (Haraway, 2016, p. 10). Thus, if *knowing* can only be formed through *practising*, then I propose that a speculative methodology provides a fitting ethico-onto-epistemological frame for a radical reconceptualisation of nonlingual bodying. This chapter discusses how fieldwork experiments enabled speculative fabulations to materialise from participants' intra-actions, in arrangements that created generative spaces for nonlingual ways to flourish and become vital, productive and response-able/ive.

Speculative methodologies as practices of resistance

My study envisions theorising and experimenting as 'dynamic practices of material engagement with the world' (Barad, 2007, p. 55), where nonlingual reductionism is already entangled with the Anthropocene's ecological crises, technological advancements and socio-material injustices. I align with Haraway in acknowledging this situation is vital for 'staying with the trouble in serious multispecies worlds' (Haraway, 2016, p. 12). This involves a relational inquiry into how we become-with multiple others, staying with the troubles that try to define what nonlingual bodyminds cannot do. My speculative methodology navigates nonlingual pathologisations, oppressions and reductions without getting stuck in binary critiques or narratives 'of internal or external opposition' (Braidotti & Hlavajova, 2018, p. 8). From within these tentacular webs of relation, I experiment with conditions that embrace uncertainty, ambiguity and complexity, where innovation and curiosity bring new insights into complex, relational ways of becoming-with the world (Springgay & Truman, 2018), as amplified in a 'Tanglegram' in section 5.1.2.

Attending and responding to alternative ways of knowing is a growing practice in educational research (de Freitas & Truman, 2021; Fairchild & Mikuska, 2024; Murris, 2021) but often overlooked by conventional qualitative approaches. Therefore, my methodology centres on an *ethics of care* emphasising nonlingual becomings-with (see section 3.2.3.). This approach acknowledges the embodied and rarely straightforward ways the participating families, materials and myself as researcher 'inhabit the world and the world inhabits us' (Åsberg et al., 2015, p. 151). I try to practice this throughout my data creation and diffractive analysis by looking for 'the perplexities, complexities, intersections, choreographies, elements in motion,

ideas in germ, and things not yet fully formed or understood' (Kind, 2023b, p. 384). Thus, speculative methodologies that enact care-full practices enable divergent spaces for expression in excess of language, challenging procedural orientations that exclude other modes of perception. Manning (2020a) stresses that divergent modes, or *minor socialities*, are excluded precisely because of their abilities to feel life's ambiguities, nuances and fugitivities, sensing the world in ways which are imperceptible to neurotypicality. Therefore, speculative methods like contact improvisation and online video-conferencing allow me to attune to the fugitivity in otherwise ways of being by inhabiting proximity without expectations for speech.

An ethics of care is an important area of scholarship for this research. Whilst not offering solutions to the issues around not-speaking delineated in Chapter Two, speculative orientations are particularly characterised by an affirmative ethics (Strom & Mills, 2021) that tackles the messy complexities of everyday realities (Braidotti, 2013; Puig de la Bellacasa, 2009). Thus my experiments compose an active methodology that aims to resist the all-too-familiar binary critiques (Haraway, 2016) that set speaking and not-speaking as opposites (Hackett, 2022). I practice this resistance by attuning to the minor synaesthetic gestures that make a difference in nonlingual ways of knowing (Manning, 2016). The speculative continues through my analysis in exploring the affective nature of environments that offer possibilities for relating differently (Massumi, 2002), as discussed in section 2.3.3. A speculative approach helps me move beyond conventional modes of analysis to disrupt linear, deterministic thinking in sometimes uncomfortable ways and foster a response-ability to address the impacts and broader ethical implications of alternative ways of being in the world (Loveless, 2020). It is a kind of justice insofar as being a process of acknowledgment, recognition and care for divergence rather than a resolution of its awkwardnesses, since, '[t]here are no solutions; there is only the ongoing practice of being open and alive to each meeting, each intra-action, so that we might use our ability to respond, our responsibility, to help awaken, to breathe life into ever new possibilities for living justly' (Barad, 2007, p. x). Next, I discuss how research-creation enacts the speculative conditions that open up this research to new possibilities.

3.1.2. Research-creation experiments and propositions

> *'Research-creation […] involves pushing knowledge to a revaluation, asking what else is moving at its linguistic limit' (Manning in, Loveless, 2020, p. 229).*

Opening experimental processes from within

Research-creation facilitates the conditions for speculative research and the '*what if…?*' of knowledge. It inquires into alternative modes of learning that do not privilege language over other forms of expression (Manning, 2020a, p. 221), engaging with the more-than-spoken of language that I discussed in section 2.2.4. Initially a Canadian funding category for interdisciplinary projects that brought together theoretical/philosophical research and artists' practices, research-creation now serves as a conduit for the expression of disparate practices (Manning, 2016). Acknowledging that normative modes of inquiry often cannot account for extralinguistic knowledge, research-creation fosters the conditions for new forms of study that transverse normative accounts of how learning happens (Manning, 2016, p. 27), reframing how knowledge is practiced, expressed and valued in academic fields. The interdisciplinarity pursued by research-creation opens possibilities to ask transversal questions in collective, sensorial and more-than-human ways. Importantly, engaging with divergent forms of expression allows us to explore beyond language and uncover new ways of thinking (Manning in, Loveless, 2020, p. 247).

In this study, I enact research-creation by considering how my methods become affective, embodied, intimate, operating 'from inside a speculative middle' (Springgay in, Loveless, 2020, p. 232). Rather than extracting data, I allow it to emerge from within a distributed, relational field of processes, always intra-acting and producing movements of thinking without a predetermined outcome. Attending to *how* I do research is a practice of being *inside* and present-with the research event (Springgay & Truman, 2018, p. 204). For example, during an improvised hand dance in a Zoom session where a mum and child are reaching their hands high, pushing palm to palm, I think-with the video-data to consider *how* these hands are relational in movement and what (in)tensions emerge (Springgay & Truman, 2018). I attune to and feel the sensations emerging from the inquisitive touch of big and little hands

and think-with the affects produced in their participation (Massumi, 2002). I listen to the hapticity of skin on skin within these kin (Marks, 2000), attend to how differently shaped, aged and textured hands mobilise each other's response-abilities (Haraway, 2016), and sense the caring forces that might be involved in intimate touch between parent and child (Puig de la Bellacasa, 2017).

By being response-able, and using movement as my response, I orientate towards research-creation that gives space for nonlinguistic expressions to explore their potential - how these modalities move and what they propose (Manning in, Loveless, 2020). This nonlingual approach compels a rich quality of movement inquiry amongst the research participants (myself included) troubling the idea that only artistic or word-based outputs are valid for expressing experimental ideas. It engages with new forms of knowledge production across the material-discursive, creating methodological and epistemological innovations in scholarly research (Loveless, 2020, p. 226). That is not to say that nonlingual modes of research-creation are without (in)tension. As I outlined in section 3.1.1., these modes are attuned to the ethico-political concerns that inhabit each speculative middle (Springgay & Truman, 2018). Addressing the pathologisation, reduction, and oppression of nonlingual ways shapes my movement responses and, in turn, affects the response-abilities of other participants. By letting go of agendas (Springgay & Truman, 2018, p. 208) and not anticipating what to do in advance of what happens, we become-with the other in an iterative process of reorienting our experiences and how they unfold.

In this study, research-creation helps me unlearn dominant views on what matters for nonlingual ways and reorients my attention towards the sensorium and sensing practices allowing other worlds within this world to emerge (Myers in, Loveless, 2020, p. 232). I use propositions (see below) to disrupt, re-arrange and mobilise alternative bodyings by experimenting with different concepts, methods and media forms (Myers in, Loveless, 2020). I am not an independent researcher observing from afar, but deeply implicated in the ways in which methods-as-apparatus (see section 4.1.1.) and data are created with the participants of this study, of which I am one. In the diffractive analysis and discussion chapters I map out the relations emerging within these processes emphasising the matters of care for nonlingual ways of knowing and inquiring of the world. For me, research-creation is an experiment in

research ethics, provoking inquiries into how different ways of knowing and relating matter and how these matters can work to rupture the representations of epistemologies and ontologies as distinct and separate agents.

Propositions for movement

In Manning's writing, a proposition is an invitation for engagement, thought, or action emerging in the middle of a situation, activating a field of possibilities without any fixed conclusions. As a force or orientation, a proposition invites attunement, emphasising how bodyminds, affects, and environments come together in new ways of sensing, or relating to the world. Manning established the SenseLab[26] (now 3-ecologies) in 2004, adopting the concept of research-creation to bridge theory and practice. Guided by the onto-epistemological alignment of this approach, this study uses propositions in its research-creation to underscore the process of thinking-by-doing, of making concepts in and through the event (Manning, 2009a). Manning wrote that propositions activate an affective force, a 'relational shape-shifting' (2009a, p. 14) that shapes our experience of the world. In this study, I use propositions as tools for experimentation, to create potential for movement and intra-action between more-than-human bodies, especially opening to the synaesthetic and tactile forces that are extra-linguistic and speak to the shape-shifting of nonlingual bodyings (see Appendix E). Using propositions in this way highlights the emergent possibilities in any event and accounts for new forms of understanding and intra-action within the world, enacting a speculative onto-epistemology.

[26] See: https://senselab.ca/wp2/about/

3.1.3. Attuning to the minor

> *'The minor invents new forms of existence, and with them, in them, we come to be. These temporary forms of life travel across the every day, making untimely existing political structures, activating new modes of perception, inventing languages that speak in the interstices of major tongues' (Manning, 2016, p. 2).*

Sensing the minor within the speculative middle

Barad (2007) highlights the often-misunderstood concept of quantum as the smallest quantity that exists, the tiniest of all forces capable of making a transformative leap that changes everything. These virtually negligible minor bits of matter that are inherently unstable are described as '*quantized indeterminacies-in-action*' (Barad, 2012, pp. 210, original emphasis). Each agential reconfiguration enfolds traces of the old into the new, always already referencing lived genealogies in memories, thoughts, atmospheres or sensations on the skin or in the gut that travel across the bodymind and map its transcorporeality (Alaimo, 2010, p. 146). Manning (2020a) maintains that attuning to the minor requires no more and no less than an openness to the transformative potential within events, even if it is not fully actualised (2020a, p. 21).

I consider how my speculative methods might amplify such quantum minor forces, without fixing or interpreting them. What does it mean to be open to transformation by these potentialising forces? Since the improvisational threads of minor forces often pass unperceived (Manning, 2016, p. 2), sensing their intensities from the speculative middle is how to 'make felt what otherwise would not register' (Manning, 2020a, p. 1). This inhabiting of the speculative middle refers to staying with inquiry processes, 'where the speculative "what if" emerges as a catalyst for the event' (Springgay & Truman, 2018, p. 206). I understand this to mean resisting pressures to rush to outcomes and keeping the inquiry space open for anything.

Manning suggests one way to keep inquiry open and attune to other perceptual registers is to feel the vibrations preceding them, like feeling an oncoming subway train. This anticipation of movement, or cueing, is part of the relational field, part of the unconscious sensory

perception that cues the body to shift in one way or another, enabling an event to be *felt* before it can be *seen or spoken*. Minor gestures reveal what bodyminds can do, described as 'choreographic thinking' (Manning, 2016, p. 122) - a thinking-in-motion that attunes to a field's rhythms and reverberations. This relational thinking shifts the act of perceiving to the multiple and thus values experiences such as synaesthetic perception, which 'cannot be reduced to the volition-intentionality-agency triad' (2016, p. 123). In this sense, minor gestures can be understood as an expression of multiple affects, as I unpacked in section 2.3.3..

Attuning to the minor involves trusting that connections will form, that minor gestures will emerge which might otherwise be missed were the space to be foreclosed by a focus on developmental outcomes. A space of trust allows for emergent force-fields, the shapeshifting of more-than-human worlds, and the intensities and (in)tensions that some synaesthetic bodyminds might feel more intensely. These gestures are important because even a still life is 'a static state filled with vibratory motion, or resonance. A quivering in the stability of a category or a trajectory, it gives the ordinary the charge of an unfolding' (Stewart, 2007, p. 19). This is why I employ the method of improvisation to practice the work of research-creation and unfold the charges that amplify the vitality of ordinary, minor forces.

One encounter exemplifies this speculative practice being put to work. In our final Zoom session, a mum, her daughter and I danced with silky scarves. We improvised different methods of flight, twirling, wafting, wrapping and twizzling with them. As I continued dancing, the little girl laid her scarves on the floor in neat rows next to each other, and proceeded to hop and jump across them, re-arranging them as they slid around. Mum and I paused to watch her new moves, ready to follow her improvisations. She began chattering quietly in her own tongue, apparently narrating how the silky 'puddles' went 'swishy' and 'splashy' as she twirled and hopped from one to another. Casting a glance over to me through the iPad screen she seamlessly switched to English, continuing her story. Mesmerised, I sat quietly listening, watching and wafting my scarf along the floor in response to her continuing to slide and hop across her silky puddles. This was the first time I had heard her speak and I didn't want to disturb a thing. Out of her daughter's sight, her mum gestured to me with silent but emphatic expressions suggesting joy in hearing her daughter speak in English to a relative stranger. This

heightened the moment's intensity, and I had to work hard to subtly acknowledge her excitement whilst also calmly attending to the little girl's continuing story.

The minor, almost imperceptible, glance at the screen without missing a beat of the story seemed to signal a transformation of forces. Something happened that changed everything to render a lingual expression capable. It doesn't matter what it was; the conditions could never be replicated to reproduce an exact event, and the focus of this study is not on lingual outcomes. But in that quantum (minor) event, what mattered was being present in the improvisation, allowing space for nonlingual bodying to become-with swishy, splashy scarves on that floor in English.

There was indeed a 'transformation by the potentializing force of what courses through the event' (Manning, 2020a, p. 21), felt in mum's animated expressions, my becoming-still to avoid disturbing the forces at play, and the verbalisation in one language, then another, perhaps to include me in the scarf improvisation. Later, mum shared that her daughter hadn't spoken in nursery for over a year and had been assessed as having delayed speech which she felt did not reflect the intelligence and capabilities of her fluent, bilingual daughter. Even trying not to disturb whatever complexities might be at play here, I could feel a rising sense of injustice, already entangled in, and affected by, the micro-political forces intra-acting in these relations. Remembering the minor gesture and the joy of that session (re-created with every reviewing of the Zoom recording), I realised that the minor had acted as 'a force that courses through [the major], unmooring its structural integrity, problematizing its normative standards' (Manning, 2016, p. 1). This improvisational method activated conditions for possibility, allowing the mother and I to encounter the potentialising of nonlingual modalities. This was a manifestation of research-creation attuned to the '*what-if*', inviting response-ability and rendering the other response-able.

Such a force may be politically or physically minor, but it is powerfully resonant; a felt-sense that sticks to my senses (Ahmed, 2010) and destabilises my understanding of the intra-actions in process, reorienting their trajectories. In Stage One, one-to-one Zoom sessions in families' homes made it easier to spot opportunities for response-ability. However, with many oddkin calling for attention in the Stage Two group sessions, it was not always possible to attune to

sensations *in the moment* and I decided to enlist the help of video editing software. Using this after the fieldwork enabled me to slow down and attune more closely to the unusual, unfamiliar events that had stuck to my senses, which I discuss in Chapters Four and Five. Using GoPro cameras to record the Stage Two sessions produced extensive data, not all of which were analysed; several agential cuts exemplifying important concepts were not used in this thesis. Yet all the theses in the world could not contain the 'unfathomable multitude' (Barad, 2015, p. 401) of minor forces and potentialities manifested in this study. In what follows, I explore how this study embodied a research-creation design committed to becoming-attuned.

3.2. Speculative fabulation in research design

Having examined why a speculative methodology is a productive approach for this research, I now set out the research design and recruitment parameters, how the movement-material propositions offered divergent possibilities as they became entangled with nonlingual bodyings, and what role the matters of care played throughout this project.

3.2.1. Experimental design and oddkin recruitment

> *'This transversality of practice is something we've explored at length […] asking ourselves what modes of work best facilitate philosophical thinking, and what kinds of process allow artistic practices to enter deeply into material propositions' (Manning, in Loveless, 2020).*

Speculative recruitment of more-than-human oddkin

In designing this research (introduced in section 1.4.), I used an agentially distributed, speculative, research-creation approach to recruitment, data creation and analysis (Barad, 2007; Haraway, 2016; Manning, 2016). I designed the recruitment and fieldwork stages to activate divergent materials and bodyminds, using movement-material propositions (Manning, 2009a) as an apparatus to cultivate trust and shift perspectives. During the fieldwork, materials and apparatus allowed us to attune to each other's rhythms, imbalances, minor gestures, affective and ephemeral intensities (Manning, 2016; Springgay & Truman, 2018) as more-than-human relations emerged. In this section, I describe how the fieldwork sessions were designed, recruited to, and carried out, emphasising how the speculative framing of my data creation methods was key to rendering capable the response-abilities of all oddkin participants, making it a micropolitical act.

Following a pandemic-enforced change of plan (see section 1.4.) and an amended MMU Ethics approval (on 10.10.20 - see Appendix B), I resumed my recruitment in autumn/winter 2020, inviting families with non-speaking children under the age of five to join the study. Six families were recruited via the SMIRA forum which has a membership of around 12,000

(parents and professionals) and is recognised for its commitment to emerging research. Following initial meetings in January 2021 to introduce the study and discuss consents, I sent the families a short video to introduce myself and the research. This meant the children could see me without 'being seen' before the Zoom sessions were conducted from February to March 2021. My recruitment practices involved more-than-human oddkin, acknowledging that minor socialites of human recruits are sometimes labelled as non-normative (Manning, 2020a). I further inverted the traditional sense of participant recruitment by recruiting several oddkin materials (see section 3.2.2.) including a hand-puppet named Bobble who invited the children to come and play during the Zoom sessions. According to some parents, the idea of dancing with Bobble each week prompted great excitement at home!

I had anticipated difficulties in recruiting participants to contribute to research not directly seeking solutions to non-speaking. However, families were open to the speculative nature of the study. During initial telephone calls and fieldwork conversations, parents confirmed that being with their children in relaxed spaces that offered comfort and encouragement was more important than having expectations of a therapeutic 'fix'. That is not to say that there was not hope and desire for a 'positive' outcome, but this seemed to focus more on achieving a sense of wellbeing than a tangible speech performance. They recognised the study provided this space and made great efforts to attend all sessions, reporting that the participatory and experimental nature of the research helped reduce their child's distress in unfamiliar environments. This open-mindedness facilitated enjoyable research relations despite the daily challenges these families experience in relation to not-speaking.

Stage One - improvising with movement-material propositions over Zoom

The first stage involved six, weekly, hour-long sessions over Zoom™ developing familiarisation through simple movement-conversations, as parents, children and I played with material oddkin propositions (outlined in Appendix E) and responded to each other's movements via the screen. Each session began with an introductory welcome song sung to Bobble, helping shift attention away from individual children as they settled in. This was followed by a movement-material proposition that I modelled at a distance from the screen, keeping words to a minimum, so families could see my whole body moving-with Bobble, Big Ted (to model

child climbing over/moving with adult), or materials from the Suitcase of Adventures (see section 3.2.2.). These movements initiated improvised movement play in one form or another, such as exploring finger or hand dances, or rocking and rolling over each other's bodyminds. As children's and parent's ideas developed, I would take some moments to watch and follow their movements, as they would mine, in a tentacular reciprocity (Haraway, 2016) of movement-material imaginaries.

During each session, I held up a numbered envelope, signalling to the parent to introduce the next package from the child's Suitcase of Adventures. The child would open it, revealing a new proposition that would lead to the next stage of movement-material-play (discussed further in section 3.2.2.). Minimising speaking (unless we made up stories together, with the parents' help), I moved from one proposition to the next with my body when the participant families seemed ready. When I did speak, I asked open-ended questions (e.g., 'I wonder how these scarves could fly?'), to reassure that there were no right or wrong responses. Parents were eager to join in, some narrating their child's movements, others directing their child's attention to the screen to '*look at what Ruth is doing!*' as I engaged with the next proposition for movement-play. Often, we didn't use all the planned propositions, indicating the child's engagement in their own emerging ideas, which I followed or played alongside (Kind, 2020) as much as possible given Zoom's limitations. At the end of each session, Bobble returned, asking us to share what we had done. This allowed me to put a few words (and lots of movements) to the family's improvisations with the parent's help and validate children's responses to the propositions.

After Stage One, I interviewed the parents over Zoom for feedback on the improvised format and content of the sessions, if their children had responded beyond the Zoom sessions, any challenges, and any suggestions to make the face-to-face sessions more comfortable in Stage Two. Parents appreciated the improvised nature of the sessions and having their children's movement ideas reciprocated. Some parents requested sessions beyond the research period, ideas to extend movement into their early years settings, and an online messenger group to continue creative ideas at home, which was set up once all consents were received and continued to be used by participants for around a year. Following the Zoom sessions, three months passed whilst we awaited the lifting of the Covid-19 lockdown and the reopening of

the gallery. One parent requested videos of movement ideas to engage with at home, keeping their child familiar with me and the research activities to minimise anxiety for the upcoming Stage Two. Although I had not scheduled for this, other families also felt it to be a useful bridge, so I prepared eleven short videos for the children to engage with at home based on the improvisations from the Zoom sessions, sending one each week leading up to Stage Two. For me, enacting an ethics of care involved responding to participants' ideas in order to facilitate engagement as well as possible (Haraway, 2016), which felt especially important during the restrictions of the pandemic (discussed further in section 3.2.3.).

Stage Two - improvising with movement-material propositions in a gallery space

The second stage, from May to June 2021, involved six, hour-long, face-to-face sessions with the same parents and children together in a local art gallery. Two families could not attend, so Stage Two continued with four families. The gallery was chosen for its spacious, light-filled environment conducive to movement, as well as its accessibility, free parking, private rest-room facilities, on-site cafe, and supportive gallery staff dedicated to the families' wellbeing and privacy. The gallery space was organised with five pop-up tents set out in a large circle, with duvets, rugs and cushions inside and in front of each tent, positioned two metres apart and fully sanitised before each session.

Before the sessions began, I emailed families a short video detailing the gallery setup, including private opt-out spaces for use during the sessions and the discreet positioning of the four GoPro cameras used for recording the sessions (see section 4.1.3.). I also invited familiarisation visits on a one-to-one basis prior to the face-to-face sessions. One family took advantage of this, wanting to help their child become comfortable with what would otherwise have been an overwhelming experience for her with other families present. Their visit led to an unexpected improvisation between the child and myself, producing verbalisations and affective intensities which left significant marks on me as a researcher, described further in section 3.2.3.

Each session began with participants choosing their own 'den' from pop-up tents arranged in a circle, designed to provide space for divergent bodyminds to de/regulate away from the others' gaze (see section 2.3.3.). In the event, children expressed sustained engagement in experimenting with the malleable shapes of the tents, which became continually entangled into the movement-play eradicating any potentiality as a space of separation. Participants brought items from their Suitcase of Adventures, as requested each week, which I supplemented with additional oddkin materials for improvisation such as balls of wool, masking tape lines, large sticks, paint brushes and bowls of water. I discuss the lively, agential role of the oddkin materials further in section 3.2.2.

Once everyone was settled into their tents, Bobble would appear as usual for the welcome song. At every session, one child would silently sing along, exaggerating the shapes of certain words as she explored their feel. The affective forces of her actions continued throughout the sessions as she occasionally mouthed gestures, sounds and rhythms emerging from the movement-play. Sessions progressed largely by feel, with me offering movement-material propositions to improvise with and seeing where these would take us (also outlined in Appendix E). Each proposition extended the movement ideas with oddkin materials introduced in our Zoom-based sessions, expanding them into the larger gallery space. Unlike on a laptop screen, children could see the whole of me without having to stop moving and families were more used to the idea of moving freely with the propositions offered. Being able to see each other without disappearing 'off screen' helped me to engage with the children's responses to movement and closely attend to their ideas, enabling the methods for data-creation to remain dynamic as relations between human and non-human gained momentum (Barad, 2007). While some movement-material ideas ran out of steam pretty quickly, others gathered force and iteratively transformed as propositions spawned new ideas which morphed into new possibilities (Lenz Taguchi et al., 2016). As with Stage One, each session ended with a round-up of participants' movement ideas for Bobble, followed by a picnic lunch where parents shared their everyday experiences of SM diagnoses, support needs, local authority discrepancies, nursery or school encounters, and managing 'friendly' neighbours. During this time, children helped me pack down the space, rolling onto and over tents, cushions, and duvets as we squeezed out the air and bagged them up amongst

sprawling legs and arms. Although there were no children's voices, these ordinary, fun intra-actions felt full of volume.

Video-watching and Fieldnote-writing as a sensing practice

In the early stages of the research design, it seemed pragmatic to construct data using GoPro cameras since I would be participating in the improvisations and unable to take fieldnotes during the sessions. Cameras were portable, durable, flexible and unobtrusive, minimising the discomforts of the observer gaze for participants. The quality of video provided a level of detail that allowed me to notice subtle intra-actions, body languages and environmental cues that might otherwise be missed. It also supported a creative method for analysing data diffractively, experimenting with how data are perceived and supporting the exploration of multiple viewpoints and experiences, which aligns with my speculative methodology (Caton, 2019; Hultman & Lenz Taguchi, 2010). However, I found reviewing the footage gave me insights into private shared moments between families, since participants had been so unaware of the cameras, that made me uncomfortable to watch. When a parent might secretly shower their child in kisses or the child might receive a quiet telling off, watching these events attuned me to the child's discomfort in case they might 'be seen' and I felt like I was intruding into personal relations I had not been invited to witness. Cameras were participants in these speculative, sensing practices (Ivinson & Renold, 2016). Therefore, the positioning and type of cameras used is something I would reconsider in future research, which I discuss further in section 4.1.3.

After each session, I reviewed the Zoom and GoPro video footage (see Appendix F) and wrote some fieldnotes noting little encounters or 'wonders' that seemed to stand out (MacLure, 2013c, p. 228). Writing fieldnotes helped me build a sensory attunement to the affective flows of intra-action between participants, materials and spaces. The act of video-watching and fieldnote-writing amplified sensations and memories that resonated in my bodymind for a long time after the sessions (Pink, 2009). Certain encounters seemed to take precedence over other potentialities, piquing my curiosity for further intra-action (Lenz Taguchi et al., 2016). Therefore, I acknowledge that my data constitutes entanglements of Zoom and GoPro footage, fieldnotes, synaesthetic sensations, sticky memories, histories and hopes for the

future. Using the video editing software platforms, *Moviemaker* and *Photopea*, they and I created agential cuts from these encounters, leading to playful diffractive analyses which I discuss in Chapter Five.

As previously mentioned (see section 2.3.2.), a speculative methodology accounts for how nonlingual, transcorporeal bodyminds intra-act with their environments, histories and futures, always in flux and never foreclosing the possibilities. Attuning to these possibilities-in-the-making was key to the improvisational approach. Although letting go of structure and language was not always comfortable, it was essential to harness that this 'collective, intense and unpredictable experimentation might be capable of letting new things be born' (Olsson, 2009, p. 104). These discomforts, which I discuss further in section 4.1.2., grounded the movement in experimentation and became productive of generative ways of being.

3.2.2. Oddkin materials and spaces

> *'Attention to the affective resonances of encounters with difference, including the ''ability of inanimate things to animate, to act, to produce effects dramatic and subtle'' (Bennett, 2004, p. 351) can thus be seen as a micropolitical act' (Nxumalo, 2012, p. 296).*

Oddkin material entanglements

In the materials-gathering process prior to the fieldwork sessions, a hand-puppet named Bobble emerged from my props bag and seemed to 'stick' to the emerging ideas of oddkin materials that might be productive of nonlingual intra-actions. This wasn't an arbitrary choice but emerged from attuning specifically to the entangled forces at play in an object that felt vibrant and lively (Bennett, 2010), opening new boundary-making practices (Barad, 2007). During the sessions, although everyone knew Bobble was not human/animal, a lively force emanated from it, beyond the biological-neuronal-social volition of my hand, which compelled intra-actions with Bobble *as if they were alive*. In the field of theatre, this phenomenon is called the 'suspension of disbelief', where human perception operates as the all-seeing, all-knowing supremacy. I prefer to think of it as the vibrant qualities or *affective vitalities* (see section 2.3.3.) emerging between participants and puppet as synthetic and synaesthetic relations entangled to create an 'exchange, thrill, a transmission amongst sensing bodies' (Hayward, 2010, p. 591). Bobble's affective vitalities became 'sticky' in a way that sustained more-than-human connections across ideas, values, and objects (Ahmed, 2010, p. 29).

As Bobble marked the start and end of each session, with participants singing to and sharing their movement-material improvisations with him, children became quite attached to him and, in a strange sort of way, he to them. He appeared in the 'welcome' signs on gallery doors, in emails I sent to the families and in the videos that bridged Stage One and Stage Two (see *Figure 5*). He sat on my desk in between sessions, as a very present force connecting me to the children and their nonlingual ways of being. Later he made me laugh as I reviewed GoPro footage and discovered him discarded, lying in a limp bundle, seemingly calling to become entangled again. How could an inanimate object have a life force compelling such a strong desire for animation? I realised, it wasn't just the dynamic character of a woollen hand-puppet but the liveliness of all the research caught up in this puppet that was creating

(in)tensions (Springgay & Truman, 2018). Knotted into this were the excitement of children finding his welcome posters, the expectant silence that fell when Bobble appeared, their audible giggles when he danced upside-down, the connective frissons that sparked when I/Bobble waved and all the children waved back, the generative expressions emerging in movement, and the falling away of expectations to conform to a norm. These were oddkin entanglements of all material-discursive kinds.

Figure 5: Bobble's welcome poster and dancing with their oddkin, Sockadoodledoo

More oddkin relations were mobilised through an assemblage of unusual objects (silk scarves, feathers, magnifying sheets, bubbles, socks, sticks, ribbons, pegs and drawing maquettes) sent to each family in a *Suitcase of Adventures* prior to the Stage One sessions (see *Figure 6*). Each object, individually packaged for the relevant Zoom session, served as a proposition for open-ended movement inquiries between participants. They played additional roles, becoming new characters, comforters, partners, intra-actants and imaginers in movement-play, enacting diverse oddkin relations (Haraway, 2016). Their unusual-ness instigated unfamiliar, exploratory movements from small bodyminds and their kin, highlighting the vitality of these lively, nonhuman objects in creating oddkin relations across diverse categories of players and processes which make up kinship (2016, p. 216n214). In intra-acting with these oddkin I considered the kinds of problems and questions they produced (Olsson, 2009). These materials, imbued with a sense of more-than-one in the play (Manning, 2013), sparked new imaginings and held on to growing ideas for future playtimes. Importantly, they

opened up spaces for me to play alongside without words, woven into which were many verbalisations, including improvised languages and movement sounds.

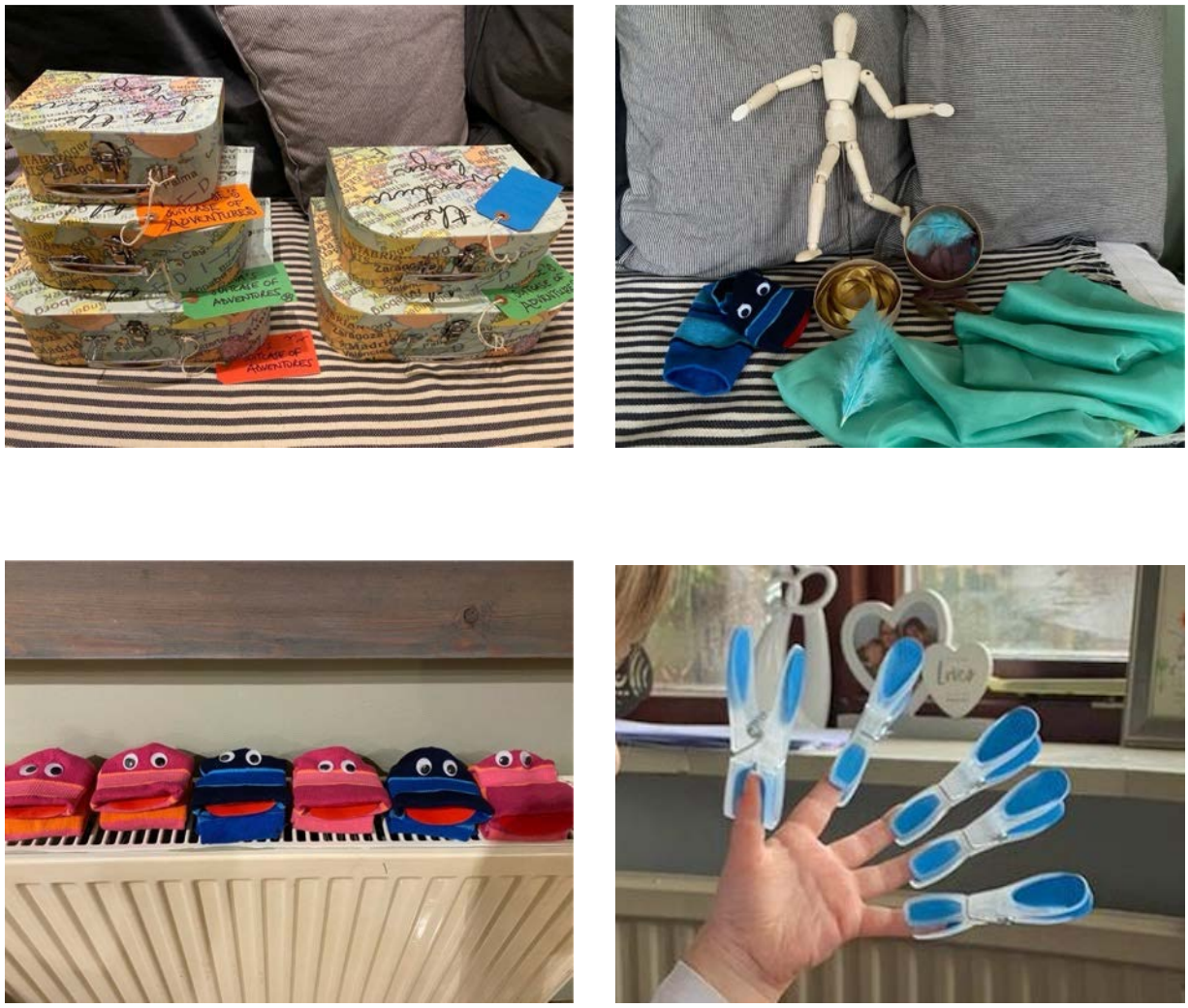

Figure 6: Suitcases of Adventures and oddkin materials

Each movement-material proposition connected transversal ideas and new patterns of difference, creating new records of history that challenged oppressive representations of how a nonlingual child 'should' be (Haraway & Goodeve, 2000; Murris & Bozalek, 2023; Osgood, 2019). I argue that improvising with divergent bodyminds and movement-materials (see section 4.1.1.) is a micropolitical act, shifting power centres and opening safe spaces for movement that 'blurs and complexifies the categories created by dominant multicultural pedagogical approaches' (Nxumalo, 2012, p. 283). For instance, to avoid anticipating the propositional encounters, I created duplicate envelopes for each object, revealing them when

the moment felt right in each session, signalling the child to open theirs as well. Unexpectedly, this created the belief that I, too, *did not know* what was inside and all the children carefully watched me slowly opening mine whilst opening theirs, seemingly excited for both of us. This positioned us in equal anticipation of what we might be about to receive, a prior-event brimming with its own intensities. It seemed to create a process that activated the *not-yet* in the object, its infinite possibilities creating experiences-in-the-making and 'value in the moving' (Manning, 2016, p. 217).

Despite the suitcases not containing the usual toys that might be gifted, there was never a sense of disappointment, just many surprises in how the objects were received. The A4 magnifying sheet was particularly popular, distorting the shapes of faces, hands or anything placed behind it and inspiring hilarious improvisations. Movements and sounds became increasingly absurd and playful as participants seemed to be less concerned about what they 'should' do with the objects, or how their expressions might be interpreted. This oddkin movement-play had the effect of slowing down our tendencies to focus on the use-value of these objects 'as carriers of sense and meaning-full expression' (Holmes & Jones, 2016, p. 3).

Creating spaces open for anything

Since the gallery sessions afforded a wide-open space, in Stage Two I introduced new objects including elasticated lycra hammocks, long balls of wool, torches, masking tape pathways, buckets of water, rolls of lining paper and paint brushes to stimulate larger-scale movement (see *Figure 7*). The tents were surprisingly divergent, morphing from spaces of refuge to central characters in the painting, wool webs, torch dancing and touch games. As families relaxed into the speculative approach, more-than-human oddkin relations seemed to grow generatively during each session, embracing the divergent spaces that were open for *anything*.

Figure 7: Spaces and materials for divergent movement-play in the gallery

During one session, we draped large lycra sheets over the top of the tents to make them darker inside. The propositions were the tent and the torch. Adults moved stealthily around the outside of the tent, shining their torch onto its folds, which repeatedly creased across different diagonals as children jumped around inside. The tents shook and swayed as children responded to the movement of lights while parents danced around, surprising them by shining torches from new directions. Small bodyminds darted about, intra-acting with the bouncing beams, trying to catch the reflections with outstretched fingers, wide eyes and audible giggles. The materials' movement compelled even greater human movement, disrupting the stillness of that cosy space and disturbing the pattern of fabric waves as the torchlights danced erratically on the sides of the tents. There were no boundaries to this game, no limitations on timescales, noise or wild movement. None of us knew the rules, but

everyone seemed to be infected by the delight and spontaneous sounds generated by a simple torch-tent proposition. The gallery space was open for anything, including unpredictability, functioning as a safe anchor point from which families could venture (Hackett, Holmes, et al., 2020) into the risky territory of verbalising and being heard. These emerging relations opened potentialities for disrupting conventional notions of difference and challenging the idea that 'materials have fixed properties that determine what knowledge they can transmit about identity' (Nxumalo, 2012, p. 297).

Dancing from tent to tent, I took up the torch-shining mantle, allowing parents to climb into the tents and witness their children's delight because, as Myer's proposes, '[w]itnesses are critical participants in any improvisational movement practice' (Myers in, Loveless, 2020). The tentacular bodyings of rocking-rolling-giggling-creasing-folding-flashing-dancing oddkin was evidence of relational bodies (lights, tents, humans, laughter) entirely entangled in each other's movements. The affective phenomena produced by these tentacular ones became 'sheer contagion' (Haraway, 2016, p. 115) and there was a sense of wanting to play to infinity within this entanglement, as if chronological time could stand still forever. The eruptions of joy and absorption of both adults and children seemed testament to how Christina MacRae et al describe the anchoring of safe spaces as 'political acts of inclusion, ensuring that time is allowed to flow at different speeds and intensities' (in, Hackett, Holmes, et al., 2020, p. 140).

Throughout the sessions, speculative fabulations with movement-materials produced new possibilities for being different in moments that were not of human making, but which revealed the potentials in vibrant child, parent and material bodies entangled together (Bennett, 2010). They enabled humans and nonhumans alike 'to intervene in the world's becoming, to contest and rework what matters and what is excluded from mattering' (Barad, 2003, p. 827). These lively materials and spaces *did* matter, becoming entangled in the activism of this project and changing the trajectory of spacetime. In relation, they created social and historical phenomena that were more-than a simple causal apparatus-effect, materialising what Murris describes as 'a matter of *justice*' (Murris, 2016, pp. 92, original emphasis).

Experimentation opening new researcher roles

By prompting unpredictable movement-conversations (Lenz Taguchi, 2012; Pollitt et al., 2021), I experimented with my role as a researcher working the limits of research (Mazzei, 2014), becoming-with the tensions of working indeterminately by being open, present, affected, relational and embodied within children's emerging movement-material ideas. My bodymind also became an experiment in the video-data, my creaking limbs and woolly socks frequently intra-acting with the GoPro cameras to interrupt views and diffract data even as they were created (see section 4.1.3.). This approach is not without its challenges, including the uncertainty for researcher and participant families of knowing what, or how, things will happen in experimental research with continual iterations and divergences into different areas (St. Pierre et al., 2016, p. 7).

I adopted a least-adult position (Mandell, 1988) by playfully engaging with children's movement ideas, and the least-expert role (Koro-Ljungberg et al., 2018) by not over-structuring each movement-material proposition. Whilst holding the children's improvisations open for anything, I enacted the role of apparatus, not passively observing but productively becoming-with the phenomena (Barad, 2007, p. 142). As apparatus, I seeded intra-actions across reciprocal, more-than-human relations, embracing the vulnerabilities this produces in entering a research site without clear outcomes. I was mindful of the uncertainties this creates for participants who might want to be reassured of the benefits for their child and, in the initial uncomfortable periods of not-knowing, we all found not-talking and not-explaining quite a challenge! As I have remarked elsewhere, '[i]t requires time to build trust in the method, the space, the researcher, the research purpose, and our own bodies, and to let go of performative expectations on ourselves or others' (Churchill Dower, 2022a, p. 79). In playing out the imbued micropolitics, the traditional role of researcher was recast as 'becoming-activist' (Taylor et al., 2020, p. 171) where the activation of entangled ethics and aesthetics became what mattered. My ethics was a politics of care in considering the implications of the methods, materials and relations mobilised through this research while attending to broader transcorporeal accounts that keep the human decentred, which I write more about in section 3.2.3.

Once the improvised, speculative methods were established, participants became absorbed in the movement-material propositions. expressing positive feelings about experiences going beyond the dominant developmental temporalities of their everyday settings (Nxumalo, 2012). As sessions progressed, the improvisations dissolved expectations to speak or move in certain ways, with gentle 'condensation, fusion and implosion' (Haraway, 1997, p. 12), unearthing surprising connections and complex expressions across human-nonhuman oddkin. These affects continued to be sticky (Ahmed, 2010) and contaminate movement-play at home long after the sessions ended, evidenced by cards made for me by participating children depicting their movement improvisations with socks, monster trucks, teddies, beads, scarves and other valued everyday objects. These agential responses marked the process of becoming different (Barad, 2007); embracing practices, powers and identities of 'becoming happy' (Ahmed, 2010) and response-able (Haraway, 2016) with leaky, heterogeneous, uncertain, nonlingual ways of being.

3.2.3. Posthuman ethics of care

> *'Considering care as a struggle makes of it an ethico-political issue well more problematic than it could initially seem to be' (Puig de la Bellacasa, 2017, p. 29).*

A lively, entangled, messy ethics of care

Throughout this project, I have aligned my research ethics with Puig de la Bellacasa's (2017) *matters of care*. This is a notion that responds to feminist discussions of the vulnerability and power imbalances around marginalised issues. Puig de la Bellacasa argues that care should not be a moral obligation with 'ready-made formulas' (2017, p. 60) that perpetuate normative economies, regardless of the intimate, pragmatic and material consequences of each care event. Echoing Joan Tronto's (1993) and Donna Haraway's (2016) ideas of care as part of a more-than-human, life-sustaining web, Puig de la Bellacasa repositions care as an ontological and situated matter which attends to 'what a livable and caring world could be [and] what care can mean in each situation' (2017, p. 60). This is an important perspective for my research in imagining nonlingual ways differently rather than being defined in advance according to fixed moral or epistemological norms (2017, p. 60). Thinking care-fully helped thicken the meanings of principles and procedures for integrity, consent, transparency, care for participants and careful data handling as detailed in the British Educational Research Association (BERA, 2024) ethics protocols and the principles of the Concordat for Research Integrity (Universities-UK, 2019). I applied these principles through a relational ethico-onto-epistemology (see section 1.5.5.) emphasising that the epistemological and ontological projects we invent are not neutral but ethical, and we are responsible for the worlds they create (St. Pierre in, Mazzei & Jackson, 2023, p. xxi).

As a matter of care, I took an affirmative approach (Strom & Mills, 2021) to designing my participant recruitment and speculative methods in an application to Manchester Metropolitan University's Research Ethics and Governance Committee, which was approved on 07.07.20 (see Appendix A). However, after a few months the project had to be halted and revised as the participating school went into lockdown due to Covid-19, restricting access only to staff and students. In a situated response to the pandemic, I re-started the recruitment process (having had my revised ethics application approved on 10.10.20 - see Appendix B) by

reaching out to families who could participate over Zoom. Discussing the Participant Information Sheet (PIS) (see Appendix C) with participants helped me ensure that their concerns were handled care-fully prior to consent forms being signed (Flewitt & Ang, 2020) (see Appendix D). In listening to participants' experiences of the reductive politics that had defined particular positions for their nonspeaking children in previous situations, I was able to affirm that I did not see their children as 'broken', nor would this research seek to 'fix' their different ways of being. I could only offer an improvisational movement approach, open-ended encounters with unusual objects and curiosity for a speculative process that would care for participants' nonlingual bodyminds. I elaborated on the importance of children's assent throughout the project (Brown et al., 2017), affirming children's right to follow their own ideas, change their minds or withdraw at any time and always *presuming competence* of divergent bodyminds (Manning, 2020a, pp. 339-340, n.316). I paid close attention to the giving or withdrawing of assent through gestures, body language, verbal and non-verbal cues (Flewitt, 2022) and attended continually to the subtle minor gestures of adults' and children's bodyminds whilst we responded within movement propositions.

I enacted an ethics of care by embracing the complexities and nuances of these messy, impure material realities, moving towards 'a more radically democratic way of listening to neglected things' (Puig de la Bellacasa, 2017, p. 58). This helped minimise any sense of having to fulfil obligatory responsibilities, mobilising multi-layered *superpositions* of relations and response-abilities interwoven with the lively ways of being otherwise (2017, p. 72). For me, this meant acknowledging the inhibitive politics that can be present in the movement space and creating conditions to minimise their discomforts. I did this by repeating invitations for nonlingual ways of being and moving, demystifying session activities (e.g. sending short videos before the fieldwork began) and facilitating relaxed and calm atmospheres. As Puig de la Bellacasa emphasises, listening-with-care is not neutral but 'an active process of intervening in the count of whom and what is ratified as concerned' (2017, p. 58). Attending to the situated matters that participants cared about offered a way to value their divergent ways of being, to facilitate ways to express freely and allow differences to flourish (MacCormack in, Braidotti & Hlavajova, 2018, p. 346). Paradoxically, whilst Covid-19 disrupted the contact-based movement plans in the original research design, the enforced move to Zoom-based contact from participants' homes meant that children were relaxed and

enthusiastic throughout all the sessions. Perhaps the desires of nonlingual bodyminds for sensory intra-action after experiencing social isolation for the previous eighteen months became a compelling force, along with an affirmative space to enjoy movement.

Enacting an ethics of care which values radical ways of being otherwise, also activates theoretical and methodological dilemmas. In what follows, I explore these dilemmas and consider my researcher response-abilities in listening with care and producing situated data. Rather than offering a universalising, 'impartial' language by which to 'interpret' nonlingual bodyminds (Land, 2023, p. 73), I reach towards messy, lively, minor gestures and being in touch with what matters in the everyday practices of care in more-than-human lives.

The problem with making nonlingual bodyminds visible

Several ethical dilemmas arose around the production of videos that make children's faces visible. Although families consented to images and videos being used in the research documentation, it became clear during the analysis that the centering of the human in these images invites an individualist gaze, positioning children as subjects rather than entanglements of oddkin matter (Trafí-Prats & Caton, 2020). This conventional observation reinforces the association of unsituated behaviours with certain social, developmental or psychologised identities (from afar), rendering mute the complexity of sympoietic relations happening within (Bennett, 2010, p. 37; Kind, 2020). Building on Puig de la Bellacasa's efforts to reclaim touch by exploring haptic visions as ways of 'proximal intimate knowing' (2017, p. 19), I argue that thinking-with-care in transmitting a sense of oddkin relations-between the research constituents (human+nonhuman) through videos or images is an important and response-able move. Problematising the distances between subjects, objects and bodyings helps counter injustices experienced in nonlingual bodyminds through expectations of being visible and known by external measures (Barad, 2007).

I discuss in section 4.1.3. how I diffract video images to engage speculatively with a 'possible transformation of ethos [through] more careful touching visions' and the ethical obligations they imply (Puig de la Bellacasa, 2017, p. 20). I avoid re-turning to individual decision-making about how images 'should' appear and engage with 'the living web of care' (2017, p. 20) that

manifests through collective forces of movement transversing relations. There are nevertheless (in)tensions in this care-full approach (Springgay & Truman, 2018) as parents are keen for their children's capabilities to be seen. Given that children may not fully understand the implications of sharing data in a thesis or how it frames their young bodyminds through a particular perspective over time, my response-ability as researcher, mother and feminist new materialist is to create possibilities for reimagining what a body can do without constraining a child's identity within research values to which they have not subscribed (Caton, 2019). Section 4.1. shows how I do this by curating the video-data using software-as-apparatus to help me attend to minor gestures, distributed agencies and affective vitalities that exemplify nonlingual ways of being without spotlighting participants' faces in any recognisable format.

Ethics that render each other capable

In section 4.1. I discuss positioning methods-as-apparatus to enable the conditions for sensory relating. Enacting an ethics of care that foregrounds sense-data without trying to interpret voice (Mazzei & Jackson, 2017) begins long before attending to data. Sensory caring begins by resisting anticipatory, pre-emptive meanings based in normative frameworks, and practises ways to displace and 'disturb the meanings of an established "well" ' (Puig de la Bellacasa, 2017, p. 7). It matters how children's movement ideas might express relations with other things, or how I might notice, sense, be affected by and sometimes respond in play with their ideas without imposing external meaning. This practice gives me chance to detach from education's incessant desire for understanding and consider, 'what is being set in motion, how might I participate with this […] so difference is enhanced and possibilities enlarged?' (Kind, 2020, p. 58). Sylvia Kind encourages attuning to multiple ways of knowing through an expectant listening and responding to children's rhythms, including the ungraspable, unknowable and unarticulated ones that vibrate across their relations in the world. I am reminded of the multiple distributed agencies involved in care responses as 'a thick mesh of relational obligation' (Puig de la Bellacasa, 2017, p. 20). By intra-acting with this thick mesh through the apparatus of movement improvisation, possibilities for shared sense-data are expanded, creating 'a porous, permeable sensorium of connectivity with/in a universe of dynamic co-constitutive and differential becomings' (Taylor & Hughes, 2016, p. 15).

To guide my participation in these relations while resisting interpretation, I re-turn to Mazzei and Jackson's (2017) three moves towards considering 'voice' (i.e. *bodies* of difference) as uncontainable (see section 2.2.4.): pay attention to their diverse dimensions, resist over-simplified representations, and use practices that are open to the messy 'potentialities of that which did not unfold lineally via neat and tidy causality' (Mazzei & Jackson, 2017, p. 1096). These moves manifested in one particular encounter with a family during their familiarisation visit to the gallery. The mum and her daughter walked around the large, light space with me, chatting about the artworks on the walls, pointing at the big light wells in the roof casting dancing shadows on the floor. As we sat down, the four-year-old began to handle the things within reach - leaflets, bracelets, teddies, cushions, the knots in the sofa and other materials - with care and attention. She prompted mum with elbow-nudges and raised eyebrows to hand these things to me, as if wanting mum to share what was important about them. I soon learned that, by taking the objects and investigating them with my own hands, her face lit up. If I put them down, her face turned to search and feel for the next thing of interest. Every time her hand dived into mum's bag, another object jumped out, to be flapped up and down, cosseted and stroked before being handed across. The space quickly became messy with lively things (Bennett, 2010), expressions that did not need words, and I did not feel the need to talk. As mum chatted away about this and that, we played and felt the shape of these things. Then she offered something directly to me. A leaflet. I took it with curiosity and looked carefully, not at the words but at the folds, the textures, the smoothness and sharpness of its form, its malleabilities and capabilities. In wondering what might be emerging, I opened, smoothed and refolded the leaflet, trying (and failing) to make it fly. I sensed her delight as she wriggled, giggled, and looked for the next exchange of materials to move-sense-feel-with. It felt like '*becoming-other*' (Lenz Taguchi, 2010, p. 172), entangled-with the affects of oddkin relations.

Throughout the encounter, as I grappled with what I thought were matters of concern - not to demand eye contact, to cause distress or to raise expectations for speech - my conscious ordering of events was swept aside by the visceral forces of sensory connection with this little girl. The encounter seemed full of power, evoking unanticipated pre-personal affects (Lenz Taguchi et al., 2016, p. 712). Her minor nonlingual, tactile expressions affected me and prompted me to play with the leaflet in new ways, responding from the speculative middle of

the event (Springgay & Truman, 2018). As I attuned to her ways of being, it felt like my habitual ways of listening 'for' something, perhaps a meaning or a 'next step', began to dissolve. My bodymind stopped performing to perceived expectations and became absorbed in the possibilities of the leaflet, increasingly wondering, moving-with the sensory, caring for and holding onto something unknown that seemed to matter. We found a way of entangling-with matter differently, cutting together-apart ideas and sensations (Barad, 2007) that seemed to matter.

The alternative spacetimemattering of *looking-with* sparked a capacious synaesthetic connectivity, producing a resistance to developmentalist politics that determine eye contact (*looking-at*) as a symbol of regulation and compliance (Hackett, MacLure, et al., 2020, p. 924; Lenz Taguchi, 2010). By caring otherwise, letting go of the ubiquitous search for meaning, there was no sense of what bodyminds might not be capable of. This caring for *how*, not *why*, created a sense of more-than-human co-production, 'a methodology of folding, that brings all participants inside the research process' (MacRae & MacLure, 2021, p. 267). Leaflet, tactility, knots, nudges, looking- and feeling-with ways of being otherwise were research phenomena participating in relational ontologies generating concern, care, wonder, respect, humility, diversity and kinship (Alaimo, 2010, p. 143).

Experiencing the event from a non-binary perspective was a matter of care. It helped me refuse binary logics that pervade lingual ways of being. St. Pierre (2013) considers acknowledging our entanglements with matter a priority, making our responsibility to being urgent and constant. This supports Barad's premise that justice depends on understanding entanglements as 'irreducible relations of responsibility" (Barad, 2010, pp. 264-265). I discuss the awkwardness of inhabiting more-than-human entanglements further in section 4.1.1. noting that, in the sometimes-uncomfortable proximity of these sensory practices of care, I become keenly aware of their material consequences. Vivienne Bozalek argues that rendering each other capable involves 'cultivating accountability and the capacity to respond' (Bozalek in, Murris, 2020, p. 135), which is useful for thinking about relational ontologies across more-than-human oddkin.

Whilst I have intimately sensed something of what nonlingual bodyminds can do, I am troubled by how to write about this without reducing bodyminds of difference to issues of individual 'autonomy, beneficence, non-maleficence and justice' (Bozalek, in Murris, 2020, p. 136). In communicating these multi-sensory narratives that shape contemporary worlds (Haraway, 2016), words become the dominant arbiter of meaning, suppressing minor forces and liminal feelings that are hard to articulate (Manning, 2016). Yet, writing-with these experiences also allows spaces for synaesthetic relations to leak out, contaminate and resonate (Manning, 2016). Such ethics of care are productive because 'different intra-actions produce different phenomena' (Barad, 2007, p. 58) bringing to the fore alternative ways of being and mattering. The (in)tensions between feeling and articulating, between being and knowing, reveals the power of material realities to shape and generate new kinds of thinking (Rautio, 2013, p. 400). These entanglements urge me to stay with the troubles of speculative experimentation, unfolding sense-data and finding alternative ways for nonlingual flourishing in bodyminds of difference (Bozalek & Fullagar in, Murris, 2021, p. 11).

The intensities, sensations, uncertainties and joys of these events might help counter representational, humanist tendencies. However, while attuning to speculative practices that extend worldly possibilities, I am implicated in also extending exceptionalist boundaries by being accountable to the institution and the participants for minimising their legal, economic and ethical risks. The (in)tensions of meeting contradictory ethical requirements[27] that, on the one hand, require methods to be fixed, evaluations objectified, and outcomes limited in advance and, on the other, are indeterminate, impure, messy and fragile remain unresolved. The politics of care is a truly precarious position to uphold.

[27] This perhaps does not convey enough the complexity of ethical contradictions I was grappling with. For instance, in order to ensure I minimised any bacterial contamination amongst participants during the pandemic lockdown period, I was required to observe extensive cleaning processes for the research materials. This included washing all the duvets, blankets, lycra sheets and cushion covers in between each session using washing powder and hot water that causes significant detrimental effects to many animals and nonhuman creatures in the environment. The damages caused by such toxic actions are well evidenced (Haraway, 2016; Tsing 2017; Tuck, 2009). Human exceptionalism reigning supreme in the everyday attempts to live together well on this earth. This is what Barad means when they describe the human as being *of* the world (2007, p.185), affecting and being affected by the world's configurations, and therefore accountable.

3.2.4. Apparatus as conditions of possibility

> *'[W]hat I am interested in doing is building diffraction apparatuses in order to study the entangled effects differences make' (Barad, 2007, p. 73).*

Apparatus attuning to their entanglements

While conventional research apparatus are tightly controlled for accurate measurements, speculative methodologies focus more on conditions of possibility than constraint. That is not to say that *anything goes* but to recognise there is no single, definitive truth to be known in any experiment (Barad, 2007). Even under identical conditions, factors like quantum variations in equipment, atmosphere, bacteria, chronological, technological or researcher bias, make exact replication impossible. Barad (2003) emphasise the importance of the specific social, ecological, environmental and genealogical variables entangled within apparatuses, configurations that change with each intra-action. Speculative research is not concerned with eliminating outliers to reach a so-called pure state but acknowledges the complex constituents of entanglements and explores diverse trajectories, accepting that much will remain unknown (Loveless, 2020). This is key to this study's process of research-creation as an inquiry which 'takes seriously embodied knowledge, craft, creativity, aesthetics, and practices of making as immanent to the processes of making knowledge and telling stories about both what is known and what remains unknown' (Myers in, Loveless, 2020, p. 227).

The apparatuses in this research are also phenomena that reconfigure relational boundaries as part of the ongoing intra-activity of the world and must be tuned to entanglements' particularities in order to responsibly explore their differences (Barad, 2007, p. 74). Tuning the apparatus means creating conditions that allow for the 'transversality of difference at the heart of all practice' (Manning, 2016, p. 41). In other words, not foreclosing the outcomes in advance but facilitating open conditions - socially, culturally, physically - that enable the ontological choreographies (Myers in, Loveless, 2020), or nonlingual movements, of the research participants to emerge.

In the study, conditions of possibility were extended through the relaxed invitations of the space, the welcoming email correspondences, speculative methods, and kinship with nonlingual ways. The materials themselves, like Bobble the hand-puppet (see section 3.2.2.), played their part as apparatuses for opening divergent possibilities. Bobble, entangled with my hand, would 'whisper' into my ear at the start and end of each session. 'What's that, Bobble?' I would ask, allowing time for words to appear on my tongue as I felt the weight of anticipation for what Bobble would say next. I often found myself nodding in agreement with this animated glove; "Oh yes, dancing upside-down is one of my favourite things, too!" While I frequently wondered where these ideas came from, I enjoyed their fugitive forces or '*schizz*' (Manning, 2020a, p. 14). On this occasion, as Bobble began to dance upside-down on my back, the children registered a generative opportunity, a space to experiment, permission to let bodyminds move.

From this unpredictable speculative middle emerged a multiplication of apparatuses. Little bodyminds coerced big bodyminds to move onto hands and knees, becoming bodily apparatus. Children climbed up and rolled over their parents' backs, hanging upside down, jiggling their legs to help them slide underneath, and climbing up the other side, with an adult helping hand (see Figure 8 in section 4.1.1.). In these intimate choreographies, heads and hands waggled and flapped, giggles escaped, and toes wriggled as bodyminds felt the forces of upside-down dancing. One apparatus in the form of a hand-puppet inciting unusual movement had morphed into 'multiple apparatuses of bodily production' (Barad, 2007, p. 94), where specific bodyings and (re)configurings of boundaries produced differences that mattered to those involved.

Apparatus as pollinators of possibility

According to Barad, the boundaries of bobbly wool, moving limbs or hard floors are not solid *surfaces* but molecular and atmospheric *sensations*, always ontologically indeterminate and continually transforming in the creating process (Barad, 2012). While it might feel like my hand is touching wool, or a child's arms are clasped around their mum's back, what we humans actually sense is an electromagnetic repulsion between the atoms in the hand and the puppet, the arms and the back. The closer the proximity of electrons, the greater the

force of repulsion. This is why a hand or a back feels as if it were a firm surface whereas, '[a]ll we really ever feel is the electromagnetic field, not the other whose touch we seek' (Barad, 2015, p. 397). Even when we are in touch, it seems, we never *actually* touch; we sense.

Barad asserts that it is not just material boundaries that are fluid but discursive ones too. Nonlingual bodyminds tend to be discursively delineated as bounded objects for particular (mostly reductive) purposes as I discussed in Chapter Two. This selective accounting for nonlingual ways has perpetuated apparatus, or boundary-making practices (Barad, 2012), that decide which 'types' of bodyminds are othered (Hollin, 2017; Puig de la Bellacasa, 2017) without acknowledging the multiple configurations at play. This study argues for alternative apparatuses that mobilise boundary *re-making* practices. These understand difference 'not as an absolute boundary between object and subject, here and there, now and then, this and that, but rather as the effects of enacted cuts in a radical reworking' (Barad, 2014, p. 174) of theories, languages, narratives and practices. I propose these practices open spaces, materials and bodyminds for unusual movements, unfamiliar sensations and generative nonlingual experiences where ethics is in process. Tents, torches, hand-puppets, dancing and singing become *pollinators of possibility,* contaminating each other, enabling differences to be felt and *re-making* boundaries around 'child', 'nonlingual', and 'synaesthesia' as 'part of the ongoing dynamism of becoming' (Barad, 2007, p. 142)?

As a researcher, my ideas, resources, frustrations, memories, hopes, kinships and movements are entangled as apparatus, sometimes intentionally, but often inadvertently opening up or shutting down conditions for intra-actions. I have no control over the many factors constituting agential relations, as with Bobble and the children's upside-down dancing. I cannot know in advance how these apparatuses might intra-act so that their 'particular articulations become meaningful' (2007, p. 148), only that apparatuses must be attuned to the particularities of the entanglements at hand. In other words, my main role as a posthuman researcher must be to keep conditions open to possibility. Staying in the middle of the potentialities of this research-creation means that all oddkin participants are implicated as pollinators of possibility. This highlights a key que(e)ry at the heart of this research; 'how to responsibly explore entanglements and the differences they make' (2007, p. 74).

3.3. Summary of speculative methodologies

This chapter has outlined the key methodological ideas and approaches attending to and creating with a multiplicity of bodies, relations and futures for nonlingual ways of being. Through a continual engagement with material-movement experiments, languages and divergent ways of knowing, I have articulated the study orientation towards a speculative methodology. Through Haraway's concept of SF, I have demonstrated how my speculative methodologies inhabited the middle of relations and processes, responding to the gestures and movements of others in speculative, playful making, evoked by the game of cat's cradle, remaining experimental and generative rather than extractive. I leaned on Manning to explore how the minor gestures and (in)tensions of ordinary life emerge in the interstices, to derail majoritarian ecologies and classifications that keep discriminatory and oppressive practices in place. Attuning to minor vitalities helped me exemplify the affective intensities that often go unperceived, illustrating how speculative practices can address the quantum (micro) affects which make different ways of life, and expressions of alternative stories, possible.

I linked speculative methodologies with research-creation as a way to align my theoretical engagement and creative medium of contact improvisation, detailed in Chapter Four. I discussed how I enacted these ideas through experiments of material-movement propositions, animating new imaginaries and ways of thinking-with lively bodies, by addressing aspects of my study's design, such as the curation of materials, the recruitment of participants, and evoking the concept of oddkin. I connected SF with an affirmative ethics of care to theorise attunement to richer nonlingual ways of expression as a commitment of my practice. In journeying towards posthuman and poststructural fields of potential, I then opened up lines of thought around apparatuses, or conditions of possibility, that invited a multiplicity of divergent relations as valid ways of knowing. In the next chapter, I delve in to the four speculative methods which I employed as apparatus for mobilising conditions of possibility.

Chapter Four

4.1. Introduction to methods-as-apparatus

In section 3.2.4. I discussed how apparatus are open-ended practices creating multiple conditions of possibility for nonlingual sensing practices to happen. I described them as *pollinators of possibility* in that each configuration of human+nonhuman relations produces new practices that iteratively pollinate new ideas as they diffract through each other. These are what Barad (2007) calls boundary-making practices, marking new territories with each iteration and changing historical and future possibilities of the research environment. Barad also emphasises that these are boundaries with indeterminate borders, not constraining but iteratively re-newing and, as such, are boundary *re-making* practices.

In this chapter, I propose four nonlingual methods that acted as apparatus, or diffraction gratings (section 2.3.4.) in this research, producing particular agential cuts that marked new boundaries for, and with, the participating bodies. Agential cuts are produced as participating bodies sense/perceive differences which are always specific to the phenomena involved, becoming response-able to redefine boundaries. The first method-as-apparatus experiments with what nonlingual bodyminds can do using contact improvisation and tactile materials (section 4.1.1.). The second explores how Zoom-as-apparatus creates generative effects for nonlingual bodyminds/ movements/ relations (section 4.1.2.). The third uses GoPro video software-as-apparatus to participate in creating and diffracting data (section 4.1.3.). The fourth invites indeterminate, lively dance experimentations using Electrodermal Activity (EDA) sensors and paint (section 4.1.4.).

In her 2016 monograph, *The Posthuman Child*, Murris experiments with language to augment the concept of entanglement. Murris employs the pronoun 'iii' to express subjective 'bodymindmatter' instead of 'I' or even 'i', as a 'reminder to challenge the binary discourses we inhabit, in order to help open up alternative, non-dichotomous understandings of child' (2016, p. 36). This experiment informs my articulation of how apparatus multiplied the agential relations happening in each agential cut. My use of plurality in the forthcoming

chapters emphasises the relations (e.g. between researcher + software-as-apparatus) in each cut, as 'even a cut that breaks things apart does not cause a separation but furthers the entanglement!' (Barad, 2007, p. 466). My methods-as-apparatus generated unpredictable patterns of intra-action. Thus, I propose that the shared forces within these unpredictable, often synaesthetic, relations across vital oddkin (human+nonhuman) materials are always non-binary. I suggest this highlights the importance of practices of care in honouring what nonhuman materials '*do*' in creating response-able entanglements.

In what follows, I explore how apparatus, material bodies, discursive situations and virtual affects are phenomena caught up in each cut, changing their past-present-futures on quantum scales that are difficult for humans to imagine. I outline these four 'methods' as research-creation experiments and ask, 'what do methods-as-apparatus generate? How do they shape the process of inquiry?'

4.1.1. Contact Improvisation-as-apparatus

> *In these safe spaces for different bodyminds, improvised movement 'opens up the possibility of differing and diverging from already inscribed identities, norms, and behaviours. It is affirmative not of the invisible but the indefinable' (Lenz Taguchi et al., 2016, p. 707).*

Improvisation as a process of unlearning

Improvisation is a research-creation practice that combines artistic and academic research through experimentation. In this study, the art form operates at the level of the sensorium, connecting how we sense and make sense of the world through bodying. This alternative sense-making disrupts common sense and unlearns individualistic ways of knowing, making each improvisation a micro-political act (Myers, in Loveless, 2020, p. 248). Conventional qualitative approaches and pedagogical methods often associate differences with separation rather than connection. Thinking-with differences as connections and compositions 'is indeed counter-intuitive and requires much unlearning' (Murris, 2021, p. 139). A central argument of this chapter is that improvisation is an apparatus to explore difference as capacious, focussing on Barad's notion of intra-action, which emphasises 'differences without separability, or differences within (entanglements)' (2021, p. 139). As an intertwining of synaesthetic modalities, improvisation-as-apparatus facilitates an unlearning of conventional bodily co-ordinations and expectations, encouraging slowing down, looking-with, tending-towards, connecting to and weaving in what arises (see also Malone and Fullagar, in Murris, 2021, p. 117). This inquiry explores the qualities of improvisational movement that foster a 'withinness' between bodies (Puig de la Bellacasa, 2017) and generate affective connections among oddkin (Haraway, 2016).

Taking the art form seriously, understanding its theoretical orientations and weaving these into the inquiry, is an important aspect of research-creation. In this study, improvisation has not been collaged on to data, nor have data been extracted into an alternative art form (I argue in Chapter Five that the software-as-apparatus enacted a continued improvisation to create new ways of experiencing relations across the data rather than extracting them). Weaving in my background in physical theatre, arts and early education, improvisation-as-

apparatus is an immanent part of data's becoming, an eventing of research catalysing from the speculative middle (Springgay in, Loveless, 2020, p. 249).

Manning describes improvised movement as harnessing a 'towardness' of forces preaccelerating through bodyminds, asking silently how to move-with each other. Before this attuning can happen, it requires 'an openness toward moving, a movement moving' (Manning, 2009a, p. 14). This expresses how I put improvisation to work, encouraging movements toward each other through deep listening, embracing the unusual, resisting explanation and being utterly open to the *other* within. In letting developmental agendas and personal inhibitions fall away, improvisation helped desensitise bodyminds to the familiar and stay with a humility and fascination for the '*what else..?*' vital for decentring human worlds (Haraway, 2016; Tsing, 2015). Improvisation invited thinking (and moving) otherwise, amplifying entanglements with the more-than-human in 'open-ended gatherings' that 'sometimes become "happenings," that is, greater than the sum of their parts' (Tsing, 2015, p. 23). In this research, I mobilised nonlingual improvisation to invite *happenings* which enabled deeper attunement through the senses to differences in the environment and to connections which were greater than the sum of the participants gathered. In this way, improvisation-as-apparatus became a matter of care (see section 3.2.3.), a listening-otherwise to diverse ways of being, where response-ability was also about rendering the other response-able.

Improvisation as attunement, or *choreographic thinking*

Improvisation-as-apparatus activates divergent thinking and movement. It requires an intensity of listening that attends to the unfolding relations in that moment; a physical and mental state that is open to the *what else* of what is about to happen, the uncertainty of which can initially feel awkward. The more open the bodymind is to attunement, the more acute this attunement becomes, shifting sensory perception from individual to multiple awareness. In this sense, improvisation is a form of cueing, or *choreographic thinking* (Manning, 2016), where felt senses tune into minor resonances and rhythms, facilitating the unconscious anticipation of movement in one way or another (see section 3.1.3.).

In my experience with contact improvisation, tuning in becomes easier (between bodyminds, at least) when the other is also open to attunement. In other words, there are greater possibilities for entanglements in each agential cut where the multiple is reaching toward each other. These situations show how '[a]ttunement is a merging-with of vitality affects across experiences toward emergent events. Not a feeling-of but a feeling-with' (Manning, 2010, pp. 7-8).

As a researcher, I recognised that mutual openness to attunement could have proven problematic for participants after a long period of Covid-19 lockdown in the UK, which required social distancing, bringing both physical and emotional isolation. I worried that my improvisational material-movement propositions would present challenges during the Stage Two gallery sessions, where physical interaction was restricted to participants' family bubbles centred around each tent. However, as I will discuss further in section 4.1.2., conducting Stage One over Zoom turned out to be serendipitous, engaging participants with nonlingual movement from a safe space, building enthusiasm for the forthcoming gallery activities. Improvisation facilitated more-than-embodied responding, keeping us in-touch with what mattered during and beyond lockdown. Improvisation became more-than physical intra-action, with touch also functioning on social and emotional levels, re-turning us to being in-touch and responding-with the world once again (Puig de la Bellacasa, 2017). Through both phases the fieldwork reaffirmed the idea that, '*touching, sensing, is what matter does, or rather, what matter is: matter is condensations of response-ability. Touching is a matter of response*' (Barad, 2012, pp. 215, original emphasis). The mattering vitality of touch was generatively experienced in the fieldwork experiments through improvisation and intensified by practices derived from the field of Contact Improvisation (CI).

CI is a spontaneous, relational form of dance between two or more bodyminds and the more-than-human forces of gravity, momentum and inertia. As a form of open-ended free-play with many kinaesthetic possibilities for supporting bodyminds through contact, CI doesn't require any formal dance technique and is accessible to anyone curious about movement (Albright & Gere, 2003). CI relies on sensory perception that cues the body to move in attunement with / response to a partner, making it generative for *choreographic thinking* (Manning, 2016, p.

122) with young, nonlingual bodyminds, helping to unlearn normative expectations for ways of being and moving.

The families and I set about using CI practices to listen-with-care and re-attune to new bodyings. When first discussing using CI before completing the consent forms, I referred to it as 'movement-play', which was a more familiar term, reassuring them that no dance technique was needed. Parents trusted that this process would not cause feelings of exposure or performativity for them or their children and, as such, I sought to honour this throughout with advance information about the movement propositions, gentle introductions on the day and reassurances that participation was always voluntary. Hence families leaned into this trust and engaged in improvisational practices with surprising enthusiasm.

With the help of oddkin objects in the movement-material propositions (see section 3.2.2.), each session saw parents and children rocking with each other's bodyminds, rolling, swaying, jumping, hopping, crawling and myriad other collaborative movements (see *Figure 8*). Examples of CI propositions, in Appendix E, provided starting points to move with the affects, curiosities and desires emerging through each gathering. As the sessions progressed, parent-child bubbles became absorbed in their material-movement-assemblages, dissolving the boundaries around bodily inhibitions and becoming multiply attuned to the *what else* of our happenings. Throughout the sessions, improvisation with nonlingual children, whose sensory perception was often well-honed, was an absolute joy. I mean this in the sense in which Manning writes, 'Joy is a sensibility, a feeling-with, of a body-world in transformation. The power to act is a feeling-moved' (Manning, 2020a, p. 242).

Figure 8: Research participants rocking and rolling with contact improvisation propositions

Improvisation countering developmentalist expectations

In my study, improvisation was a valuable apparatus for countering developmentalist expectations of progress according to performative techniques or locomotive skills (Batson & Wilson, 2014, p. 37), aligning with my appraisal of developmentalism in section 2.2.3.. Moving away from the predominant focus in early education on the overtly physical preparation[28] of the young body, improvisation stimulated conditions to explore new ideas. It invited potential imaginaries to come alive and 'unsettle taken-for-granted, normalised and overcoded concepts of education that close down educative possibilities and differences' (Lines, 2018, p. 53). Creating such conditions was crucial for overturning homogenisation and highlighting the transversality of difference in practice, especially when learning processes are not easily articulated, because '[w]hat is at stake is the very redefinition of knowledge' (Manning, 2016, p. 41).

My research-creation enactment of improvisation pursued Barad's emphasis on how 'patterns of mattering [are] produced through complex agential intra-actions of multiple material-discursive practices' (Barad, 2007, p. 140). I engaged CI as a material-discursive apparatus to re-draw the boundaries of what matters in material-discursive practices, as

[28] Physical Development is one of seven Areas of Learning in the Early Years Foundation Stage curriculum in the UK, and is promoted as a Prime area of learning. This means it is to be prioritised within a child's first two years along with communication and language, and personal, social and emotional development. See: https://www.gov.uk/early-years-foundation-stage.

discussed in section 3.2.4. As a sensing practice, CI reached beyond the *othering* of purely physical or cognitive approaches, unfastening binary assumptions (Murris, 2021), ableist expectations (Goodley et al., 2016), and representational judgements (MacLure, 2016) tightly held in developmentalist frameworks. CI enacted a transcorporeal process of *choreographic thinking* with movement across distributed agencies where 'experience is in the tense of life-living, not human life per se, but the more-than human life: life at the interstices of experience in the ecology of practices' (Manning, 2016, p. 1). In this study, improvisation provided a space for *dwelling* in these interstices. As CI scholar, Anne Cooper Albright (2003) suggests, dwelling is 'a heightened experience of inhabiting - fully and consciously - such that a space becomes more than the sum of its parts [and] *makes things happen*' (2003, pp. 260, original emphasis). I considered the improvisations as synaesthetic *happenings* arising from *gatherings* (Tsing, 2015) of choreographic affects. It seemed that when sensory bodyminds dwelt in improvisation instead of being parsed through social or cognitive processes that perceived their incapacities, nonlingual ways were opened up to their 'life-living' qualities.

Contact improvisation putting quietness-in-motion

CI is a generative research-creation method for this study is because it was established to radically reposition notions of embodiment away from the body-mind dualism of many traditional dance forms towards interdisciplinary movement (Bardet & Noceti, 2012; Batson & Wilson, 2014; Sheets-Johnstone, 2011). Building on the postmodern dance movement of the 1960s, somatic and CI practices began a relational, movement study where partners' bodyminds would listen to each other's somatic proposals as bodies-in-motion (Batson & Wilson, 2014). As I discussed in section 2.3.1., bodies-in-motion acknowledge not just the embodied (interoceptive-exteroceptive) experience but also the continual folding and unfolding of affective dynamics that emerges from these confluences/tensions, resisting the defining of stable and permanent boundaries (Bardet & Noceti, 2012, p. 196). In this study, I experimented with bodies-in-motion, manifesting Manning's notion of *bodying* where, '[w]e always happen in the middle. […] Not first a body then a world, but a worlding through which bodyings emerge' (Manning, 2019, p. 1). As an apparatus for bodying, I put CI to work not as a technique, but to attend to the minor movements in kinaesthetic, musculature,

skeletal and nervous systems, noticing the forces and sensations that emerge in relation-with the environment, materialities and rhythms.

In working with nonlingual bodies-in-motion, I gently extended CI to put quietness-in-motion and motion into apparent immobility (Bardet, 2018). During the fieldwork, participant families and I experimented with the 'small dance[29]', a CI 'warm up' whilst standing still, that builds awareness of the thousands of tiny movements inside and outside of the body that calibrate momentums with the world (Albright & Gere, 2003). This practice relates tangible and intangible materialities, not towards a definitive 'wholeness' but towards a 'place of paradox' (Bardet & Noceti, 2012, p. 207) where even still movement is always dynamic; becoming; *bodying*. This more-than-human ontology shifts the concept of movement away from imitating prescribed steps or measuring the body as a performative instrument (Batson & Wilson, 2014; McCormack, 2014). In this sense, CI is a radical material-discursive onto-epistemology, both 'practical and theoretical at the same time [and] where philosophy is in the midst of being made' (Bardet & Noceti, 2012, p. 198), which is what makes it an important method-as-apparatus for my research.

Contact improvisation as a creative, micro-political act

Manning describes a speculative practice as one whose unfolding expression is unpredictable 'in advance of the doing' (Manning, 2016, p. 227). This is the art of CI, that provides an underscore, or the conditions of imaginative possibility, 'for an action as yet unmappable' (Manning, 2016, p. 224). Although participants became more familiar with the conditions over time, their actions remained unmappable, a form of SF (see section 3.1.1.) pollinating indeterminate possibilities (physically, spatially and affectively) in every session. Although debates continue as to whether CI is an art form, a sport, a somatic practice, a hybridisation

[29] CI is often facilitated using the 'small dance', created by CI founder, Steve Paxton, or 'The Underscore', a framework for improvisation devised by one of the founding CI dancers and former gymnast, Nancy Stark Smith. Borrowing forms of spirals, rolls, falls, jumps, lifts and flights from gymnastics, the Underscore takes the dancer through different speeds of attention and states of awareness to play with gravity, momentum, velocity, rotation and inertia in relation with other bodies. CI dancers, Blom and Chaplin (2000) explain that; 'The kinesthetic sense, often bypassed by the more externally apparent senses of taste, touch, sight, hearing and smell, is actually the most potent and relevant one for the dancer. It refers to the body's ability to perceive weight, balance, verticality, laterality, gravity, buoyancy, volume, muscular tension, fatigue, release, stretch, flexion and extension, rotation, spatial orientation, and timing (p.182-183).

of these and more, I approached CI encounters in my fieldwork as *haptic-synaesthetic relations* that expanded the potential of arts spaces, materials and politics. This apparatus invited the '*what if…?*' And the '*what else…?*', sparking a desiring for something new, allowing for a flourishing of 'the peculiar relations that art establishes between the living body, the forces of the universe and the creation of the future' (Grosz, 2008, p. 3).

During the fieldwork improvisation sessions, the participants and I encountered surprising experimental intra-actions with ribbons, lycra, sock-puppets, humming, water, movement, brushes and sounds due to the willingness of all participants, human and nonhuman, to affect and be affected. This commitment towards improvisation sparked curiosity and drew us into unpredictable orbits where nonlingualism was ontologically and aesthetically valued (Lenz Taguchi et al., 2016). This research leveraged CI's shape-shifting potential as an apparatus for *tuning into what matters to participants*, not into what form or content is produced. In CI, bodily connections are always becoming, never achieving a completeness in form, pattern or narrative, but 'always being in a creative process of differing' as 'counter-acting practices that enable individuating 'sparks' or 'flickers of life' of a differentiated Child – a Child always in a process of becoming-different-in-itself' (Lenz Taguchi et al., 2016, p. 707). It is here that improvisation, as a 'force of imagination puts us in touch with the possibilities for sensing the insensible, the indeterminate' (Barad, 2012, p. 216), making it a vital apparatus for bodying encounters.

CI, as an alternative speculative method, helped me foreground posthuman transcorporealities and new forms of bodying (Alaimo & Hekman, 2008; de Freitas & Truman, 2021, p. 523). It attuned me to minor frequencies through worldly sensibilities (de Freitas, 2018) and, in doing so, fabulated new ways of knowing across bodyminds. For this reason, I argue that improvisation is a micro-political act that, 'opens up the possibility of hearing the murmurings, the muted cries, the speaking silence of justice-to-come' (Barad, 2007, p. 216), bringing with it new trajectories for nonlingual ways of being.

4.1.2. Zoom-as-apparatus

> *'In the face of such touching silliness about technofixes (or techno-apocalypses), sometimes it is hard to remember that it remains important to embrace situated technical projects and their people. They are not the enemy; they can do many important things for staying with the trouble and for making generative oddkin' (Haraway, 2016, p. 2).*

Zoom-as-apparatus for post-lockdown relations

The Covid-19 lockdown necessitated a shift to conducting fieldwork via the video-conferencing software, Zoom™, deemed 'safe' amidst the pandemic and the university restrictions on face-to-face data collection (see section 3.2.1.). Initially, I was unsure how sensory and physical contact between bodyminds would translate online. However, Zoom as a method created room for intense transcorporeality, eliciting vital forces of touch with other bodyminds and objects in our homes and mobilising innovative and audacious connections from these places of familiarity. Perhaps because of Zoom's virtual qualities, there seemed to be fewer risks or barriers to spontaneous movement, creating an odd sense of close sensory proximity despite the geographical distances.

Beyond the lingual, Zoom-as-apparatus allowed us to engage synaesthetically, appreciating how movement alters the body qualitatively (Manning, 2007, p. xiii). I argue that Zoom-as-apparatus extended this synaesthetic affecting across all research participants, both human and nonhuman, having fun with movements in ways that became infectious. Whilst the pandemic presented conflicting messages that ameliorated and accelerated fears, this research saw ideas, affects and sensations contaminating and diversifying our encounters (Tsing, 2015), producing a different type of virus where 'connection proceeds via contagion, affect and epidemic rather than by meaning and signification' (MacLure, 2016, p. 178). Using Zoom-as-apparatus transformed the constraints of the pandemic into intra-active, agentic partners, mobilising connections and modes of feeling-with bio-techno-synaesthetic-affects that disrupted the effects of global restrictions.

In this case, Zoom-as-apparatus was a more-than-human method, response-able during the pandemic in allowing humans and nonhumans to gather and create 'ways to render each

other capable in problems novel to all of them' (Haraway, 2016, p. 18). That this digital-organic assemblage invited curious affective and material exchanges to transit across vast bodies of matter, beyond space and time, virtual and material (Alaimo, 2010) made me wonder if this boundary-blurring apparatus would enable innovative, nonlingual ways to flourish in all situations. That is not to say that Zoom-as-apparatus was not without its disconcerting, uncomfortable and stuttering qualities, but I argue that this method-as-apparatus reshaped awkwardness as productive (Lorimer, 2014), and prepared bodyminds for further improvisational material-movement propositions during the gallery sessions in Stage Two, as I go on to discuss.

Zoom-as-apparatus for more-than-human refrains

One wouldn't normally consider Zoom, with its overt centering of the human face, as conducive to speculative, more-than-human methods. But interestingly, by experimenting-with contact improvisations (CI) over Zoom-as-apparatus, curious more-than-human refrains emerged. Many involved toys, paintings, bubbles, sculptures and other creations which commandeered attention on the Zoom screen as children held them quiveringly close to the camera to show, move-with, and invite me into relation-with. In the main, there were no words accompanying these objects, just encouraging sounds or gestures from me and occasional background details from parents. These performative events were often accompanied by a long-held eye contact from the child, inviting the Zoom-me to acknowledge the offering. Sometimes this would take a moment if the object was being held off-camera or too close to focus. More-than performative, each 'showing' seemed to exemplify both a response-ability to the ideas emerging from our play and an invitation to improvise along new trajectories.

In one instance, a child held an inside-out doll close to the camera, flapping it from side-to-side to animate the ribbons tied around its neck. Mum: 'This is cupcake doll. This morning she came shopping with us all wrapped up in the ribbons you sent but, for some reason, she always seemed to end up in the sweetie isle, didn't she [*addressing child*]…?' (followed by blurry cupcake ribbon-dancing and grinning). I picked up some ribbons at my end, tied them on to my fingers, and joined in with the child-doll-ribbon-dance as we continued playing with

the movements that cupcake doll seemed to suggest. No doubt my finger-ribbon-dance-offerings also appeared blurry and indefinable at their end. Occasionally one of us stopped to watch the other, pick up new movement ideas and carry on, until we felt our way toward a conclusion.

Human-nonhuman gestures or objects often filled the screen, accompanied by smiles or giggles as little bodyminds brought their own flavour of improvisation-with their nonhuman objects. These objects of some importance seemed to propose unpremeditated movements with their child-oddkin, which were happily 'performed' knowing the Zoom-me would follow. Parents sometimes joined in, but mostly narrated the *happenings* taking place in each gathering (Tsing, 2015). Our mutually improvised quivering-object-Zoom-dancing demonstrated how 'nonlingual' and 'child' were becoming-imperceptible as separate objects, humans and movements whilst creating surprising and humorous intra-actions (Lenz Taguchi et al., 2016). In each improvisation, we responded to the agentic draw, or thing-power (Bennett, 2010), of these happy objects (Ahmed, 2010). These unprompted encounters happened in almost every session, becoming a repeated refrain of more-than-human relations that mattered.

From each of these object-copying-funny-movement-encounters grew a rich response-ability composed of a dance of invitations and acceptances going *viral*. This 'safe', non-contagious digital apparatus became productive of a contagious, often outrageous, symbio-techno reciprocity. Participants' ideas inspired and challenged me, expressing what MacRae and MacLure describe as, 'moments when they come together and break apart according to unspoken accords that seem more like contagion than explicit invitation or negotiation' (MacRae & MacLure, 2021, p. 264).

Zoom-as-apparatus for symbio-techno bodyings

Bandwidth disruptions, slight time-delays, fuzzy cameras, inaudible audio often made improvised bodyings hard to perceive during the sessions. These techno-glitches highlighted how much I was trying to 'interpret' what was being improvised due to the discomforts of watching as if with one eye closed. They promoted me to relinquish my familiar methods of

perception and remain present, open to what might happen in each moment, which often ascended into the absurd (MacLure et al., 2010). Added to the lack of uninterrupted vision was the lack of peripheral vision in the Zoom window with participants' home views restricted to nonhuman participants (such as, bookshelves, wall hangings, dazzling lights, rugs in front of a sofa or the kitchen sink). Whilst Zoom-as-apparatus limited the possibilities for 'knowing' participants' situations, it invited a deep attentiveness to small movements, drawing both sides closer to listen- and sense-with the other.

Zoom-as-apparatus facilitated sympoietic intra-actions across human-nonhuman bodies (see section 2.3.1.), creating a symbio-techno-poietic event (Haraway, 2016). Diffracted radio waves (Wi-Fi) and affective particles entangled with biological and chemical matter, reshaping human form and function through transcorporeal exchanges. Furthermore, *what mattered* became reconfigured through the electrical, biological, cultural, political and historical encounters in the transversing of bodyminds and screens. Both were imbricated in complex ontological gatherings, creating relations that were 'perhaps more intimate, ever-present and affective than any we have thus far experienced' (Richardson, in Pink, 2009, p. 126).

Parents noted their children unexpectedly chatting during the Zoom-based sessions, which happened much less frequently (in the same children) during our face-to-face sessions. This symbio-techno-apparatus seemed to lend itself to lingual relations amongst the improvised, virtually affective oddkin scenarios we played out. Perhaps the synaesthetic forces were too strong to parse into words during the gallery sessions, with four other families and myself being physically present. However, Zoom's lack of direct eye-contact created a sense of seeing without being seen. In other words, whilst Zoom-as-apparatus encounters were happening *now*, in a shared present, they were not happening *here*, in a shared proximity, which perhaps felt less exposing for nonlingual bodyminds.

Whether Zoom rendered young bodyminds capable of speaking did not seem to matter as much as the affective movements it mobilised, embracing possibilities for new ways of being. Multiple bodies moved erratically in front of a distant laptop camera, countering the screen's familiar demands for lingual and frontal gestures which only serve to reinforce the 'edges and boundaries of humanity' (Manning, 2020a, p. 6). Thus, this method transgressed the

standardised use of Zoom as a window for close-up, disembodied faces. It produced unusual angles, unpredictable matter working at varying speeds and proximities to the camera, without privileging human, nonhuman or more-than-human entities. We (bodyminds, Wi-Fi radio waves, spacetimemattering) were incapable without, and intra-dependent on, the other for connection, but not for communication. Perhaps due to the families' familiarity with digital spaces during lockdown or the comfort of playing in their homes which lead to more silliness than sense-making, I felt less need for words in this digital space compared to the physical gallery space in Stage Two.

Staying with the humour of techno-troubles

Through the affective qualities afforded by Zoom-as-apparatus, the shared vulnerabilities and feelings of uncertainty (Lorimer, 2014) became anchors for experimentation, possibility and collaboration. The sense of being entangled in these uncertain movements through which bodies were being moved, affected and reshaped seemed to come from a 'desire for thinking in intimacy' (Puig de la Bellacasa, 2017, p. 93). As tiny improvisations with small, nonlingual bodyminds generated significant ideas, they moved towards playful encounters that were sometimes incomprehensible (MacLure, 2016), imperceptible (Lenz Taguchi et al., 2016), incommensurate with expected ways of knowing (Olsson, 2009), and often funny (MacLure et al., 2010). Their infectious humour became a currency of greater value than the costs of awkwardness arising from the stress, anxiety, lack of control and uncertainties of pandemic predictions. Humour became a force that ruptured lingual mastery and inhabited 'linguistic between-spaces' (Hohti & Truman, 2021, p. 16), creating minor ripples that deterritorialised the major and exceeded the need for language and meaning. In fact, silliness and humour often became the affective transformation that served to disturb deficit discourses surrounding nonlingual ways of being (MacLure et al., 2010), such was the transversal capacity for affect that Zoom-as-apparatus unexpectedly invited. It seemed that this method enabled intimacy-at-a-distance, where new methods and theories about what bodyminds can do could be experimented-with and reconfigured. This did not eradicate the symbio-techno-troubles that happened on a regular basis, but rendered them more tolerable, opening doors to absurd improvisations as ways to stay with them (Haraway, 2016).

For instance, in one Zoom session, a two-year-old child became entangled with a set of clothes pegs that arrived in their Suitcase-of-Adventures. Gently squeezing the pegs onto our fingers, we enacted a strange finger-dance where the extra weight of pegs responding to gravitational forces now exaggerated our long fingers in flicking-flapping movements. Just as on a washing-line, peg forces are always moving, increasing or decreasing their pushing and pulling in quantum increments in proportion to the vibrations across their springs, tightening or loosening each peg's grip. A transcorporeal encounter emerged across my pain-receptors as the squishing-dancing-pegs became an uncomfortable *pinch-point* for me physically, and doubly uncomfortable for me as researcher-mother to watch on the child in the Zoom-screen. The synaesthetic paradox thickened as I looked closer at the screen to see this child with a smiling face, apparently happily dancing away, singing the words 'Ouchy! Ouchy!' to her mum, but refusing to have the legs repositioned, or even touched by mum. In this complex intra-action, I could not easily parse the signals of playfulness and pain, which also cued painful synaesthetic sensations in my bodymind. Laura Marks' (2000) describes how film becomes tactile, as if eyes could touch, which she calls *haptic visuality* (2000, p. xi) (discussed further in section 4.1.3.). In experiencing the double discomforts played out on the screen and in my senses, I extend Marks' concept to a *haptic-synaesthetic* visuality, highlighting 'a vision that is not merely cognitive but acknowledges its location in the body' (2000, p. 132). Unable to remove the pain on the other side of the Zoom screen or engage with the enjoyment that was also apparently happening, I responded to this sensory paradox by arresting my movements and re-positioning my own pegs on a more fleshy part. It seemed peg-power was not just molecular physics; it was discursive and transcorporeal too.

I remember Tsing's (2015) insight that the art of noticing requires new tools, because 'a tool for noticing difference is worth trying out' (Tsing, 2015, p. 123). I parsed these Zoom improvisations through video software to notice what differences these pain-pleasure-peg-politics made, and found the software effects extended the discomforts as I played with enlarging and attaching the pegs to the head, wrist and spine of the child (see *Figure 9*). For me, this was a way of making sense of the Zoom-improvisations we had engaged with, and also a micro-political act, drawing attention to the normalising pinch-points on non-speaking bodyminds and the harms these peg-politics can cause, opening new sensibilities for the implications of being nonlingual beyond traditional modes of Zoom analysis.

Figure 9: The pinch-points of peg politics

The production of humour, digital disturbances and awkwardness through Zoom-as-apparatus helped to diminish binary power hierarchies between researcher and participants, fostering a sense of (un)knowing co-presence where awkwardness is generative and productively troublesome (Lorimer, 2014, p. 196). These encounters sensitised me to the vulnerabilities, challenges, risks and humorous potentials involved in symbio-techno-troubles that defy human logics. However, in relation to developmentalist expectations, I stayed with the awkwardness of these troubles, considering them a useful 'index of alterity' (Lorimer, 2014, p. 197). Alterity is a constant reminder of how life-limiting universal categorisation and pathologisation can be and, like Lorimer, 'I sense that there is great ontological, epistemological and political promise in awkwardness' (2014, p. 204). Despite the discomforts, sensing these dynamics amplified the ongoing challenges of enacting feminist new materialist speculative methods that resist predetermined knowledge (Manning, 2016, p.

227). Staying- or moving-with these Zoom troubles, learning to be affected and infected by the alterity of the other, is what allowed the complexities of these entanglements to be honoured and work against reductionism.

4.1.3. GoPro video software-as-apparatus

> *'These technologies are inextricably intertwined, as are the issues they bring into focus: the intra-activity of becoming, the ontology of knowing, and the ethics of mattering' (Barad, 2007, p. 36).*

GoPro's magnetism towards privileging human optics

Following my research-creation methodology, I adopted an experimental approach to video-data-creation to dispute conventional representational methods and trouble 'the hierarchal researcher gaze within the video 'selection' and 'analysis' process' (Caton, 2019, p. 3). During the gallery-based fieldwork, I set up four Go-Pro cameras (one with 360 capabilities[30]), three taped to the floor around the edges of the movement circle and one taped discreetly to a pillar. I chose these cameras for their unobtrusive size, their wide-angled lenses that could register minor movements on the peripheries, and abilities to disrupt the Anthropocentric gaze, especially using 360-degree capabilities. However, processing 55 hours of video data proved challenging due to the requirements for storage space, processing power and editing time. In addition, my all-too-human viewing habits combined with the static camera positions subtly re-centered the human contrary to my efforts to attune to a more entangled flow of affective minor gestures. To address these issues, I enlisted the help of video editing software which acted as an apparatus for diffracting and analysing the data differently, attending to the material not just 'as words, but also as images, movements, politics, molecules affect, noise, haecceity and pollution' (Holmes & Jones, 2016, p. 11), as I go on to discuss.

With all beeps, sounds and flashing lights disabled, the cameras became less intrusive, allowing me the freedom to move around in tune with the emergences of each session. On viewing the footage after each session, I focussed on wide floor angles which had the effect of bringing forward nonhuman agents in the movement relations, such as blankets, tents, wool, lycra, floor, lights, offering less anthropocentric views. However, the enchantment of intimacy-moments between child and parent challenged my attempts at more-than-human viewing. The human relations in the footage had a 'magnetic power' (Hultman & Lenz

[30] The GoPro 360 footage was not diffracted for this thesis due to its enormous size rendering both storage and editing difficult on domestic equipment. See (Caton, 2019).

Taguchi, 2010, p. 525) over my gaze, often luring me back into habitual empathetic engagements with agency and meaning (Caton, 2019). This lure of a human optics acted to separate myself as viewer and fall back into distinct hierarchical relations which do not account for the entanglements of humans within the world (Barad, 2007; Hultman & Lenz Taguchi, 2010).

With the richness of data before me, I wondered how I could harness Bennett's (2016) concept of enchantment as a way of knowing the world differently, how to reconfigure 'play as dynamic entanglements of bodies and things that carry indeterminacy and resist mastery' (Trafí-Prats & Caton, 2020). Could the subject-centring equipment be transformed into more-than-human apparatus capable of erupting sensual registers 'dense and intense enough to stop you in your tracks and toss you onto new terrain' (Bennett, 2016, p. 111)? This led me to experiment with speculative diffractions of these data in post-fieldwork editing (see section 5.1.1.) in order to remove pre-assumed hierarchies, draw closer to the haptic and sensuous registers, and re-enliven my enchantments 'with the porosity, materiality, relationality of bodies and worldings through combinations of pixels, light, and moving lines' (Trafí-Prats & Caton, 2020, p. 9).

Sensing the affective qualities of video-data

Decentring human subjects in video-data requires a process of caring for its sensuousness (MacRae, 2019b; Trafí-Prats & Caton, 2020). In this study, this meant foregrounding data's sensuous qualities, minor forces or quantum movements to trouble conventional interpretations, or 'exceed (the) researcher's capacity to know them' (Koro-Ljungberg & MacLure, 2013, p. 220). Conventional methods organise video-data to be viewed through discrete sense faculties according to the representational logics of language and to meet preconceived expectations of how the normative world works (Ash & Gallacher, 2015, p. 1). This study's video-data, recorded from cameras taped to the floor, intended to engage upward-oriented viewing angles to break with the traditional point-of-view that tries to 'know' children through a frontal 'panoptic surveillance' (MacRae & MacLure, 2021, p. 268). However, since families were often looking in my direction, the resulting footage inadvertently positioned bodyminds in a frontal orientation, potentially reinforcing particular

narratives about physical, social, emotional or cognitive *capability* and inviting judgements about developmental *progress* (Caton, 2019; MacRae & MacLure, 2021).

To disrupt practices of frontality in favour of a 'side-by-side-ness […] that might allow neurodiverse bodies to feel more welcome' (Manning in, Loveless, 2020, p. 218), I adopted a new materialist approach, focusing on video qualities related to movement, gesture and sensations. This speculative method explored the relational dynamics manifesting in the sessions and attuned to their extra-linguistic events. By slowing down or speeding up the video-data, I made visible affective charges and minor shifts that had unfolded during fieldwork but which were barely perceivable at normal speed (Manning, 2020a, p. 16; Puig de la Bellacasa, 2017). This had the effect of creating a more-than-human temporality, or untimeliness, where the dynamic qualities of slower-moving data allowed for a synaesthetic experience-in-the-making that could not quite be put into words but was nonetheless felt (Manning, 2020a, p. 16).

Experimenting with media sparked different ways of thinking otherwise and manifesting alternate worlds which 'render inquiry closer akin to an experimental arts practice than a social science' (Myers, in Loveless, 2020). Even when freezing video-data clips, the still images felt like they were *still lively* with movement. Their stillness was composed of minor gestures animated through affective frequencies that resonated with me, creating ongoing emergent events (Manning, 2010). Therefore, I stayed with the still images in my diffractive analysis, in order to become-with their possibilities (see section 5.1.1.). The praxis of research-creation holds an imperative to experiment artistically with my methods, therefore I wondered if, by improvising-with sensorial cuts through video editing software, it might be possible for other viewers to also *feel* the synaesthetic affects of these data's oddkin movements. Actively editing into a video's haptic sensuality is a technique Caton calls, *video data sensing* (2019). Here, the boundaries between the technological and the organic become blurred (Haraway, 2016; Puig de la Bellacasa, 2017, p. 140) and digital footage becomes lively matter (Bennett, 2010). Thus, to invite a pre-discursive way of sensing the video-data synaesthetically, I employed an improvisational technique playing with specific distortion filters offered by the software-as-apparatus, Photopea (see *Figure 10*), specifically using the Water Colour, Liquify, Noise-Dither and HSB/HSL filters. By rasterising, posterising, distorting, blurring, dilating,

spinning, tilting, speckling, diffusing or particulating, the software-as-apparatus (and I) rendered indefinable the normative tropes of what a body *should* do and displaced the logics of representation with a process of caring for its sensuousness. This is a method that becomes 'ethico-aesthetic, because it moves by affect rather than communication' (Trafí-Prats & Caton, 2020, p. 4).

To break my viewing habits and accentuate minor movements and relational dynamics, I mobilised Moviemaker and Photopea (a free variant of Adobe Photoshop) as software-as-apparatus. Together, we (researcher+software-as-apparatus) created superpositioned layers (see section 2.3.4.) of video-data, revealing movements that were not delineated only by human bodyminds. Here, we invited an experience-in-the-making of the intensities of synaesthetic affects moving across indeterminate bodies, matter, time and space, giving shape to new experiences (Manning, 2020a, p. 269). This method was as much 'ethico' as 'aesthetic' since caring for the sensuous is also an ethical cut, to move human bodyminds away from the anthropocentric gaze which would have them known in a certain way (Hultman & Lenz Taguchi, 2010).

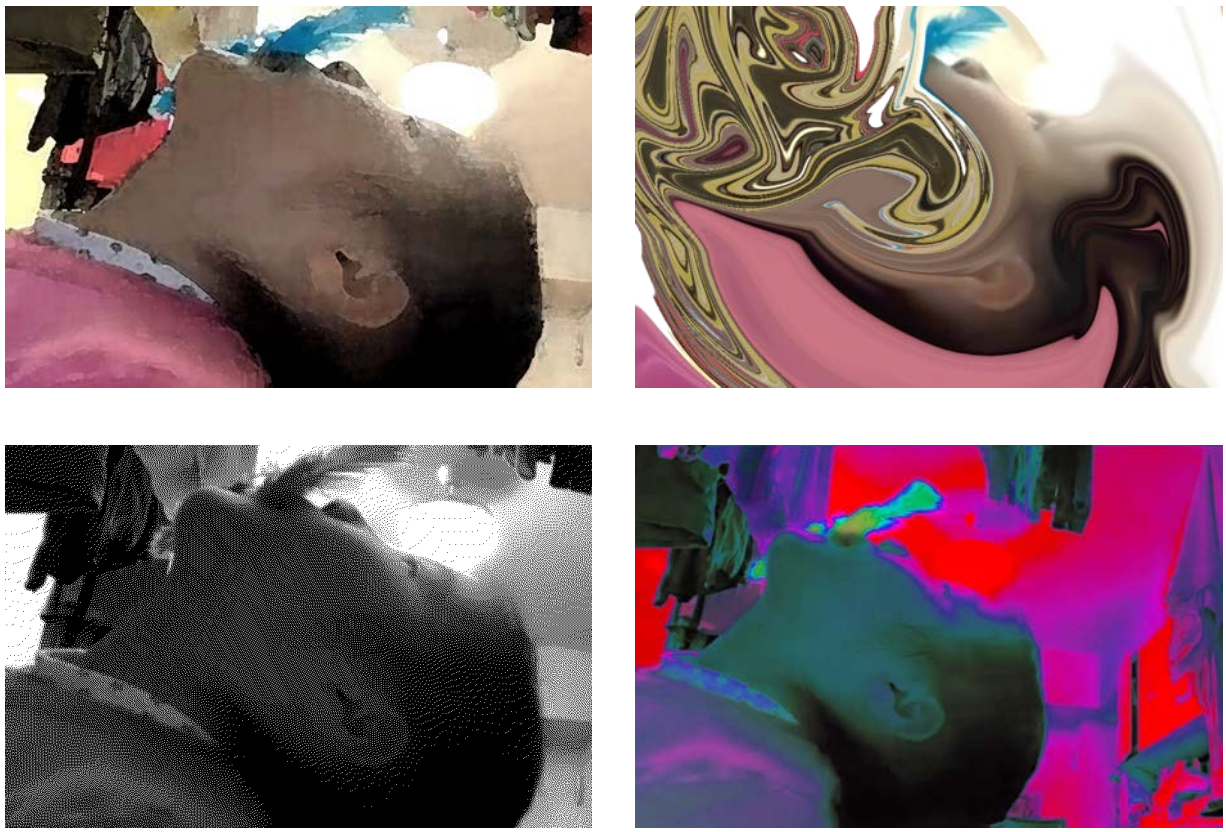

Figure 10: Video-data-sensing with Photopea software effects

As discussed in section 3.2.3., the expectations on bodyminds are a serious concern for posthuman ethics. They straddle the messy ground between adult research participants wanting their children to be known as *capable,* and a feminist new materialist (and political) imperative to unfasten the need for such desires. Therefore, our (researcher+software-as-apparatus) synaesthetic video-clips aimed to create a more-than-human sensory entanglement and offer an alternative view on the parent-child entanglements of the research participants. Following Laura Trafí-Prats and Lucy Caton (2020), I viewed participant bodyminds not in static, binary relations (e.g. parent-child / supervisor-supervisee / watcher-player / neurotypical/neurodivergent) but as bodies affected by play's immediacy, emergence and sensuous forces of contagion (Trafí-Prats & Caton, 2020, p. 6). In this sense, I was editing with an open response-ability for many bodies (not just mine) to respond (Dixon et al., 2024). As will become evident in Chapter Five, the software became an important player in this speculative process, co-composing cuts and transformations which allowed research participants to 'become more than they could otherwise be' (Ivinson & Renold, 2016, p. 172). This speculative method also implicates post-research viewers as participants by re-vitalising the effects of the research as *new* encounters, inciting intensity beyond immediate content and context (Caton, 2019, p. 10).

Jumping from visual spectating to haptic speculation

Viewing video clips, I was reminded of Laura Marks' idea that 'memory functions multisensorially' and 'activates a memory that necessarily involves all of the senses' (2000, p. 22). This 'haptic visuality' invited my bodymind into a multimodal sensing, relinquishing attempts to *make sense* of the affective forces within each event. This sometimes required a 'jump' into unfamiliar modes because, unlike optic (a sense of sight), haptic (a sense of touch) works through the viewer's willingness to surrender to the 'touch' of the camera, 'as though one were touching a film with one's eyes' (2000, p. xi). In this process, my haptic editing (see section 5.2.) became a *synaesthetic bodying* (discussed in 2.3.3.) by dismantling the boundaries that partition off discrete senses, as if they could be individually perceived (MacRae & MacLure, 2021). Unlike optic vision, where eyes can be closed, perspective distanced and vital perception detuned, 'touch is there *all the time*' (Puig de la Bellacasa,

2017, p. 99) reminding me that matter is always already part of itself in entangled layers (see *Superpositions* in section 2.3.4.). Like the snail whose ventral muscular foot and calcium-rich slime are constantly *bodying* or *sensing-with* the world as it moves-through-touch (J. Osgood, 2024), haptic vision in this research is a way of seeing by feeling-with and reaching-toward, new bodyings.

Feeling-with the data in this study involved haptic speculation produced through the entanglement of data+affect+researcher+software-as-apparatus. Editing from within this superposition of layered phenomena allowed us to reach-toward a tentacular web of pasts, presents and futures (Haraway, 2008, p. 32) that entangled the (past-present) viewer with other (past-future) bodyings because '[t]he trace of all reconfigurings is written into the enfolded materialisations of what was/ is/ to-come' (Barad, 2010, p. 264). This shifted the viewing experience from determining '*what is happening?*' towards que(e)rying, '*what relations / encounters might be unfolding, and how do they touch/move/matter?*'. Following Marks' suggestions, we (researcher+software-as-apparatus) vitalised the haptic by amplifying the sensory through close-up views of textures (especially of skin), grains and scratches, blurring or over/under-exposing images, mixing image formats, varying the speeds, viewing angles and focus points (Marks, 2000). By slowing down, overlaying and ghosting the video-data in diffractive superpositions, the event's micro-motions were 'brought into the threshold of our perceptibility', where each motion 'has a variability of intensity, of direction, of speed, and of co-motion' (MacRae & MacLure, 2021, p. 271).

In addition to haptic-synaesthetic improvisations in the rendering of effects, I also attended to different scales that might draw attention to the multitude of knotty layers superpositioned in the data. For example, in *Figure 11*, the position of the GoPro camera on the floor directly in front of a child playing with wool, together with using an ink-outliner effect, which emphasises colour boundaries and tone differentials, brought a vibrancy and prominence to the red wool. Floor-based viewing angles help to privilege smaller bodyminds, movements and materials, avoiding adult-oriented viewpoints that often reinforce hierarchical power imbalances by looking down on a child or their play (Hultman & Lenz Taguchi, 2010). In this case, the camera's wide eye invited a particular viewing angle, giving the effect of the child being smaller in scale than the wool in which he was becoming entangled. This foregrounding

of the red thread invites the viewer's attention to move with it, perhaps sensing the vibrations resonating down its long red line, to its horizon and a crawling, twisting body whose human qualities have been decentred in this move. Drawing the eye along these vibrant woollen lines into different entanglements with small bodyminds exemplifies how '[m]ovement does not belong to the body but to a flow that connects bodies. It is an ongoing recombination of the body towards the forces and intensity propelled by the other body' (Manning, 2020a; Trafí-Prats & Caton, 2020, p. 10).

This intra-active web of movements between GoPro-software-researcher-wool-child is neither caused nor effected by any one element. The inclusion of all (and exclusion of others) in this perspective creates specific effects that might otherwise have been missed (Barad, 2007, p. 37), such as the changing scales and reverberating flows. Gabrielle Ivinson and E. J. Renold's (2016) scholarship is important here in highlighting the role of the camera as a 'posthuman participant' (2016, p. 169) which, in this case, is also true of the other apparatus. What this produces is alternative perspectives on a familiar situation. For instance, the foregrounding of vibrant red lines highlights the wool's agenting, compelling a child to play and become tangled up with it, emphasising the vitality of the wool threads and their capacities 'to act as quasi agents or forces with trajectories, propensities, or tendencies of their own' (Bennett, 2010, p. viii). Bennett reminds us that humans are also nonhuman, and that nonhumans are vital players in 'the complicated web of dissonant connections between bodies' (2010, p. 4). Extending this concept, the ink-outlining removes the clarity of the child's facial gestures and avoids the usual portrayal of childhood vulnerability as he becomes entangled. Without human emotions dominating the viewer's gaze, the nonhuman players (wool, space, floor, colour, texture, vibrations) do not have to battle for attention.

Figure 11: The haptic-synaesthetic qualities of wool

Sensing these forces helps displace linear narratives of bodily progress fixed in chronological time and amplifies a different dimension of the multimodal, multi-skilled, multi-sensorial engagement of nonlingual bodyminds, where small movements matter as sensate knowledge (MacRae & MacLure, 2021, p. 274). These relational methods, though sometimes uncomfortable to view, offer valuable, situated lessons about learning to live with others, where 'to be touched as much as to actively touch, is an opening to "becoming with" ' (Puig de la Bellacasa, 2017, p. 116). In other words, viewing through haptic speculation prompts curiosity as to '*how am I / are we implicated in what is happening?*' It renders viewers capable of considering the alternative trajectories and relational effects of the movement sessions, and counters the developmentalist or pathologised appraisals often held within linear video formats (Caton, 2019). The video-data fragments used for diffractive analysis, based on a selection of agential cuts from my haptic-synaesthetic-sensing as I attuned to their relations, can be experienced in Chapter Five.

4.1.4. Electrodermal Activity sensors-as-apparatus

> *'Sensing practices are ways of articulating what matters, of signalling an expressive register of relevance, and affecting and being affected. In this respect, sensing practices are world-making practices' (Gabrys in Braidotti & Hlavajova, 2018, p. 396).*

Dancing to our own tunes

In the final session, parents and children were invited to wear the Empatica E4 wristbands[31] (electrodermal activity (EDA) biosensors), the live traces of which were projected onto a floor-level screen as a backdrop to their painting-dances. Using bluetooth, the wristbands were connected to Empatica's E4Realtime software on a laptop, which then projected sensorial traces from the wristband data in real time onto a portable screen, stood on the floor at children's body height. Children and adults were encouraged to respond to the differently coloured lines dancing across the screen - peaks and troughs of their sensorial traces - in whatever ways they felt moved. Connecting with the methodological innovations of de Freitas (2018) and Shannon (2021), the idea was not to collect biosensor statistics as a way of measuring something about children's galvanic skin responses. Simply to use the trace projections as stimuli for further movement, bodyminds attuning to their own movements as they played out on the screen. Dancing to our own tunes, as it were.

In exploring the potential of dancing to screen-based traces without losing the spontaneity of improvisation, I considered using paint to activate the more-than (Alaimo & Hekman, 2008), the not-yet (Manning, 2016), or the so-far (Haraway, 2016) beyond interpretative methods. Could the tactility or other qualities of paint mobilise dancing bodyminds in surprising ways, and could there be a relation between the movements of paint and EDA traces, with or without human involvement?

To experiment, I attached a bamboo cane to each paintbrush, then lashed together four extended brushes with an elastic band at the middle point. Around this central pivot, brushes could be splayed out narrowly or widely in different directions by four hands working together (see *Figure 12*). This constraint, a constructed condition of possibility, aimed to

[31] See: https://e4.empatica.com/e4-wristband

diminish the developmentalist expectation for particular painting skills and techniques, and to emphasise the relations of unusual materials-bodies-movements, because '[w]hat matters is how the constraint embedded in the procedure becomes enabling of new processes' (Manning, 2016, p. 91). A long roll of paper was laid out across the floor, extending from the projector screen to the opposite end of the movement space. Buckets of water, pots of paint and the bamboo-stick-brush-bundles were arranged along the paper. Children and parents were invited to play, exploring how moving-with materials in unfamiliar ways affected both the marks on the floor and the EDA traces on the screen. Two children and parents wore EDA sensor wristbands which, as they put them on, projected wavy, spiky lines onto the screen. Despite the more curated conditions in this final fieldwork session, by now the families were accustomed to improvising with movement-material-propositions and each bodymind-duet became quickly absorbed in their paint-water-brushing-tracing-movement experiments.

Figure 12: Movement experimentation with analogue (paint) and digital (biosensors) apparatus

Small and tall bodyminds dabbed, swirled, pushed, dragged and manipulated the paintbrush-collectives across the paper with great difficulty, their disproportionate heights making it awkward to find synchronicity across human and nonhuman bodies. The pivoting of bamboo-stick-brush-bundles around the central bands made their movements unpredictable, often diving off in opposite directions. Two hands of different strengths on each brush created forces that destabilised the equilibrium, often catapulting the brush hairs (loaded with paint) across shoes, up legs, onto knees, and occasionally splashing clothes. Paint marks became scattered all over in unusual patterns without form or meaning and parents seemed to be enjoying the random manipulation of the dancing-brushes. But, despite the many hilarious

encounters it evoked in the unexpected trajectories of coloured water, the children grew restless with the constraints, preferring to work the brushes on their own. They quickly devised their own moves, one holding closed the paintbrush-collective in both hands to experiment with dabbing big multicoloured dots, another bobbing the brushes up and down in the water buckets, absorbed in their splashes. Two children left the brushes entirely, dropping to their knees to pat, print and smear the paint with hands and feet, moving with full body motions across the paper.

The analogue materials were so compelling in their immediacy that participants did not seem to notice the EDA trace patterns on the screen. Two of the parents were intrigued by seeing their 'insides' on the 'outside' and happily wore the wristbands, encouraging their children to do the same. One child quickly found the wristband too scratchy and uncomfortable and the other happily wore the 'watch' although, disappointed it didn't tell the time, eventually took it off to focus on the serious business of painting. Meanwhile, another child approached the projector screen, pointed to the moving lines and followed them with her finger. A human digit tracing a digital trace. At this point her mum was wearing an EDA wrist band and deliberately shook her wrist whilst looking at the screen as if to initiate a movement in the trace. Nothing obvious happened to the moving lines which were dancing across the screen, resisting identification as to whose trace was whose (and debatable as to whether traces even belonged to bodyminds - see de Freitas (2018) below). The event lasted but a moment then the child returned to paint-dancing, joyfully smearing paint across the paper (and then the floor) with hands and feet. Other than the invisible exchange of physical-digital data, this was the only visible interaction that happened between the 'outside' traces on the screen and the 'inside' traces of participants' bodyminds. The bio-data traces seemed too abstract and disconnected from the sensory 'tunes' of participant bodyminds, making the biosensors ineffective for inspiring movement. Perhaps this was an apparatus whose boundaries were so limited to detecting linear bio-electrical differences in a still subject as to be entirely unsuited to a speculative movement methodology. In what follows I will explore how this realisation unfolded.

Sensors that cannot parse more-than-worldly sensibilities

EDA sensors are used in research to measure emotional valence (the extent to which a person's emotions are considered positive or negative) and arousal (their strength and intensity) with view to making causal, partial and unsituated assertions about a body's capability under stress. A tiny electrical current is conducted across the skin, multiplying in response to increased sweat gland secretion. It is stimulated through higher levels of arousal, and its peaks and troughs are measured as 'live' traces by biosensors, albeit with at least a half second delay between receiving the signal and producing the trace (Massumi, 2002). The traces intend to show the intensity of emotional arousal in terms of the activation of a body's sympathetic nervous system (SNS), by measuring the increases in eccrine sweat gland activity in the skin non-invasively and in-situ (Betancourt et al., 2017).

To achieve 'accurate' EDA traces in the conventional sense, the 'purity' of arousal tracking depends on the removal of any other sensory interference, or 'noise', which could drown out the sensor. This requires the wearer to be a certain temperature (between 22-24°C), to remain still, to avoid sudden respiratory movements from sneezing or coughing (all termed as 'unwanted noise') and to ultimately create an artificial situation where bodies are sensed whilst in an abnormal state of being (Gul Airij et al., 2020). Although the requirement for stillness would never meet the objectives of this research, I argue that putting to work sensor technologies in subversive ways is an interesting experiment in how visualised sensory traces might help mobilise agential relations-with nonlingual movement. By projecting the vitalities of entangled bodies onto a screen, EDA sensors can work as posthuman apparatus, highlighting marks of entanglement with other worldly forces.

Aligned with my research objectives, this was an experiment in decentring humans by noticing the relations in bodying. While EDA sensors appear to mark the traces of human arousal, Elizabeth de Freitas (2018) notes that sensors plug into worldly sensation producing data that are 'profoundly indeterminate and thereby refuses to belong to any one organism' (2018, p. 6). This makes visualising a bodymind's 'own trace' irrelevant since so much of the world is entangled in every trace. Following de Freitas' argument for an alternative, ethical approach where biosocial data registers a '*more-than-worldly sensibility*' (2018, pp. 3, original emphasis), I wondered if my EDA data might displace the biological organism by revealing

their worldly entanglements. However, the experiment demonstrated that, even while plugged into worldly sensation, EDA sensors lacked response-ability towards broader worldly entanglements, revealing their shortcomings. This technology could not agentially relate-with complexity beyond the boundaries of causal examination (de Freitas, 2019). Furthermore, the delays in registering bio-data and sending a trace to the screen, the inability for the sensors to function well amongst the 'noise' of children's lively movements, and the sensors' inability to inspire dancing-with-vitalities meant that bodily traces were, I argue, *disconnected from their constituent bodyminds* both sensorially and affectively.

In complex, nuanced situations, I propose that, while performing as apparatus in listening to certain biological registers, the EDA sensors were not able to 'hear' minor relational frequencies (Manning, 2016) beyond these registers. Furthermore, sensors were technologically (perhaps, sensorially) overwhelmed by other worldly information which they were not rendered capable of parsing, a bit like divergent bodyminds. However, the bamboo-paint-brush-bundles engaged with more-than-human sensibilities (de Freitas, 2018, p. 12) performing as unexpected diffractive apparatus. As entangled phenomena, these malleable materials responded to the forces and movements that mattered. Regardless of the technology, families were lured to the paint and became absorbed with the intensities of paint-water-brushing dances, productively tracing the ebbs and flows of affect that technological methods missed. Therefore, I argue that analogue sensing apparatus like bamboo-paint-brush-bundles are a dynamic way of disrupting the limited, linear classifications of technological sensing practices, which work to make the senses *make sense* within a universalised human frame, by tying sensory organs exclusively to the bodymind (Massumi, 2002).

The power of the analogue to sense the quivering periphery

In mediating between the phenomena of the world (matter, atmospheres, politics, ideas) and their sensing systems (skin, nerves, stamen, bark, antennae, bacteria), Jennifer Gabrys (2019) posits that sensing practices are always already creating different worldings. Yet analysing the bio-data from biometric technologies such as EDA sensors involves transforming it into specific algorithms by mapping numbers, images, symbols and points onto certain agential

cuts (Gul Airij et al., 2020). In doing so, EDA sensing technologies collaborate with embedded economic and political forces to bring a particular bias that reinforces privilege and oppression (de Freitas, 2018). From my research experience, I contest the notion heralded in much literature that EDA sensors are 'non-invasive' (Betancourt et al., 2017; Gul Airij et al., 2020) on two counts. First, the biological reductionism inherent in much biodata analysis (Meloni et al., 2016) reinforces micro-aggressive tropes within their pathologising definitions of the divergent bodymind. Second, the act of wrapping an electronic band around a small wrist for the purpose of gathering personal (worldly) biodata is not something a young child could provide informed consent for. This runs counter to the ethics of care (see section 3.2.3.) in my study so, for these reasons, this apparatus was never used to 'collect' biodata nor perform any kind of embodied analysis.

In this project, I repurposed the EDA sensors-as-apparatus to sense the 'quivering periphery' (de Freitas, 2018, p. 7) of moving matter and encourage further entanglements with movement. Trying to subvert the technologies to resonate-with more-than-human worlds and account for biodata differently was one way of 'refusing to package sensation in terms of biomarkers of dis/ability.' (2018, p. 13). However, in the event, the quivering periphery of bodyminds became apparent only in movements of paint on long rolls of paper and on participants' legs, hands and feet, as families responded to the affective currents of their more-than-human relations. The immediacy of these analogue phenomena rendered them capable of tracing diverse worldly vibrations - hopping footprint trajectories, sympathetic nervous systems, more-than-human collaborations, heartbeat oxygenations and imaginary ideations - surpassing the capabilities of biosensor technology.

While the use of bamboo-paint-brush-bundles did not lead to the extended experiments I imagined when creating these conditions, rendering the video-data of this event through the software-as-apparatus revealed new visualisations (see *Figure 12*). In applying a 3D filter, which adheres a contrasting colour to all straight lines in order to add depth to their boundaries, suddenly 'the video footage incited an intensity that acted beyond its immediate content and context […] that coerced a close look into the phenomena at hand' (Caton, 2019, p. 10). What it revealed was not just the straight lines of the bamboo-stick-brush-bundles but of almost all the legs. In other words, painting with long sticks required almost all bodyminds

to be entirely straight, upright, restrained from movement. This did not trouble the parents who seemed happy to use them throughout the session - a possible relief from the usual rolling, rocking and dancing we had done! However, the children were by now enjoying the relaxed freedoms of moving on all levels in this gallery space, and these distancing observation platforms only removed them from the tactility of sensuous paint practices.

The experiment highlighted my familiar tendencies to think-with and create experiments in a certain way and reminded me that every encounter is unique and requires its own conditions, which are 'an infinity of moments-places-matterings' (Barad, 2014, p. 169). Although the bamboo-stick-brush-bundles method had seemed conceptually interesting and full of possibilities, I had reverted to thinking-with a familiar 'cause-and-effect' mindset, trying to 'predict' in advance of the event what might happen (Springgay & Truman, 2018). The software diffraction of these data helped me attune to other ways of being and thinking-with speculative methods and apparatus as they emerged to unfasten familiar tendencies that stopped movement in its tracks (Manning, 2016). In order not to pre-empt the materialisations of an agential cut by fixing apparatus for certain outcomes, this diffraction process revealed where human thought might stifle the possibilities for sensing-practices to work beyond the cognitive. Having said this, I do not believe in making methods 'unfamiliar' for the sake of it since difference is not simply one thing, opposite to the same. It is a multiplicity in and of itself (Barad, 2014), which is why improvisation with apparatuses is such a valuable practice for attuning to many possibilities.

Was the use of EDA sensors-as-apparatus a 'failed' experiment? Only insofar as demonstrating the incommensurability of biosensors to engage in entangled relations. Ignoring the preconceived idea of screen-trace-dancing led to an exciting, speculative creation of more-than-human desires based in a curiosity for the what-if, the so far, and the not-yet of paint, paper and bodyminds in both divergent and convergent relations. Moving bodies away from the predictabilities of technically driven pedagogies (Lenz Taguchi, 2010) doesn't mean swapping one technique for another but being open to the 'and… and… and…' (Murris, 2021, p. 39) of materials, concepts and movements in all directions. Sensors-as-apparatus for movement offered limited conditions for human-nonhuman dancing relations but their incapacity for diverging from their core function paradoxically foregrounded the productivity

of analogue ways of moving. The minor forces in the paint-paper-brushing-hopping-feet created transit maps (Alaimo, 2010) for sensing otherwise, forces that challenge the notion of the organism as the sole unit of inquiry. In this research-creation experiment, humans were decentred, nonlingual movements were animated and the participants' biodata was reconfigured as 'part of the radical *exteriority of experience*, and as evidence of the inhuman forces at play in any environment.' (de Freitas, 2018, pp. 3, original emphasis).

4.2. Summary of methods-as-apparatus

In this chapter, I explored four speculative methods-as-apparatus, which worked to diffract relations and produce particular agential cuts, or differences, amongst the participating bodies. I detailed my research-creation experiments with contact improvisation, Zoom, GoPro video software and EDA sensors, not as strict techniques that might cause predetermined effects but as speculative approaches to inviting the unfamiliar, the unpredictable and the awkward.

First, I discussed how improvisation-as-apparatus became a matter of care, a listening-otherwise to what mattered and experiencing the *more-than,* including sensory modalities beyond words. Next, I went on to argue that, despite the enforced situation of using a video-based method to avoid spreading bacteria during the pandemic, Zoom-as-apparatus enabled participants and myself to contaminate relations, allowing the viral spread of synaesthetic affects, ideas, sensations and imaginaries. This supposedly non-contagious digital apparatus became rich with symbio-techno reciprocities in transcorporeal exchanges that were virtual, material and political. Third, with the GoPro footage pulling me towards a humanist engagement with subjects in each frame, I discussed how diffracting the video through software effects enabled me/us to work speculatively with the sensory forces and materiality of the multiple relations emerging. Mobilising researcher+software-as-apparatus, we enacted an ethics of care in repositioning the video-data away from anthropocentric representations of nonlingual bodyminds towards a haptic visuality, disrupting the logics of normativity and inviting a sensuous feeling-for minor gestures and other ways of bodying.

Finally, I discussed my use of biosensors, not to measure traces of participant data but to stimulate further movement as we watched our biodata unfold on the screen and danced to our own tunes. However, as I discussed, this did not go to plan as children became absorbed with the intensities of paint-water-brushing in affective analogue dances that technological methods could not understand. I concluded by highlighting the limitations of biosensor technology for speculative methodologies. It seems EDA sensors cannot easily be adapted beyond their anthropocentric design to make the senses *make sense* as individual elements of a human body, running counter to the more-than-human aims of this research.

In this chapter, I considered how each apparatus might restrict or amplify what nonlingual bodyminds can do, how they were important in producing ethico-onto-epistemologies about nonlingual ways of being, and what they might bring to the research field. This valuing of experimentation at the interstices is a way of resisting orthodox data production methods where, '[w]ithin the schema of representation, things are frozen in the places allotted to them by the structure that comprehends them' (MacLure, 2013a, pp. 168-169).

In Chapter Five, I focus specifically on the dance between researcher-sensing, improvisation and video software-as-apparatus, using haptic-synaesthetic attunements to perform a diffractive analysis that opens new ways of seeing relations. Using these apparatus, I create a diffractive patterning of sense-differences that emerge when data are read through the intra-mingling molecules, histories, fissures and situations through which they travel.

Chapter Five

5.1. Introduction to the diffractive analysis

This chapter builds on the speculative data creation methods discussed in Chapter Four by analysing them using a diffractive method that might be productive of nonlingual, transcorporeal bodyings. Barad's methodology of diffraction is an essential way of rendering capable more-than-human relations within an ethics of care, as I discussed in section 2.3.4., enabling a careful and responsive reading of differences through each other. In '*cutting together-apart'* (Barad, 2014, pp. 176, original emphasis) the data, I create a series of agential cuts which produce certain effects and enable different ways of responding-with these effects. Rather than analyse the video-data in each agential cut to 'make sense' of them, this diffractive analysis opens possibilities for reading data's effects differently or sensing the differences-within.

Prior to discussing the diffractions, I trace the networks of sensation emerging through this project in a Tanglegram of synaesthetic relations. This Tanglegram invites different accounts of nonlingual bodying by reconfiguring individualist perspectives and considering data as fluid, entangled, divergent matter that continually rupture and reform nonlingual worlds. As I have discussed throughout this thesis, in valuing divergent bodyings, I also decenter my researcher position. I propose this requires learning *how* to be affected to render my speculative approach response-able to become a 'radically open methodological experiment' (Pacini-Ketchabaw et al., 2016, p. 165). It is challenging work to craft the conditions for living in the intensity of more-than-human interstices in order to experiment with other modes of existence (Manning, 2020a, p. 14). The process of diffracting my video-data helps to meet this challenge by noticing differently, staying curious and learning how to be affected despite feeling sometimes uncomfortable (Lorimer, 2014; Pacini-Ketchabaw et al., 2016, p. 165).

I then explore the five agential cuts of video-data-sensings as they become response-able, improvisational, touching, synaesthetic, affective, awkward, experimental and attuned (Barad, 2003; Koro-Ljungberg et al., 2018; Massumi, 2002; Puig de la Bellacasa, 2017). I focus

on data's synaesthetic affects that have arisen through the data creation apparatuses, namely contact improvisation, Zoom and GoPro video editing software. Specifically, I diffractively explore how agenting data become intra-dependent (in section 5.2.1.), how superpositioned data enfold histories and possibilities-to-come (in section 5.2.2.), how mattering data contain challenging matter that can be neither solved nor repaired (in section 5.2.3.), how touching data reveal indeterminate synaesthetic flows in their relations (in section 5.2.4.) and how response-abling data renders capable human and nonhuman transformations (in section 5.2.5.).

Using a diffractive method by improvising with video-data-sensing (Caton, 2019) towards a haptic visuality (Marks, 2002), I put to work my research-creation methodology by inviting sensory response-abilities beyond words that might help to reconfigure narratives around nonlingual ways of being. In improvising with the software-as-apparatus (introduced in section 4.1.3.), I explore ways to allow the reader/viewer's bodymind to sense the sort of synaesthetic relations that were happening during the fieldwork, including how the data acted upon my researcher bodymind.

Through these analyses, I aim to foreground 'quantum understandings of diffraction and the important differences they make […] in order to produce a new way of thinking about the nature of difference, and of space, time, matter, causality, and agency, among other important variables' (Barad, 2007, p. 73).

5.1.1. What does diffraction do to data?

> *'I will argue that a diffractive mode of analysis can be helpful […] if we learn to tune our analytical instruments (that is our diffraction apparatuses) in a way that is sufficiently attentive to the details of the phenomenon we want to understand' (Barad, 2007, p. 73).*

Diffractive analysis as improvisational attunement

This research actively explores 'what else' matters in the world (Osgood & Robinson, 2019, p. 16), by asking how my methods-as-apparatus interfere and make a difference, mindful that '[d]iffraction is not about any difference but about which differences matter' (Barad, 2007, p. 378). This chapter details my diffractive analysis, mobilising video-data to amplify nonlingual relations, and imagine new nonlingual futures (Åsberg et al., 2015; Haraway, 2008). I explore how these diffraction patterns connect-with and affect my research questions later in Chapter Six where I put diffraction to work *materially* and *discursively* to reconfigure new narratives by challenging predetermined categories of lingual normativity in young bodyminds.

Diffraction is 'an iterative practice of intra-actively reworking and being reworked by patterns of mattering' (Barad, 2014, pp. 187, n.163). For me this involved using editing software to disrupt what Mirka Koro-Ljungberg et al call data's gravitational 'pull' (2017, p. 4) towards old patterns of external interpretation, focussing instead on the sensorial frequencies, reverberations and forces within nonlingual relations. This process of cutting together-apart and making strange the haptic visualities that moved in the fissures of my footage (Land, 2023; Marks, 2000) unfolded differences that iteratively re-worked boundaries.

My approach integrates Barad's (2007) concepts of diffraction and entanglement, with Marks (2000) and other education researchers ideas on video-data-sensing and haptic video methods, which I unpacked in section 4.1.3.. A diffractive approach superimposes texts, concepts, materials, methods and theories, reading their affects through each other to unfold new narratives (Iris van Der Tuin in Braidotti & Hlavajova, 2018). In my work, this began with video-data-sensing practices, dwelling inside their sensory webs and experiencing the textural quality of video as if 'seeing it for the first time' (Marks, 2000, p. 178) before interpretation jumps in. Interpretation quickly obscures important phenomena about different ways of

being, which then remain imperceptible not because of the limits of biological perception, but through 'ongoing and active forms of disavowal, denial, and forgetting' (Myers in, Loveless, 2020, p. 99). Therefore, by dwelling with sensory haptics and attuning to the 'thickness of synesthetic perception' (Myers in, Loveless, 2020, p. 99), I practiced an affirmative ethics of care and response-ability, exploring *what else* mattered in the data and expanding the contours of understanding what divergent bodyminds can do. My work with video-data sought to generate alternative visions and sensations challenging the dominant 'practices of frontality' (Manning in Loveless, 2020, p. 218) in GoPro and Zoom recordings.

In section 4.1.3. I discussed the problematics and awkwardness of sensing complex data. It was difficult to 'know' what relations were happening and, therefore, how to 'handle' data diffractively. For instance, how should I resist *selecting* an agential cut without playing a 'god trick' (Haraway, 2016, p. 40), and taking an exceptionalist stance to my analysis (Kuby and Zhao in Murris, 2021)? Organising 55 hours of video-data (see Appendix F) into categories or codes was also problematic as it reduces data to dates, timestamps and themes of representative subject matter (Mazzei, 2014), foreclosing transversal tentacular connections with intangible phenomena (Haraway, 2016; Myers in, Loveless, 2020). The urge to construct categories to manage the data was strong, but I realised this might inadvertently perpetuate an Anthropocentric approach that *ties data down,* in a posthuman project where *data wants to move*, affect and be affected (Koro-Ljungberg et al., 2017).

Mazzei recommends working at the limits of orthodox practices through a process of 'plugging in [to] ideas, fragments, theory, selves, sensations, and so on' (2014, p. 743) to keep data's entanglements moving. This aligns with Barad's (2007) diffractive concept where data are never new but always 'dynamically re-constituted' (2007, p. 146). Therefore, to avoid making anthropocentric decisions, I simply organised the video-data into groups of Stage One and Stage Two sessions for easier access, then embraced a speculative 'plugging in' to this indeterminate matter. This meant reviewing data in any order, noting how the vibrancy of certain movements within the data *selected me* (Bennett, 2010) as I was drawn to their haptic-synaesthetic qualities. The randomness of this approach highlighted data's partial, unpredictable and unstable nature. Data frequently diverged from anticipated trajectories, becoming sticky (Ahmed, 2010), resistant to interpretation (MacLure, 2013b), contaminating

(Tsing, 2015), sensual and disorienting (Koro-Ljungberg et al., 2018), often 'stepping outside of static identity [and] embracing the "in-between"' (Nxumalo, 2012, p. 286). Although it felt like I had no control over how or what data might manifest as important, which MacLure (2013c) suggests is how data often reveal themselves, taking an improvisational approach to analysis helped me break free of majoritarian structures that preserve linearity (St. Pierre, 2011, p. 621). In responding to their synaesthetic hapticity, improvising with data enacted 'a becoming of inquiry that is not priori, inevitable, necessary, stable or repeatable but is rather created spontaneously in the middle of the task at hand' (St. Pierre, 2011, p. 620).

Cultivating a synaesthetic sensitivity brought to life Barad's idea that data are superpositions of '*ontologically indeterminate states*' (Barad, 2007, pp. 265, original emphasis) that are always intra-acting, always in a state of *doing something* (a verb) rather than *being something* (a noun). In my diffractive analysis, I tried to sense the *doings* in the more-than-human connections in nonlingual bodyings. By replaying the Zoom and GoPro recordings, sometimes closing my eyes to listen to, and sense, their affects, I could background the *look* and foreground the *feel* of the data. Vitalities emerged through sensing proprioception, kinetic energy, the feel of the research materials we were playing with, sensing the temperature in the room, and hearing the splatter of running feet on the big floor, absorbing my bodymind into the sensory encounters taking place.

The process of thinking-with '*ontologically indeterminate states*' of data blended sensing with remembering fragments of encounters imprinted on my synaesthetic sense-memories, creating a thickness of past/present superpositions. Recognising that 'there is no moving beyond, no leaving the 'old' behind, there is no absolute boundary between here-now and there-then' (Barad, 2014, p. 168), I continuously tried to attune to *what bodyminds can do* across temporalities; sensations that were there-then (in our sessions) and are here-now (in the video data). As I allowed my haptic-synaesthetic gaze to dwell in the data, sense-memories began to dwell in my bodymind; 'frissons of excitement, energy, laughter, silliness' (MacLure, 2010, p. 282) drawing me closer. Seeing the washed lycra sheets dancing in the wind on my clothes line, for example, immediately transported my bodymind back to the video-data of the dancing-lycra-ghost (which I diffract in section 5.2.2.) whose continuous twisting and twirling (there-then) had me wrapped up again (here-now) in their folds. I was

materially and discursively caught up in the data, as they interfered with my sensibilities (Lenz Taguchi, 2012, p. 272), and I with theirs, 'mutually implicated in the dynamics of intra-activity' (Barad, 2007, p. 152).

My entanglements with the data actively affected, infected and transformed me (Hultman & Lenz Taguchi, 2010; Tsing, 2015). I realised that interpretation is impossible because any agential cut diffracted through the software is but an inkling of what is, has, or will take place in this ongoing entanglement, of which my more-than-human involvement is but a quantum part. Fox and Alldred (2017) suggest exploring 'the constellations of relations that assemble around events, and unpicking the affects, the capacities and the micropolitics that produce these assemblages' (2017, p. 48). Through this, I shifted from trying to *know* or *understand* what something meant and why it mattered towards being curious about relational processes, their capacities, and affects. Therefore, I moved-with data as dynamic encounters that were 'conceptual, theoretical, philosophical, ethical, material, performative, practical, ontological, and spatial' (Koro-Ljungberg et al., 2017, p. 3), acknowledging that diffractive analysis, as an improvisational way of attuning to data, is always a process of research-creation (see section 3.1.2.).

Sensory diffraction gratings

Whereas an apparatus is the general equipment used to conduct an experiment, a diffraction grating[32] is the specific optical grating through which light wavelengths are viewed to see their diffraction patterns which are otherwise intangible. They work by showing where constructive interference occurs in the wavelengths, indicating the *regions of maximum intensity*. We, researcher+software-as-apparatus, applied diffraction gratings to the data to show their interference patterns (relations) and highlight *sensations of maximum intensity*. Each diffraction grating (software effect) highlighted important material-discursive differences and

[32] A diffraction grating consists of many parallel, equally spaced, vertical slits cut into a glass plate (building on Thomas Young's original two-slit experiment in 1803 - see figure 3 in section 2.3.4.). Diffraction gratings are useful because they create a sharper pattern than a double slit. They are used to separate light of different wavelengths with high-resolution, diffracting monochromatic light into bright and dark fringes or white light into its different wavelength components. Diffraction gratings are used in spectrometers to analyse light from stars, analyse the composition of a star, measure red shift / rotation of stars, measure the wavelength / frequency of light from a star, observe the spectra of materials, or analyse the absorption / emission spectra in stars.

relationalities 'in the lively dance of mattering' and appreciated the intricacies of the patterns (and exclusions) produced that might otherwise go unnoticed (Barad, 2007, p. 37). Unlike reflective apparatus that reproduce homogenous images of (more-or-less) the same, diffractive analysis explores *differences within* by producing patterns that mark the relative qualities of constituents as they intra-act (Barad, 2007, p. 81).

Using the software-as-apparatus, I discovered superpositioned layers of video footage, materials, memory, and affect intertwined with each edit. Letting go of expectations to represent a child/human-centred bias (e.g. images of the happy child, joyful dancing or the engaged parent), I encountered chaotic, strange and haptic-synaesthetic images that reimagined nonlingual bodyminds (e.g. stomping sticks choreographing rhythmic trajectories, or the dynamic folding and unfolding of creases on a dancing-lycra-ghost). Once I had a gathering of video-data fragments that moved me, I explored the pull of their forces on my bodymind, noting their generative qualities, e.g. improvisational potential for playing-with and distorting further, ability to touch my senses deeply in ways that were hard to articulate, or their knottiness making me wrestle further for what they might reveal. Frames activating the *maximum intensity* of these qualities were then frozen as an image and diffracted using the Photopea software. We (researcher+software-as-apparatus) began by removing the background of each image to highlight key minor qualities (I discuss in section 5.2.1. how this impacted on the entanglements of data). We then had fun, experimenting with the vast possibilities of effects and filters to sense/feel how each one might amplify their generative qualities.

In setting the filters' parameters, I was aware of the risk of representing data in specific ways but, having not previously used this software, I had no idea what each filter setting would produce until applied. Thus, I was reasonably confident of preserving the speculative in this research-creation process. The produced effects stirred up emotions, sensations and gut feelings that attracted *and* repelled me, interrupting my sense of equilibrium in what the image was doing as data continued to materialise in these new material-discursive relations (analysed in section 5.2.). Each 'reading' of the data through different software effects (haptic-synaesthetic gratings) produced something different - sensations, concepts, memory fragments, partial utterances, stutterings and obscurities that defied articulation (Koro-

Ljungberg et al., 2017, p. 5; MacLure, 2010). And each iterative stage of the diffraction process rendered me response-able to tuning-in to the movements and feelings of data, enacting a further resistance to interpretative transcribing.

'The details of diffraction patterns depend on the details of the apparatus' and fine-grained details matter (Barad, 2007, p. 91). By speeding up video fragments, slowing them down, freezing frames, distorting textures and dislocating their linear, chronological flow, I developed a synaesthetic sensitivity towards curious details previously unnoticed. The data+video-sensing-apparatus were *doing* something to me, helping me 'sense the difference between a variety of states' (Ash & Gallacher, 2015, p. 74). Like dancers attuned to the ephemeral sensations of their choreographies beyond physical notation (Myers in, Loveless, 2020), I cultivated a haptic-synaesthetic sensitivity to the subtle micro gestures, minor movements, sounds, vibrations, atmospheres and textures of more-than-human relations (Ash & Gallacher, 2015).

Using software filters as diffraction gratings helped me to challenge assumptions that data contain coherent narratives, are the whole story, can be hierarchically classified, or are 'innocent' of their historical, political or social situations (Koro-Ljungberg et al., 2017, p. 2; Koro-Ljungberg et al., 2018; Yergeau, 2018). It helped me to keep the data vibrant and open to improvising new relations, where software effects were not 'representing' data but mediating *raw*[33] materiality (de Freitas & Trafí-Prats, 2023). Each editing event that produced an abstract image brought forth new potentialities, creating 'software art' (de Freitas & Trafí-Prats, 2023, p. 62) but, as Elizabeth de Freitas and Laura Trafí-Prats (2023) argue, although something was produced, something was always lost, highlighting data's incommensurability. In this research, the haptic-synaesthetic diffraction gratings enacted more-than-human mediations that were not neutral - something was always excluded and had to be accounted for. This was exemplified as I wrestled with the response-ability of using software filters to cut into the relational layers wrapped around each participant's experimentations. These were carefully laboured stories of nonlingualism, shaped by the social constructions of race/

[33] In relation to data, I put any use of the word 'raw' in inverted commas. In line with posthuman new materialism, this indicates that there is no 'original' source of data and that the perception of data changes as it is always entangled with the viewer and their situation, no matter how small a difference this might make. (Koro-Ljungberg, 2018).

gender/ age/ development/ dis/ability, making it difficult to de-centre the Anthropos. But these constructions were important too, so I engaged with software-effects as experiments into new ways of learning and thinking with these material-discursive phenomena. My aim was not to get the data analysis 'right' but to practice the processes of sensing-, thinking- and moving-with the effects of difference. It was an improvisation, open to chance and responsive within the event, heeding what nonhumans seem to do well - attuning to the affective charges and vibrations in the excitable life of matter, or 'Becoming Sensor' (Myers in, Loveless, 2020, p. 107).

Diffraction marking affective differences

This project's diffractions were speculative, always incorporating *differences within* (e.g. politics, histories, (in)tensions) rather than opposing them. For instance, video-data-sensing revealed children's awkward transitions from the busyness of the outside to the quiet uncertainty of the gallery space. Their histories, experiences and emotions did not stay outside the gallery, but came in with them, often manifesting in nervous anticipation of the challenges ahead. During the sessions, the methods-as-apparatus also performed specific diffraction gratings (e.g. improvisation with movement-material propositions evoked specific movements and responses), facilitating transitions towards different ways of being while considering *differences within* a matter of care (Puig de la Bellacasa, 2017). Their effects manifested in relaxed body movements; letting go of parents' hands, little jumps, smiles, giggles and sometimes chatter. Often subtle, these movements served as nonlingual maps of transit (Alaimo & Hekman, 2008), only becoming apparent through the software diffraction gratings. In this research, diffraction gratings were the specific apparatus arrangements that enabled the affective marks of nonlingual differences to flourish.

For example, in our first face-to-face gallery session, I was gently pouring water over a mother's hands, taking time to cover every finger, line and crease in the skin on both sides, then patting dry and wrapping them up in a towel. The extended invitation to the child was accepted and she crept forward, attending to each inch of proximity between us. I waited; caring, attending, inviting touch. Eventually, kneeling a short distance away, a little arm stretched forward and placed a hand into mine. Then, discomfort seemed to shift, and the

atmosphere changed as bodyminds relaxed and leaned in to the coolness of the pouring water, the stroking, dotting, twirling and flicking of a paint brush, and the softness of the patting towel. Hand on hand, skin within skin, held breath in held breath; in these few short moments there was a cascade of intensities that I had not felt before in our connections. There was something about the simplicity of water, its capacity as an apparatus to bridge human-nonhuman relations in a more-than-chemical form, that opened us to affective attunements. Here, being nonlingual-with-water felt easy, unambiguous, like there was nothing to decode, nothing to work out, nothing to understand. Through this diffraction grating we could experience capacious sensations of maximum intensity.

Perhaps the watery allures, quiet waiting, sensing hands and mum's reassurances opened us to vital sense-events, 'intensely and forcefully altering the trajectory of the becoming event' (Manning, 2009b, p. 38) of nonlingual bodying. The affects that arose from relating through an ordinary, everyday act altered our virtual synaesthetic perspectives (Massumi, 2002) offering insights into the forces and power relations across more-than-human bodies (in, Murris, 2021, p. 8). I reminded myself that synaesthesia is not held in a bodymind but is an environmental, more-than-human agenting through which all movements flow (Manning, 2007), which prompted me to wonder how the forces of affect became manifest through watery-matters-of-care, and how a diffraction through video-data-sensing might re-enact this?

Figure 13: Video-data-sensing of ordinary acts of care

In activating the vital-sense-events of these data, I diffracted them through the software to focus on nonhuman agencies, such as the water pouring over two hands (see *Figure 13*), trying to decentre the powerful agentic presence of human bodyminds. For instance, using the software-as-apparatus, the Crystallize-Splatter filter created a watery effect which helped to disintegrate the boundaries around the human assemblage into a porous multiplicity. This amplified a sense of bodyminds in proximity with the world where 'human' might not even exist as separate matter (Gilbert et al., 2012). However, to focus in on the dynamic process of *differencing* across matter through tuning in to its affective vitalities, I further inverted the colours and textures that signified 'human' and added an HSB/HSL distortion filter over the water pourer, creating random colours. Unexpectedly, the filter created a particular contrast that seemed to bring to life the vitalities of these matters of care (Puig de la Bellacasa, 2017) by highlighting an *affective hotspot* where a minor gesture co-composed with an intense affect (Manning, 2016). Through these digital affects, I propose this tiny animation of the pouring of water helped me care for the sensuousness of the movements in those relations (MacRae, 2019b). It also helped accentuate data's affective intensities in this entangled composition of water-software-researcher-daughters-mothers, generating sensuous knowledge about how care emerges between, and transforms, human and more-than-human elements (Ivinson & Renold, 2016).

I contend that the diffraction of this water pouring event rendered a nonlingual bodymind response-able; it's gentle playfulness within an act of care enlivened possibilities for care-full

relations beyond words, or any expectations for speaking. This nonbinary, synaesthetic entanglement is akin to *quorum sensing*[34] where bacteria gather to 'chemically sense the presence of others' (Tsing, 2015, p. 238). This describes the intertwining of synaesthetic affecting and becoming affected. Just as an agential cut diffracts matter *together-apart in one move* (Barad, 2014), I propose that *affecting and being affected is also one move* - inseparable except for the purposes of noticing the marks of difference made. The affective possibilities of cool water and gentle brush-strokes were activated by a quorum sensing of a little hand accepting an invitation to become affected, water droplets splashing into bowls of fluid kin creating an affective shift in atmosphere and drawing constituents together in a sense of wonder. Many mutualities of affecting and being affected were caught up in this moment, a quorum sensing of political, social, lingual, embodied and virtual affects through one tiny gesture.

Did diffracting the data reveal what mattered? I argue that it did by mapping 'where the *effects* of differences appear' (Barad, 2007, pp. 72, original emphasis). It is not possible to reveal all effects through video-data-sensing, such as those manifested in subtle body languages, minor atmospheric changes, increased willingness and enthusiasm for participation, the knotty intra-actions of (in)tensions, inhibitions, frissons and humour that became contagious within the more-than-human 'relational field' (Olsson, 2009, p. 20). However, in participant-researcher-data-mattering, it is important to re-state that what matters cannot be known in advance or even after the cut; it changes with every iteration and is different for everyone/thing entangled in the relations intra-acting. Therefore, the effects of difference revealed in diffracting the data can only ever be incomplete, indeterminate effects that reverberated for me and should not be read as a *fait accompli* for the other participants, human or nonhuman. In what follows, I unpack the process of diffracting data's entanglements diagrammatically through a tanglegram.

[34] 'Quorum sensing' is when, in an unforeseen collective moment, bacterium signal when the air, nutrients, water, temperature and other things are ripe for the simultaneous emergence of a bacterial colony such as a fungi mosaic. See: https://www.sciencedirect.com/topics/immunology-and-microbiology/quorum-sensing.

5.1.2. Diffracting data through Tanglegrams

> *'Each moment is an infinite multiplicity. 'Now' is not an infinitesimal slice but an infinitely rich condensed node in a changing field diffracted across spacetime in its ongoing iterative repatterning' (Barad, 2014, p. 169).*

Tanglegrams as an ontology of entanglement

In this ontology of entanglement, I visually explore some of the more-than-human phenomenal connections of this research through *Tanglegrams*[35] which are then choreographed further throughout Chapter Five in diffractions of video-data-sensing (Caton, 2019). Introduced by archaeologist Ian Hodder (2023), a tanglegram maps the interdependence of humans and things with lines and arrows connecting their relations in transformation. Hodder emphasises how people and things, or states of change, co-create each other, finding the Tanglegram more generative than other mapping methods because of its messiness. 'It describes the ways in which we live our lives struggling between webs of demand and potential, making do, working it out, unclear what is happening much of the time, not knowing the results of our actions or why. We can never mop up all this mess.' (2023, p. 222).

In 'Meeting the Universe Halfway: Quantum Physics and the Entanglement of Matter and Meaning', Barad mapped the entangled genealogies of agential realism (see *Figure 14*). The map depicts textured, porous and multi-dimensional matter, suggesting movement and fluidity amongst the concepts which, were the map to be a moving image, would perhaps be bumping into each other, merging and emerging transformed in their intra-actions and generating a thickness of agential relations. Although the illustration conveys a sense of

[35] This tool, primarily used by biologists to compare evolutionary histories, was developed by Ian Hodder and Chris Doherty for the purposes of mapping the dynamism of things, their dependence and dependency whether animated or inert, believing that they 'have lives which follow their own paths' (Hodder, 2012, p.13). Like Bennett (2010), Holder holds that objects have 'thing power' that disrupts, attracts and makes people just as people disrupt, attract and make things, which can be plotted in power hierarchies. Tanglegrams offer visual threads of connectivity but are no more than a temporary agential cut which changes in the very process of the mapping with the researcher biasing which elements are presented. Furthermore, Tanglegrams suggest somewhat linear trajectories between determinate boundaries (for the sake of the illustration), and so should be enjoyed with this caveat, as simply an interesting slice of the liveliness of materiality.

multiplicity of entangled apparatuses, Barad acknowledge the misleading impression the labels give of individual entities and practices without accounting for their mutually constitutive and iteratively changing materialities. They suggest what it might offer is 'some sense of the need to read genealogies for their constitutive exclusions' (Barad, 2007, p. 389). This is important since mapping the divergent elements of networks runs the risk of othering outliers[36] and reinforcing difference by drawing attention to them as if they were an isolated individual force.

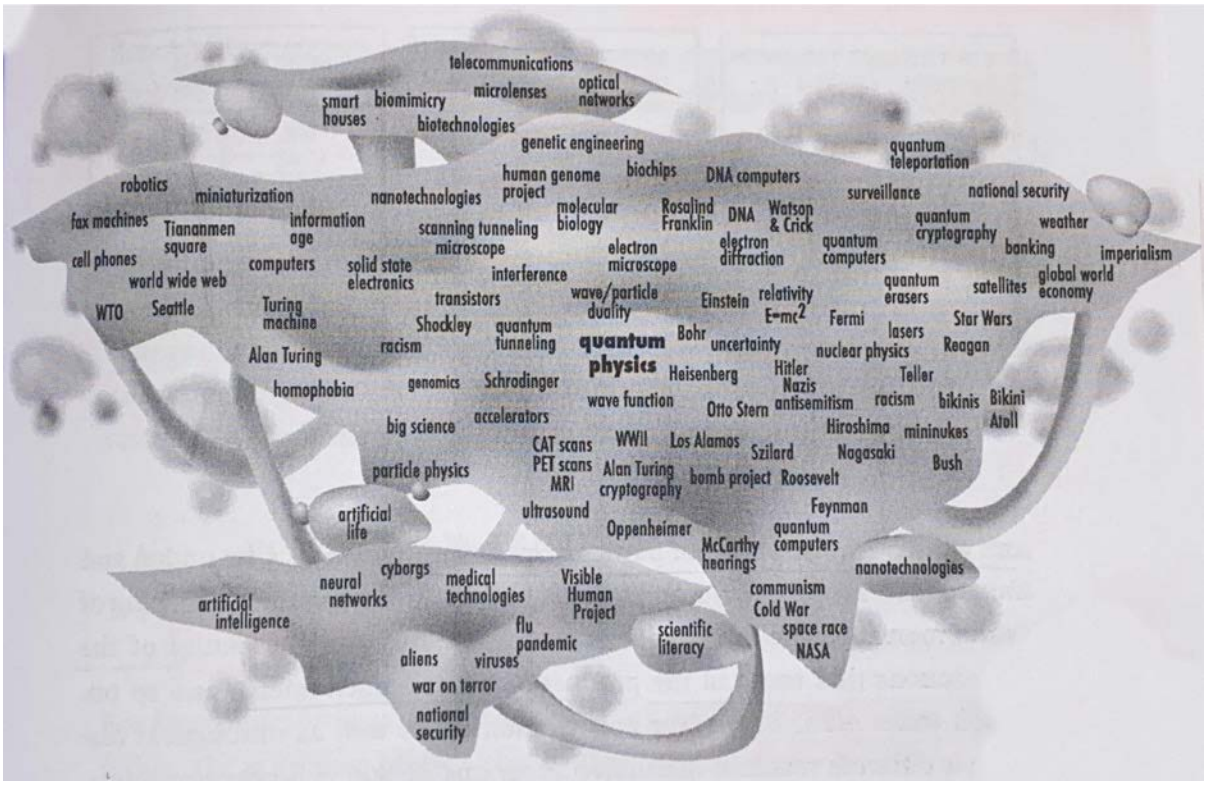

Figure 14: Entangled Genealogies - illustration by Nicolle Rager Fuller and Karen Barad

Thinking with Barad's concept of superposition, I attempted to map the relational ontologies happening in this research, attending care-fully and generatively to outliers and expanding possibilities into their infinite multiplicities (Barad, 2014). Rather than trying to map genealogies, my tanglegram of relationalities (see *Figure 16*) grapples with the *infinite*

[36] In traditional science disciplines, data are often seen as fixed, boundaried and capturable, from which the truth of a matter might be extracted. For big data sets, experiments are replicated in as 'pure' circumstances as possible. Data are reproduced and re-captured multiple times in order to filter out the outliers so that a more reliable 'truth' might emanate from the correlatable data. Agential realism does not uphold the notion of a single, capturable truth, nor does it seek to eliminate data that are significantly (or slightly) different. Rather, it is the effects of differences that create insights into the relations that are happening (Barad, 2007).

multiplicity of agential relations transversing diverse ways of knowing and being. Barad (2007) asserts that agencies are situated and created inside relations which, like movement, resides not in a body but in the field of forces orienting towards becoming-with the world. Certainly, their illustration above gives an impression that the amorphous bubbles housing the labels/relations might be infinitely constituted and connected, but this is difficult to map in a 2D rendering. I tried several ways of mapping the gathering of agencies, movements and affects of nonlingual bodyings by illustrating the diffraction of one agential cut from this chapter to amplify their thicknesses (superpositions), multiple relations, pasts and futures and potentialities (Barad, 2014). In the mapping of relations, I grappled with the ethics of data creation and analysis by trying to include entangled data of all kinds, *especially* the outliers; the uncodable infiltrators who stir up awkward relations and feelings (MacLure, 2013c, p. 230). However, this process became unwieldy and unreadable, being impossible to grasp a sense of everything involved in sensing practices, politics of care, improvisational methods, oddkin relations, and nonlingual bodyings, while at the same time remaining ignorant of what else might be known when looking at a similar cut of nonlingual bodyings through an alternative diffraction grating.

Barad reminds me that ethics of mattering are not about essentialist, externalised choices of what or whom to include but involve 'accounting for our part of the entangled webs we weave' (Barad, 2007, p. 384), emphasising collective obligations over individual commitments which, 'exposes the multilateral circulation of agencies of care' (Puig de la Bellacasa, 2017, p. 120). Alaimo's *maps of transit* notion is also useful (see section 2.3.2.) to help me think about how superpositions of data move. These are not literal maps but conceptual tools that trace how diverse bodies, memories, materials, histories, politics and ideas flow and intersect, from the molecular to the affective (and pre-lingual), across constructed boundaries and hierarchies. Maps of transit reveal the complex superpositions of seemingly unrelated lives as relata-within-phenomena emerge through diverse connections (Barad, 2007, p. 140). By tracing nonlingual maps of transit, the transcorporealities of young nonlingual bodyminds are brought into view as they reveal what other 'models of extension, interconnection, exchange, and unraveling' (Alaimo & Hekman, 2008, p. 244) could be happening here.

Thus, rather than attempt to convey the complexity of all nonlingual relational ontologies, of which I (as a more-than-human) am indefinably entangled, I provisionally map below the methodological movements undertaken in this research, showing the superpositions of spacetimematterings, that might reimagine new nonlingual maps of transit (Alaimo & Hekman, 2008; de Freitas, 2012). I map these superpositions in a linear format as a *de-tanglegram* to begin with to unpack the continually changing iterations between the continually transforming data (blue ovals), diffraction gratings (green lines) and the temporary effects of difference (yellow starbursts) that appear in an agential cut (see *Figure 15*). I make some suggestions as to the co-composing entities of layered superpositions intra-acting with data, aware that these classifications are temporary boundaries for the sake of de-tangling the diffractive method, and amplifying that nonlingual bodying is entangled with multiple circulating forces emanating from the sensory and environmental relations within their orbit (Massumi, 2002).

I then use this to guide my map of transiting relations in an agential cut between Feather and Blower that is diffracted in section 5.2.5. It is impossible to know what the effects of difference are for the participants, so these are shown as emerging bubbles around the data (see *Figure 16*). While relations are mapped between superpositions such as forces, histories and affects, these are also the diffraction gratings by which effects of difference emerge, the complexity of which is not possible to map in a 2D image. One of the challenges in this thesis has been knowing which way to cut data, with response-abilities for the ethico-onto-epistemological implications of each cut. The requirements of scholarship demand that classifications of one sort or another are used to render data's complexity understandable in some form, despite that any agential cut is but a microcosm of the ethics+practice+knowledge possibilities. Therefore, my Tanglegrams below are far from being complete but, as a temporary determining of relations, are nonetheless 'a particular instance of wholeness' (Barad, 2007, p. 119).

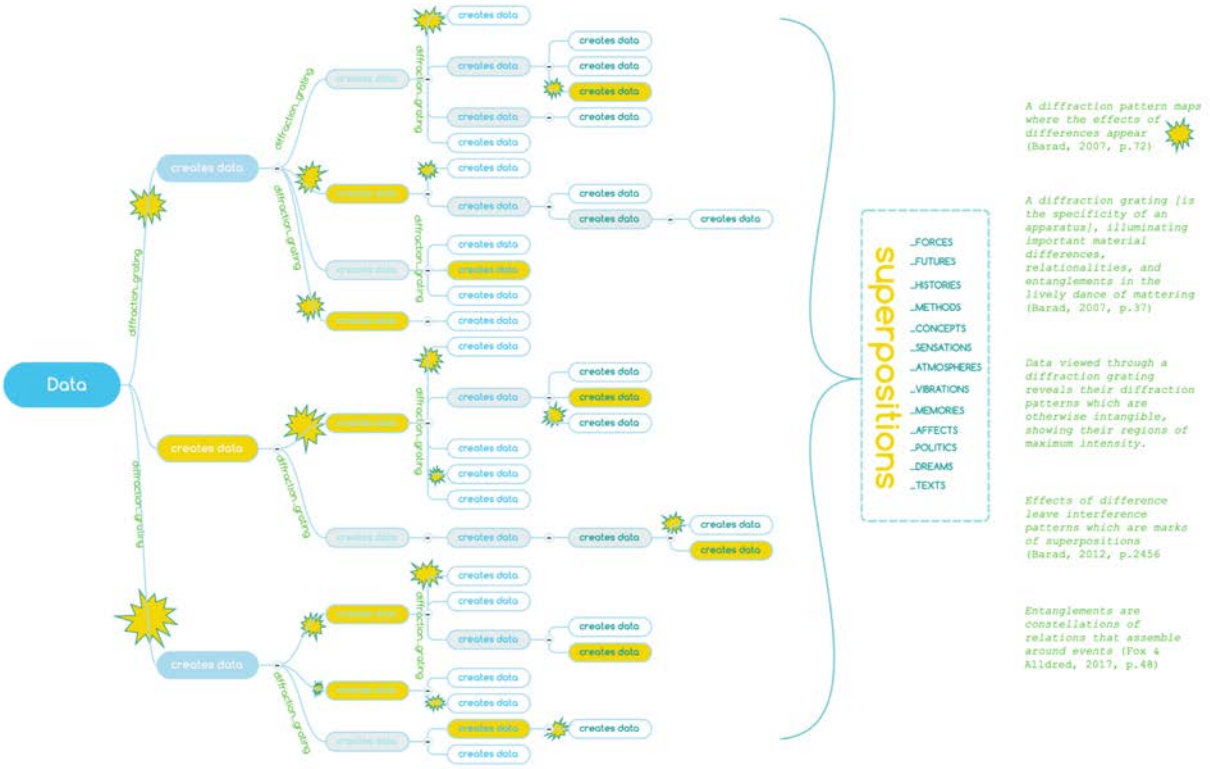

Figure 15: A de-tanglegram of diffractive methods in a temporarily linear format

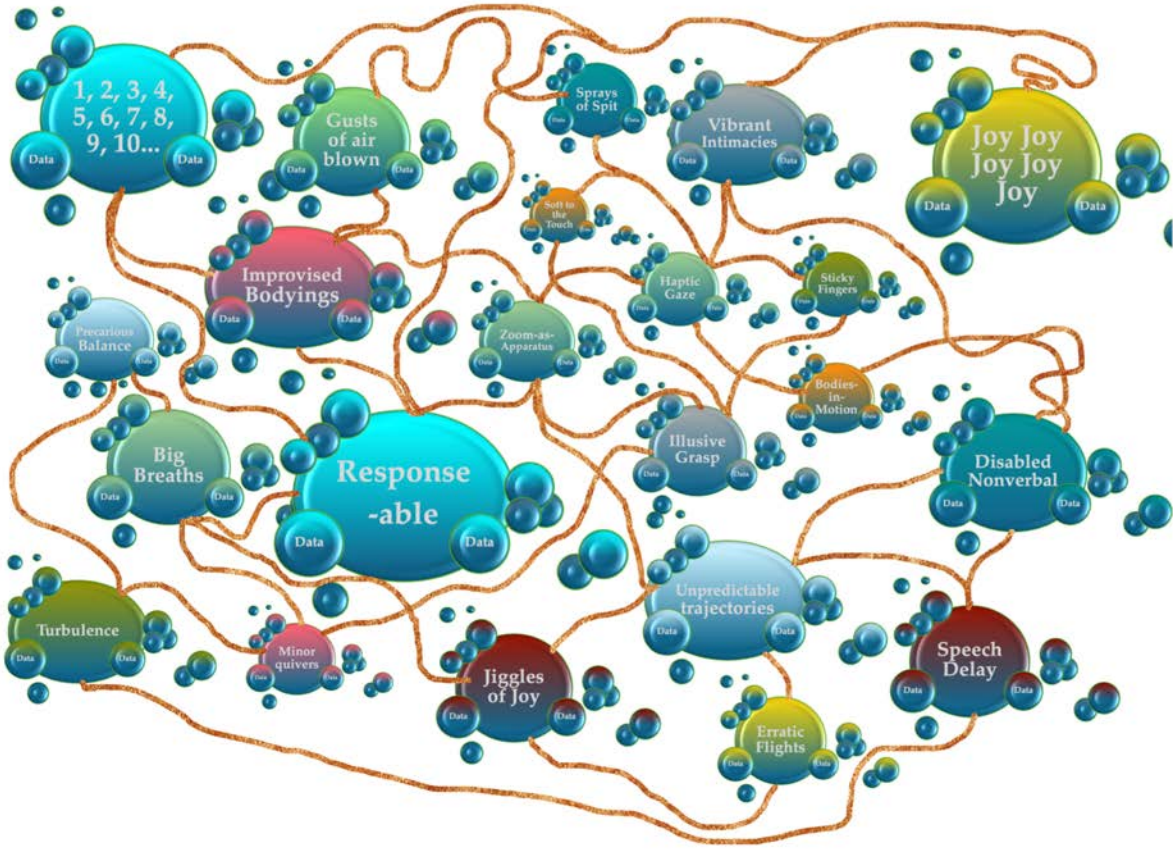

Figure 16: A tanglegram of diffracted relationalities between Feather and Blower

5.2. Dancing-with diffraction gratings

> *'Diffraction queers binaries and calls out for a rethinking of the notions of identity and difference' (Barad, 2014, p. 171)*

Thinking about how phenomena become multiply reconfigured and Barad's proposition of diffraction as a single move, I have explored the agentic processes of diffraction and their centrality to my research in section 1.5.4. and section 2.3.4. I now re-turn to diffraction as a 'multiplicity of processes' (Barad, 2014, p. 168) that, in turning over and over again, might reveal new patterns, new effects of difference and new spacetimematterings.

Previously, I outlined how data fragments emerged when randomly sensing the video-data to become agential cuts of haptic-synaesthetic expression using the software-as-apparatus. In what follows, I take these agential cuts and discuss the diffractions that occurred. To visualise how diffraction gratings work, I re-turn to the illustration in *Figure 2* (reproduced below from section 2.3.4.). The blue horizontal lines provisionally map the data passing through the apparatus (grey section), the yellow dots map the different configurations (diffraction gratings) of the software-as-apparatus and their discursive political, cultural and social biases that create interferences for the data, and the light grey waves map the new entangled patterns (relations) produced.

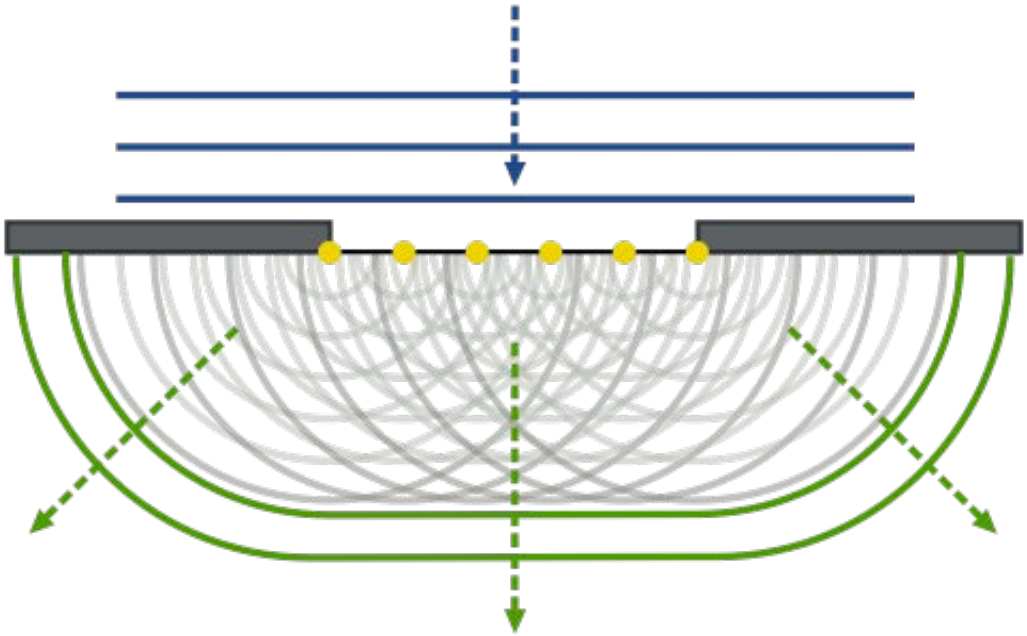

Figure 2 (reproduced): Wave Diffraction according to the Huygens and Fresnel principle

To discuss the findings of the data that has been put through the researcher+software-as-apparatus diffraction gratings, I think with some key Baradian concepts developed throughout my arguments (also, see section 1.5.) and ask, what do data produce when read diffractively through these concepts? I also thread through the chapter exemplifications of how my methodologies have been put to work. Using different filters and effects, I experiment with ways that allow video-data to play out their haptic-synaesthetic forces differently, generating new ideas and imaginaries beyond the limiting representations of traditional video-data analysis. Because my own histories, cultures, and experiences shape my engagement with the data, each cut also becomes a micro-political act of response-ability as my haptic-synaesthetic video-sensing reveals alternative perspectives of nonlingual patterns, opening new political, technological and sympoietical horizons (Haraway, 2016).

For the following sections' data diffractions, I take as my inspiration Barad's seminal paper on *Diffracting Diffraction: Cutting Together Apart* (2014). I use relevant citations from this paper to anchor the agenting process as I read the data diffractively through the key concepts of this thesis. Each themed diffraction reveals the affective charges and minor forces emerging as I become entangled with them, and the effects of their differences (2014).

Agential Cuts

Since the purpose of this research is to attend differently to nonlingual ways of being, in the following sections, I introduce some exemplifications of different practices through temporarily determinate agential cuts (in these green-highlighted text boxes), which then undergo a diffraction process. These cuts animate data emerging from the diffraction gratings (e.g. contact improvisation) that interfere with, que(e)ry and create new patterns of difference, helping me consider what effects different conditions might enable data to produce.

Each agential cut is a way to materialise and experience the sensations, forces and frequencies that provide insights beyond the cognitive 'and disrupt the genealogy and meaning of texts' (Truman, 2022, p. 32). It is a chance to experience cutting together-apart and think-with what is being produced in the data. The irony of tackling such a task within a word-based modality has not escaped me, and the limitations of this are addressed in Chapter Two. I exemplify the texts with diffracted images of digital art, created through the relations between researcher+software-as-apparatus.

Agential cuts are numbered in each section, e.g. (AC#1).

5.2.1. Agenting data

'Quantum entanglements are not the intertwining of two (or more) states/entities/events, but a calling into question of the very nature of two-ness, and ultimately of one-ness as well. Duality, unity, multiplicity, being are undone. 'Between' will never be the same. One is too few, two is too many' (Barad, 2010, p. 251).

AC#1 - The improvised agenting of Sockadoodledoo

' "Can you open and close its mouth?" mum asks. A sudden idea seems to ignite and flow across the child's face as he places his other, ungloved fingers into [the sock-puppet] Sockadoodledoo's mouth. He casts a smile towards mum as he taunts and tests the possibility of having his fingers eaten alive. In a micro-second, Sockadoodledoo's nascent character is born as they nibble the child's fingers. Fingers with a temporarily new assignment eating their own kin (right hand gobbling left hand) whilst pretending they don't already know each other. An assemblage of skin-muscle-bone-humour-brain moving inside the skin-fabric-thermo-dynamic-brain, creating an intra-active intelligence that gives birth to the animation of a nonhuman being and to a different story of multispecies kinship'.

'All body parts become engaged in a frenetic dance that follows the rhythms and vibrations of the [violin-researcher] string-kin; material waves, brain waves and sound waves crashing together as oddkin. The vigorous forces result in Sockadoodledoo's head flopping weightily off the end of the child's hand and bouncing back and forth in opposition to the pull of the arm, now synchronously immersed in the violin's vibrational rhythms. The child's eyes are glued to the dancing sock-arm-collective even though the speed of their movements cause the video to blur, and his head darts in all directions, tangled up as it is with the flopping and flapping of Sockadoodledoo's head. Every part of his face is stretched to its widest proportions [as] increasing-momentum-possibilities [are] discovered through this animated alien friend. Such a strong sense of elation radiates from their dancing that both mum and researcher are utterly affected, entranced and touched by this performing-joy.'
(Churchill Dower, 2022 #612@143-145, reprinted with the kind permission of the CPI journal - see Appendix G*)*

Figure 17: The multiplicitous improvisations of arm, sock-puppet and dancing forces

The improvised agenting of the sock-puppet called Sockadoodledoo took place during Stage One of the fieldwork, where data were created with oddkin materials and Zoom-as-apparatus and then put to work through the software-as-apparatus (see *Figure 17*). In diffracting these data, I was struck by how lively, agentic, and affective they were (Koro-Ljungberg et al., 2018, p. 469). As a specific diffraction grating, Zoom helped in this regard since the blurry quality of the recording highlighted the porosity of boundaries around child, arm and sock-puppet, making their separation indistinguishable at times. Also, with the Zoom recording enabling participation from within the familiarity of his own home, the participating child seemed to engage enthusiastically in movement improvisations. Thus, in the dance of sockadoodledoo-arm-flapping-floppy-joy, data was not a static *thing* but a dynamic process of *doing* or, to be more precise, a *becoming* (Barad, 2007).

Becoming happened materially as much as metaphorically. As the child's mum unravelled and pulled Sockadoodledoo onto her little boy's arm, the sock-puppet unfurled its creases, changed its molecular shape and became stretched onto the child's skin. Sockadoodledoo, already multiplicitous in its composition of textures, shapes, relational affects, semi-fluid molecules whose physical properties (such as temperature) kept changing, began to potentialise a character in relation with the child. Furthermore, a molecular kinship formed as heat from the child's skin transferred to Sockadoodledoo, relaxing and expanding its fibres. As they began dancing and increasing body temperatures, an ongoing reciprocal heat exchange occurred, with one body emitting heat and the other retaining it. Sweaty skin and water molecules emerged from this reciprocity, or intra-action, with child and sock-puppet becoming mutually constituted agents. Their sharing of physical, biological and affective forces effectively re-shaped each other's more-than one-ness.

In the distribution of agencies, forces were re-created and shared by all matter that were touching and mattering in an act of multiplicity. Their shape-shiftings produced new bodyings where they were always less-than-two as there was no material separation (Barad, 2010), only an ontological one in the form of an agential cut. Entangled, they were able to affect, be affected and perform apparently joyful dancing in enacting the differencing of nonlingual expression. The length and feel of Sockadoodledoo hugging the child's arm seemed to

influence whole-arm movements, visibly increasing the frenetic nature of their dancing and invisibly increasing the temperature of the bodies-in-motion. This may have contributed to the forces with which the child swung his arm, eventually rendering Sockadoodledoo's head to flop off his hand and flap wildly to the dancing beat. The dancers' material multiplicity was first diffracted through the oddkin improvisation and Zoom-as-apparatus, which revealed new movement patterns across spaces, times and imaginaries. Then through the software-as-apparatus which enabled a haptic-synaesthetic sensing of the data to reveal other nonlingual flourishes previously imperceptible. This amplified Barad's point that differentiating is a material act of making connections and commitments (Barad, 2014, p. 184).

In the top line of this picture, I work with the software-as-apparatus to create a negative inversion of the data, bringing into relief the floppy-flapping forces produced between child, environment and Sockadoodledoo as the arm/sock-puppet waves wildly around. I use 'negative inversion' cautiously, aware that diffraction reveals the relations within differences, not opposites or a flattening out of differences (Barad, 2014, p. 175). In quantum physics experiments, diffraction patterns reveal the porosity of light and dark boundaries, indicating no material separation of things from their environment. Everything in an entanglement is in ongoing intra-action. The negative inversion supports this, showing that lightness and darkness do not exist as opposite states which expel each other, but as a proliferation of each other's wavelengths. Light and dark, a dance of material differences, are part of an intra-active process, amplifying each other's frequencies. Darkness, therefore, is not a lacking or an absence of light, but an abundance (Barad, 2014, p. 171). This is a useful concept for the improvised agenting of Sockadoodledoo and child, where their diffraction of nonlingual matter reveals a similar pattern. The forces of temperature, movement and molecular intertwining that emerge through their intra-action show that silence is not a lack of language but an abundance of being and becoming in each other's frequencies, which are inseparable in their becoming. In this way, diffraction 'queers binaries and calls out for a rethinking of the notions of identity and difference' (Barad, 2014, p. 171).

What is not apparent in the top line of the diffracted images is the intricate movement-play of other materials in this entanglement, such as the sweater fabric across a twisting torso. In the second line of images, a posterising filter with contrasting colours draws attention to the

minor shapes and creases of the sweater, improvising a series of enfoldings in each movement. However, the movements remain static and representational in these images, each iteration having been stabilised and separated from the others. This diffraction interrupts the data and helps me to look more closely at the movements, but the independent frames cut into the fluidity of the entanglement, suggesting determinate boundaries over a linear timeline.

The improvisation of child+sock-puppet dancing is a speculative movement, with no predetermined iterations. As part of my research-creation methodology, I explore these speculative possibilities by improvising with the software filters to evoke some sense of the haptic-synaesthetic relations happening in the more-than-one dancing, and the affects experienced during the session. As the player of the violin generating staccato chords and tempos, I had not expected to witness, and be moved by, the impassioned movement of the dancing assemblage. Therefore, in my third diffraction, cutting together-apart (Barad, 2014) the multiple movements in this encounter, the software-and-I overlaid all eight iterations of the two-second dance as if they had occurred simultaneously. The resulting multi-layered, superposition produced a ghosting effect of shadowy boundaries, multiple dimensions and incomplete movements, highlighting the indeterminacy of the dancing bodies. This process of creating software art (de Freitas & Trafí-Prats, 2023, p. 62) allowed me to sense the data differently, producing an abstract image with new potentialities.

The superpositioning effect of this image revealed the interdependence of Sockadoodledoo and child, neither of whom would be dancing like this without their intertwining. There was no dance score here, no curriculum outline against which a developmental assessment could be made. Simply the vital forces of physical and virtual affect improvising new dances to the violin's weird-sounding chords, with an unexpected bodying response occurring in more-than-one participant. The ghosting effect reminded me that these are not forces in isolation but come with '[h]auntological [r]elations of [i]nheritance' (Barad, 2010, p. 240) manifested in concerns over not-speaking.

However, by removing the backgrounds of these dancing bodies, we (researcher+software-as-apparatus) have also rendered invisible the situated knowledges implicated in these data

which 'excludes the thickness of the ecological context that movement responds to' (MacRae, 2019a, p. 10). Mindful of the discursive as well as the material being entangled in every intra-action, this is a concern. Perhaps, given more time, we (researcher+software-as-apparatus) could find a way to render visible the many layers, players and spacetimematterings in these movement relations without overwhelming the human eye with their complexity, indeterminacy and ongoing multiplicity. This is important because '[r]esponding – being responsible/response-able – to the thick tangles of spacetimematterings that are threaded through us, the places and times from which we came but never arrived and never leave is perhaps what re-turning is about' (Barad, 2014, p. 183).

On the other hand, every diffraction creates an abstract milieu that cannot encompass everything (Manning, 2020a) because it cuts a certain way to include what matters (Barad, 2014). Therefore, the question is again one of responsibility, that is, to consider what types of abstractions each diffraction generates. Or, to put it in Haraway's (2016) terms, to account for what stories we tell to tell other stories with, what concepts we create to make other concepts with. In focussing on the possibilities that might emerge from creating this conceptually, aesthetically and digitally abstract diffraction, I align with Trafí-Prats and Caton who argue; 'we firmly believe that unexpected contagions occur in aesthetically conditioned milieus that can produce minor germinations and eventually new cartographies of everyday life' (2020, p. 14).

5.2.2. Superpositioning data

'Memory – the pattern of sedimented enfoldings of iterative intra-activity – is written into the fabric of the world. The world 'holds' the memory of all traces; or rather, the world is its memory (enfolded materialisation).' (Barad, 2014, p. 182).

AC#2 - The enfoldings in the fabric of the world

A pair of woolly tights housing two little legs peeps out from the bottom of a large blue sheet. It is a ghost. Underneath are little hands, holding on tight, and a stream of squeals and giggles which seem to emanate from everywhere. The giggling-limbs-bundle engages in a twirling pattern as the lycra ghost twists around a small body. Where the corners of the sheet are not encaptured by hands, the movements are amplified; fabric flapping, flying and twirling back in on itself.

The weight of the fabric allows it to move elegantly with the twirls, always a split second behind the centrifugal force. Its twisting dynamics create long creases from the top to the bottom of the enfolded bundle, moving in a diagonal, corkscrew pattern in accordance with the speed of the horizontal twirl, the weight of loose lycra, and the vertical gravitational pull upon them all. The creases are never stationary, each fold rippling across the vast expanse of fabric as the ghost turns one way, re-turns, and turns back again. Rippling, creasing, flapping, flying, giggling, twisting and enfolding. This ghost is very much alive!

Suddenly, a lack of friction between woolly tights and wooden floor results in a collapse of the ghost-giggles-twirls-legs assemblage into a heap. But movement never stops, and the prolonged twirling of the ghost's head marks an ongoing merry-go-round of internal sensations as their momentum continues.

Figure 18: The enfoldings of lycra-ghost-dancing

To diffract these data, I began by freezing ten frames, micro-seconds apart, from a ghost-dance with a large lycra sheet (see *Figure 18*). In the fieldwork, the sheets had been used as hammocks to gently rock and sway children, as magic carpets to drag little bodyminds across the gallery floor and as long, twizzled, skipping ropes. One child had pointed to the lycra, then to her head, indicating she wanted to be a ghost, and these frames show the transformations as her bodymind, and the lycra sheet became entangled. Wafting the lycra over her head, I became mesmerised by the graceful spirals and folds produced by the ghostly jumping, twirling entanglement. Inhabiting an older muscular-skeletal system that diverges from the flexibility, coordination and flowing attributes of a younger dancing body, I felt drawn to the imaginative possibilities of this elegant lycra assemblage. In some way, the ghost-dance was rendering me response-able as a dancer again, to become-with its movements. As the lycra-

ghost twirled, I picked up another lycra sheet and began twirling, flying and spiralling alongside the ghost, responding-with-lycra to their moves and experiencing-in-motion the tensions, joys and fugitive forces of the *so far…* (Haraway, 2016) in my tight muscles and creaky joints.

Months later, on re-viewing the video-data fragment, these sensations re-turned to me, and I felt the effects of the strong, twisting forces of lycra folding through my bodymind. In diffracting these video-data, I tried to unfold the possibilities of these haptic-synaesthetic effects in the images above, each line building on the one before, showing the iterative process of synaesthetic vitalities. In creating each line of images, I transferred the ten frozen frames from MovieMaker into Photopea, opened the 'liquify' filter range, set the density and speed parameters for the 'smudge' and 'twirl' filters and began to carefully move the cursor in smooth waves and spirals to animate not so much the *actual* movements of the dancing-lycra-ghost but the vitalities they triggered in my bodymind. However, a cursor lacks the sensitivity of an artistic tool and the process became frustrating; even with the versatile software-as-apparatus, I could not fully grasp these forceful intensities.

I suspect this is where Barad would remind me that '[d]iffraction is a mapping of interference, not of replication, reflection, or reproduction' (Barad, 2014, p. 172). My double-layered fieldwork-sensing and video-data-sensing of the lycra-ghost-dancing was but a microcosm of the sensing possibilities available. Although the past of this encounter remains entangled in present perceptions, every viewer's experience of these lycra positions is a multiplicity of other pasts too; a superposition. In this 'thick web of its specificities, what is at issue is its unique material historialities and how they come to matter' (2014, p. 176). Furthermore, as an apparatus, the GoPro's partial view intertwines with these twirling phenomena, preventing a complete story existing from which the synaesthetic affects can finally be 'understood'. As a form of string figuring, the camera can only help me attend to 'the webs of relation, movements, rhythms, regions of intensity, and to that which is activated and set in motion' (Kind, 2020, p. 51). Therefore, in trying to map the effects, or transitions, of differences that matter, I let go of using software effects to render sensations visible. Instead, I focus on the liveliness of the lycra enfoldments, and how they animated multiple vitalities during the

fieldwork. By isolating the lycra creases in each frozen frame, it becomes easier to perceive the vitalities enfolded in the dancing-lycra-ghost's thick web of histories.

Attuning to these superpositions situated the research focus among material-discursive encounters which transform the trajectories of entangled-bodies-that-express-differently. The diffracted images above revealed lycra-ghost bodying as a superposition of combined amplitudes within which all bodyminds-affects-spacetimematterings were implicated. Materially, lycra's elasticity and weight amplified the twisting-twirling forces whose stretched warp and weft effects created visible diffraction patterns. None of these moves created new folds as each intra-action held traces of its previous reconfigurations 'written into the enfolded materialisations of what was/ is/ to-come' (Barad, 2014, p. 183). Between the intricate and ceaseless stretching of muscles, fibres, nerves, blood cells, electrical impulses, chemical concoctions, imaginations, feelings and lingual matter were formed histories-in-the-making. Discursive traces were also enfolded in these materialisations; squeals-giggles-soundwaves of the lycra-dancing-ghost vibrating across parents' bodyminds re-creating memories, mapping transitions from silences to vocalisations, and creating new sedimentations of possibility as they were absorbed into the stretchy fabrics of their worlds.

Superpositioning data remained dynamic, even within the agential cut. In the fieldwork, every dancing-lycra-ghost shape changed the instance it formed, its weight wrestling with gravity to hold even the merest of folds intact. For me, it seemed that in each enfolding was wrapped a sense of hope, a promise of future possibilities. Creases fell out and promises were unfulfilled, yet each one was abated by another movement, re-creasing the fabric with each change of trajectory, holding infinite potentiality for different futures in a research-creation project that had, as yet, only reached *so far…* (Haraway, 2016). What is not so obvious in the top five lines of lycra-ghost-dancing, is how the superpositioning data became multiplicities of futures as well as histories. They were not fixed to certain ways of 'being' nonlingual but became re-enfolded into alternative ways of being through the effects of the agential cuts, which are the enactments of differentiations and possibilities-to-come (Barad, 2014, p. 176). In the bottom image, I tried to animate this sense of hope as the folds of the lycra-ghost fell, twirled and re-folded, manifesting the superpositioned effects of gravity, momentum, imagination, verbalisations and possibilities in becoming more-than-human and more-than-nonlingual.

Freezing another ten frames, this time of flying-lycra-ghost movements, software-and-I created a circular arrangement without effects to reveal the unfiltered movement relations in that event. Paradoxically, I felt the removal of effects enhanced the haptic-synaesthetic visuality (Marks, 2000; Puig de la Bellacasa, 2017), highlighting the flying-folding-dancing-potentialities of the lycra entanglement. The superpositioned patterns of the lycra-dancing-ghost oriented the agential cut towards the multiple potentials of more-than-human matter, amplifying its generative expressions and destabilising fixed categorisations, such as those attached to nonlingualism. These material-discursive orientations interrupted and changed the nature of its constituents, always already activating something new. Each flight of the lycra sheet created its own diffraction, causing air molecules to part and regroup beyond the fibrous obstacle, producing a wave phenomenon that reshaped molecular compounds within its fibres. I propose that, like wave patterns oscillating their wavelengths in each diffraction (see section 2.3.4.), nonlingual lycra-dancing-ghost patterns did not leave words in a void but either amplified or neutralised their embodied expression, offering '[a] way to figure difference differently' (Barad, 2014, p. 170). Language may not have been audible in this space that attended to what nonlingual bodyminds can do, but linguistic identities and developmental-expectations were still imbricated in every movement, sensation and intra-action of material-discursive relations as their wavelengths oscillated. In this sense, diffraction is not a metaphor for the enmeshed disturbances of life. It is life.

5.2.3. Mattering data

'In queering the classical physics understanding of a fixed and given nature, [diffraction is] rethinking mattering - what it means to matter, what matter means - in a rethinking of the nature of difference. […] Meaning is not an ideality; meaning is material. And matter isn't what exists separately from meaning. Mattering is a matter of what comes to matter and what doesn't' (Barad, 2014, p. 175).

AC#3 - Wondering what the matter is

I roll balls of wool towards each tent, each one a different colour, and families begin to unravel them, wrapping and unwrapping wool around tents, pillars, chairs and tables, stretching right across the gallery. After a while, the whole space becomes a woolly jungle that children navigate on all levels - jumping over, crawling under, pulling, tugging, wrapping, winding, teasing, tangling, twisting, vibrating and wriggling themselves into a knotty web of threads. They become materially and discursively entangled between the interwoven lines.

One little girl stays to one side, playing with a ball of red wool. She discovers the trickiest thing is to first find the end of the yarn. Even when she finds it, as soon as she unravels a bit more wool and lifts up its knotty configurations, the end disappears. Eventually, after lots of pulling, she finds the end, stands on it, and appears to contemplate with her fluffy guineapig how they might proceed. Mum invites her to bring the wool over to help sort it out, but she refuses to move. A lot has gone in to finding this end which is now firmly captured under her left foot. Mum appeals again but there is a stand-off, a slight tension, as the little girl and her guinea-pig survey the knotty conundrum.

The GoPro camera positioned in front of the little girl's foot silently participates in recording the determination of these little toes in frilly socks. The camera, however, can only record a partial view of the scene, missing the action from across the room, or before and after the session. It does not 'know' the situation that surrounds this little girl's entanglement with wool. It cannot tell what the matter is and why she and her guineapig now stand resolute on a single red strand.

Figure 19: Differences that matter for guineapig-child-tiny-text-wool-webs

Re-turning to the video-data fragments of the agential cut above, I consider the woolly webs. Intrigued by the little girl pulling apart a red ball of wool, I use MovieMaker software-as-apparatus to freeze frames with a single ball of yellow wool lying in the foreground (see *Figure 19*). Attending to the differentials in these images, I notice the still presence of the yellow ball of wool whose orderly patterns have already been diffracted through a wool-winder, and the messy knottiness of the red-wool-child entanglement in the background. The yellow wool seems stable, organised, neat and tidy, ready for predetermined enactments, such as knitting. But this is not how wool is being used in the fieldwork and speculative methodologies rarely promote stability and neatness as hallmarks of potentiality and difference (Kind, 2020; Springgay & Truman, 2018).

As I move the frozen frames into the Photopea software-as-apparatus, I enact a response-able practice of obscuring identifiable features with an ink-outliner filter. In opening the filter

gallery, I set the parameters for a short stroke length to enable the dynamism of movement to remain in the folds and creases of wool and clothing. I select a higher intensity of dark tones, to remove lighter facial features and to thicken the lines, giving a not-quite-human effect. Concerned that this little girl should not be recognisable in years to come, or have her identities represented in research to which she has not subscribed (see section 3.2.3.), I obscure her features further by superimposing some knotted wool. This move feels awkward since so much sensory response and connection is offered through the face, but this research is also about enacting a response-ability towards other's futures, and the obscuring of a face does not obscure what matters in this event. Finally, I remove the background and enlarge the images to attend closely to the knotty relations. In the ink-outliner diffracted state, the wool's lines appear thickened and loose, suggesting they could become unravelled again. Their infinity of entanglements seem 'never closed, never finished' (Barad, 2014, p. 169).

As I zoom in on the enlarged images, I notice something that was not obvious to me either during the session or in the video: the text '*always be kind*' embroidered on the little girl's dress pocket. This minor gesture unleashes intense forces that stop me in my tracks and change my trajectory (Bennett, 2016). '*Always be kind*' seems a huge demand of a small dress/wearer. It makes me wonder what this tiny-text is doing and whether it is exerting an unsuspecting menace. Does it make the dress lively (Bennett, 2010) by prompting specific thoughts or actions? Certainly, I cannot now take my eyes off this image as a vaguely uncomfortable sensation takes hold in my gut. I think about the act of care behind choosing this dress and wonder about the many thousands of parents and children drawn to its message of kindness.

The weightiness of the phrase '*always be kind*' on a dress designed for a three-year-old unsettles me. Is it a harmless phrase? Or does it subtly reinforce vulnerability and teachability that underpin the developmentalist tropes that render a child always to be guided or saved? These matters come to matter, in other words, they become manifest in matter, in material ways of being different. Barad reminds me that differences are not fixed but are *within, '*formed through intra-activity, in the making of 'this' and 'that' within the phenomenon that is constituted in their inseparability (entanglement)' (2014, p. 175). A girl and her guineapig standing on a red thread change how the threads unravel, creating new forms of response,

new languages of being, and alternative expressions of what matters to them. Subject and object, matter and meaning, do not exist outside of their entanglements; tiny-text, girl and guineapig are 'not absolute separations, but only contingent separations – within phenomena' (Barad, 2014, p. 175). Whether this is a harmless phrase or one with political overtones, this knotty situation cannot be unravelled because it is the entanglement that creates new meanings, woven with past histories.

I think about the material-discursive histories caught up with the embroiderers of this dress (and many like it), carefully positioning their sewing machine needle over the material as these words come into being. Were the embroiderers working in less-than-human conditions, or for wages that did not reflect their skilled work? Was anyone kind to them? Did they think about these words as they stitched? Or were they emblazoned on the dresses by machines, for mass market distribution to hundreds of little girls who should always be *kind*? What does it mean to *always* be kind? What constitutes kindness? By *whose* standards and at what cost (Manning, 2016)? What would happen if the wearer did not follow its command? Suddenly this tiny-text grew in significance towards a threat of regulation and discipline thinly veiled as a promise of rewards for good behaviour. I was surprised by the affective charge of something so seemingly innocuous, entangled as it was with 'the ongoing ruptures, repulsions, detachments, and disavowals that shape relations among bodies' (Myers in, Loveless, 2020, p. 99). Perhaps my own childhood histories of being made to wear dresses against my will contributed to this affect? It serves as a reminder that a researcher is never an objective observer, but always already implicated in the research.

The matter of this tiny-text is not insignificant, intricately bound to material-discursive meanings. The cotton thread which has been farmed, spun and embroidered is part of a tangled web of production that belies global economic politics, workforce conditions, marketing and distribution systems, fashion design, and other ecologies linked to the commercial potential of these three small words. Its cottony matter is linked to injustices that matter to this researcher but cannot be 'solved' in a software-as-analysis diffraction. Haraway offers an insight into the resonances between *kin* and *kind*, suggesting that the kindest are not necessarily kin (and vice-versa) despite sharing a common flesh and that the co-compositions of oddkin are what *make* people (not individuals). Ecosystems, working

conditions and cotton growing are all collaborators in this oddkin assemblage, and what matters here is that 'making kin and making kind (as category, care, relatives without ties by birth, lateral relatives, lots of other echoes) stretch the imagination and can change the story' (Haraway, 2016, p. 103). Therefore, I consider how diffraction isn't about revealing 'rights' and 'wrongs', as if there were a single truth or that justice could be served once and for all (Barad, 2007, p. 56). Diffraction moves out of time and beyond injustice which cannot be repaired since, '[t]he past is never closed, never finished once and for all, but there is no taking it back, setting time aright, putting the world back on its axis. There is no erasure finally' (Barad, 2014, p. 183). Furthermore, embodied in this tiny-text are also generative perspectives of kindness, such as the care taken by a thoughtful curator of clothing for this little girl, or the skill of an embroiderer whose earnings may support their family, too. It is a reminder of the response-abilities we have towards the world's differentials, that might enable humans and nonhumans embroiled in the effects of different economies to live well together. Enfolded in this tiny-text are possibilities for becoming-with these complex relations, and for recognising the generative nature of entanglements, since, 'If we hold on to the belief that the world is made of individual entities, it is hard to see how even our best, most well-intentioned calculations for right action can avoid tearing holes in the delicate tissue structure of entanglements that the lifeblood of the world runs through' (Barad, 2007, p. 396).

Barad's insights shift this diffraction from value-judgements on three small words to sensing their longevity and unboundedness. Kindness as a social construct might feel loaded, but when viewed as entangled with a long history of human-nonhuman potentialities it becomes indeterminate. The tiny-text loses its disruptive force as a social gesture alone and becomes a tiny-thread intertwined with many other threads in a dynamic process where excluded constituents re-turn (Barad, 2014, p. 178). '*Always be kind*' is not an endpoint with fixed consequences to bear. It is in the middle, with much yet to become, of what is mattering between a little girl, her guineapig, some red wool and a spacious floor. What matters here is in the becoming of these threads. This software-diffraction has helped shift this image from a subjective, interpretative standpoint towards revealing different scales, unravelling dominant forces and tracing alternative possibilities. Following these threads and finding their tangles is 'crucial for staying with the trouble in real and particular places and times' and for using SF as

'a method of tracing, of following a thread in the dark, in a dangerous true tale of adventure, where who lives and who dies and how might become clearer for the cultivating of multispecies justice' (Haraway, 2016, p. 3). It is knotty, messy and indefinable, not 'solving' dominant problems nor guaranteeing alternative futures. But 'the point is that the past was never simply there to begin with and the future is not simply what will unfold; the 'past' and the 'future' are iteratively reworked and enfolded through the iterative practices of spacetimemattering' (Barad, 2010, pp. 260-261).

5.2.4. Touching data

> *'When two hands touch, there is a sensuality of the flesh, an exchange of warmth, a feeling of pressure, of presence, a proximity of otherness that brings the other nearly as close as oneself. Perhaps closer.' (Barad, 2012, p. 206)*

AC#4 - Mapping indeterminate lines of transcorporeal touch

Participant bodyminds are moving in all sorts of ways along a length of masking tape stuck to the gallery floor in a wavy, winding pattern. The line curves, wriggles, intersects and diverges around the tents. Little legs are twirling, jumping, crawling, hopping, skipping and roly-poly-ing along the line with parents in pursuit. Somehow the curvatures and junctions of the line seem to compel their bodyminds to change shape and intra-act differently. A little girl feels her way forward on tiptoes, helped by her mum. She holds out two rough-textured wooden sticks, one on each side, for balance, whose weighty presence seems to render capable tip-toe-line-walking. Another child jumps high over every junction, avoiding touching the points where the lines intersect.

One little boy has found a bouncing up-and-down rhythm, tapping two big sticks on the floor in unison with each step forward. Clod-clod-clod-clod. His whole body seems absorbed in this rhythm but, on his way around the line, he meets an obstacle. A little girl, grasping her mum's fingers, is lifting herself up and making little jumps towards him. As they come to a halt in front of each other, the boy continues to march on the spot and tap his sticks, keeping the rhythm going. There seems to be a hesitancy, a little uncertainty in working out how to keep going. The line is calling. Mum moves to the side, hoisting up the little girl who, in turn, lifts her legs even higher as they skirt around the boy. Jump-muscles-giggles-willpower rise to the occasion until the entanglement have passed the boy. Feet touch down just as they reach the line, and I can sense a mutual satisfaction with this arrangement. Neither has had to step off the line or waiver from their trajectory. Clod-clod-clod-clod. A conversation between sticks, feet and line continues, their vibrations and transcorporeal presence felt by all in that space.

Figure 20: Mapping movement improvisations along different lines

In this diffraction, I map unfamiliar lines of transcorporeal touch by improvising-with the movements in the data (see *Figure 20*). I consider these data a constitutive force, affecting the researcher as much as the researcher affects the data (Hultman & Lenz Taguchi, 2010, p. 527) and look for opportunities to be *in touch* with minor movements in the videos. Highlighting the affective nature of touch as a politics of care, Puig de la Bellacasa' maintains that '[i]nvolved knowledge is about *being touched* rather than observing from a distance' (2017, p. 93). Therefore, in the above image, I used video-sensing practices (Caton, 2019) to invite care-full ways of being *in touch* and *touched*, connecting marginalised bodyminds. I worked with the Photopea software-as-apparatus in a complex diffraction to amplify the politics of care in my research-creation process. We (software-and-I) focussed on the quantum multiplicity and in/determinacy that are enacted by agential cuts when cutting

together-apart (Barad, 2014, p. 177). Taking the multiplicities in the above agential cut of participant bodyminds, lines, jumps, intersections, sticks, running, bouncing and clod-clod-clodding, we cut them together-apart, re-sized, re-ordered and re-arranged them to augment the connected touch of different lines of movement. Barad describes such a multiplicity within agential separation as an indeterminacy - an ongoing iteration of movements that are 'a holding together of the disparate within' (Barad, 2014, p. 177). Thus, I was mindful that the apparent independence of different movements, bodyminds and sensations in this cut were temporary enactments of agential separability, always already touched by, and entangled with, disparate elements of nonlingual phenomena.

The re-created assemblage invites viewers to become virtually co-present with the participating bodyminds in movement improvisations, evoking a powerfully sensorial experience through becoming in touch (Puig de la Bellacasa, 2017, p. 98). It opens possibilities for sensations to run through the space, bodyminds, atmospheres and oddkin materials, amplifying how haptic-synaesthetic affect is intertwined and not separate (see section 2.3.3.). Navigating this site of synaesthetic flows (perhaps even drawing a finger along the lines of the image), viewers can sense how participating families might have experimented with new movements, balances, ideas, expressions and connections. They might imagine the sensations of jumping, hopping, rolling and running around the gallery, mapping its possibilities, activating 'the not-yet already alive in the interstices and mak[ing] it reverberate' (Manning, 2020a, p. 123). Through the diffraction grating of researcher+software-as-aparatus, we improvised with making familiar expectations unfamiliar. The strangeness of legs running across thin air, the uncertain movements of children jumping and balancing, the invisible line cutting off the heads of people moving on the line, and the distorted scales of miniaturised bodyminds making the play tents look enormous, draws viewers to look closely and try to make sense of what they are seeing, because '[s]ense and nonsense walk together hand in hand' (Olsson, 2009, p. 5).

Through these unfamiliar perspectives, movement improvisation invites relations and sensations through touch, not necessarily between humans, but through a congealing of material-discursive agencies reconfiguring boundaries and re-mapping a more-than-bodily transit. The porosity of boundaries and scales in the above image suggests that relating

matter is always an opening to future potentialities, an indeterminacy, that is always dynamic and ever changing. As Barad (2014) states, '[t]here is no absolute outside; the outside is always already inside. In/determinacy is an always already opening up-to-come. In/determinacy is the surprise, the interruption, by the stranger (within) re-turning unannounced' (2014, p. 178).

Barad (2007) extends Haraway's notion of 'diffraction as a metaphor for rethinking the geometry and optics of relationality' to 'take account of topological as well as geometrical reconfigurings in genealogical analysis' (2007, pp. 416, n.412). Topology involves the structural shape of objects being stretched, deformed or changed without being broken. Using this analogy, software-and-I que(e)ry how existing patterns of nonlingual being and knowing could be reshaped to embrace irregularities and unpredictabilities. Following Trafí-Prats and Caton (2020), we create a second image for this agential cut, focussing on an aesthetic approach to 'intensify sense and affect' and 'as a force of interruption and estrangement of acquired sensory-motor habits that is world-making' (2020, p. 16). Olsson describes this 'registration of intensive affect' as 'the effects of affect' (2009, p. 77) inviting me to question how human-nonhuman bodies might become *in touch* through these estranged affects.

Figure 21: The estranged shapes and scales of indeterminable touch in close proximity

From the fieldwork sessions on Zoom and in the gallery, I was struck by the abundance of touch. During long periods without speaking, parents often stroked their children's hair, backs, tummies, legs and feet, expressing bodily entanglements nonlingually. These sensory languages seemed to enact matters of care through touch, countering concerns or expectations. Similarly, children intra-acted with unusual objects from their Suitcase of Adventures (see section 3.2.2.), winding, stretching, stroking, wafting and dancing them into all sorts of shapes and movements. Quite often, children touched human and nonhuman participants with their objects - scarves, ribbons, sock-puppets, feathers, bubbles, maquettes - transforming them through touch into extensions of their bodyminds. Perhaps this was an intra-active expression of nonlingual bodying - a way to *stay in touch* without words (Puig de la Bellacasa, 2017)? Barad (2012) suggests that touch is indeterminable, with things being simultaneously unbounded and bound up even before proximity is determined. Indeterminacy, Barad says, doesn't negate boundaries, facts, histories or injustices but constitutes their very materiality, offering hope for boundaries to move, change and be changed *ad infinitum* (Barad, 2014, p. 177).

In the image above, I explore touch as indeterminate relations (see *Figure 21*). Once again, the software-and-I have cut together-apart these tools of touch using the 'lasso', 'crop', 'clone' and 'patch' tools in Photopea, re-arranging them to appear strange. Their differences in size, shape and texture are highlighted because cutting into entanglements does not erase their histories or differences. 'On the contrary, entanglings entail differentiatings, differentiatings entail entanglings. One move – cutting together-apart' (Barad, 2014, p. 176). Showing hands in this strange, oddkin formation draws attention to connections that increase absence as much as invite co-presence (Puig de la Bellacasa, 2017, p. 99). Although the reversibility of touch denotes that, when bodyminds or things touch, they are also being touched, this doesn't necessarily assume that either thing is *in touch* with the other. I consider how the data have touched me and the implications for care practices in research where movement improvisation was an unusual way of connecting for the participants, especially after the touch-aversive practices established during the Covid-19 pandemic. The skewed hands in the above image hold this sense of awkwardness in touch, perhaps even 'a rejection of sensation, a self-induced numbness in the touched' (2017, p. 99). The overlap of

organic and digital apparatuses in this diffraction has helped me attune to 'moments of misrecognition, contemplation and tensions as sites of knowledge production' (Caton & Hackett, 2019, p. 5).

I am touched by participants' engagement in the experiments of this research, which can perhaps be sensed in the top image, and by how parents' caring touch emerged as a powerful sensing practice, perhaps even a stand-in for words. Although movement improvisation was new territory for most families, it offered a space to map new potentials for nonlingual ways of being, where children became absorbed by new imaginaries in both movement and words. Across these many dimensions, nonlingual bodyminds could run, skip, jump and reach towards alternative expressions, exploring gestures of a relational ontology that embraced strangeness and difference. This is not difference as a universal concept, but as an indeterminate multiplicity revealed through the above diffractions, where 'diffraction is a matter of differences at every scale, or rather in the making and remaking of scale (spacetimematterings).' (Barad, 2014, p. 176). Through these diffractions, I argue that the affordances of this space for physical, sensory and affective phenomena to be *in touch* were what opened the conditions for response-ability, where "*[t]ouching is a matter of response. Each of "us" is constituted in response-ability. Each of "us" is constituted as responsible for the other, as the other*" (Barad, 2012, pp. 215, original emphasis).

5.2.5. Response-abling data

'The ability to respond is what is meant by responsibility . . .' (Anzaldúa in, Barad, 2014, p. 183)

AC#5 - Response-abilities of breath, flying feathers and joy

Feather, refusing to follow the trajectory or force of a blow leads the bodymind of Blower in unpredictable directions. Whilst watching me on Zoom, blowing and dancing beneath a flying feather, Blower holds Feather to her face and emits a huge raspberry blow. Feather does not fly but remains stuck to her lips, now glistening with spit. Blower's body expands as she takes in another breath, so big it almost bursts out of her as she tries again. This time, Feather tries to escape and take flight, only to remain lodged between fingers in their sticky grip. Mum demonstrates holding Feather away from the face and letting it go when blowing. The complexity of these moves does not deter Blower who emits another huge gasp, but it doesn't quite reach Feather which has all too previously dropped out of her hand.

To reduce Feather's unpredictable moves a little, I try a different tack and balance my feather on my nose, head fully back. Blower gets it and immediately throws her face to the sky, feeling Feather into place across her nose with both hands. This time her big, spittle-fuelled gust propels Feather skyward sending wriggles and jiggles of joy through Blower's body. 'Again! Again!' and off we go. A flying-feather-joy-making apparatus. 'So many! So many feathers!', says Blower, as she begins counting and laying each one on top of the other.

Since Blower doesn't normally speak to me, and her native tongue is Mandarin, mum repeats her phrases and counts along with her in English. Blower, constraining Feathers from flight with both hands until she is ready, suddenly blows as hard as possible again, and again, and again as the relations between breath-flight-feather-hand-lips-wriggle-jiggle render her capable and response-able. I find my own researcher-parent-child body also wriggling and jiggling in communion with this wonderful mobilisation of forces, both now and later, with video-data that registers frissons of joy with every viewing.

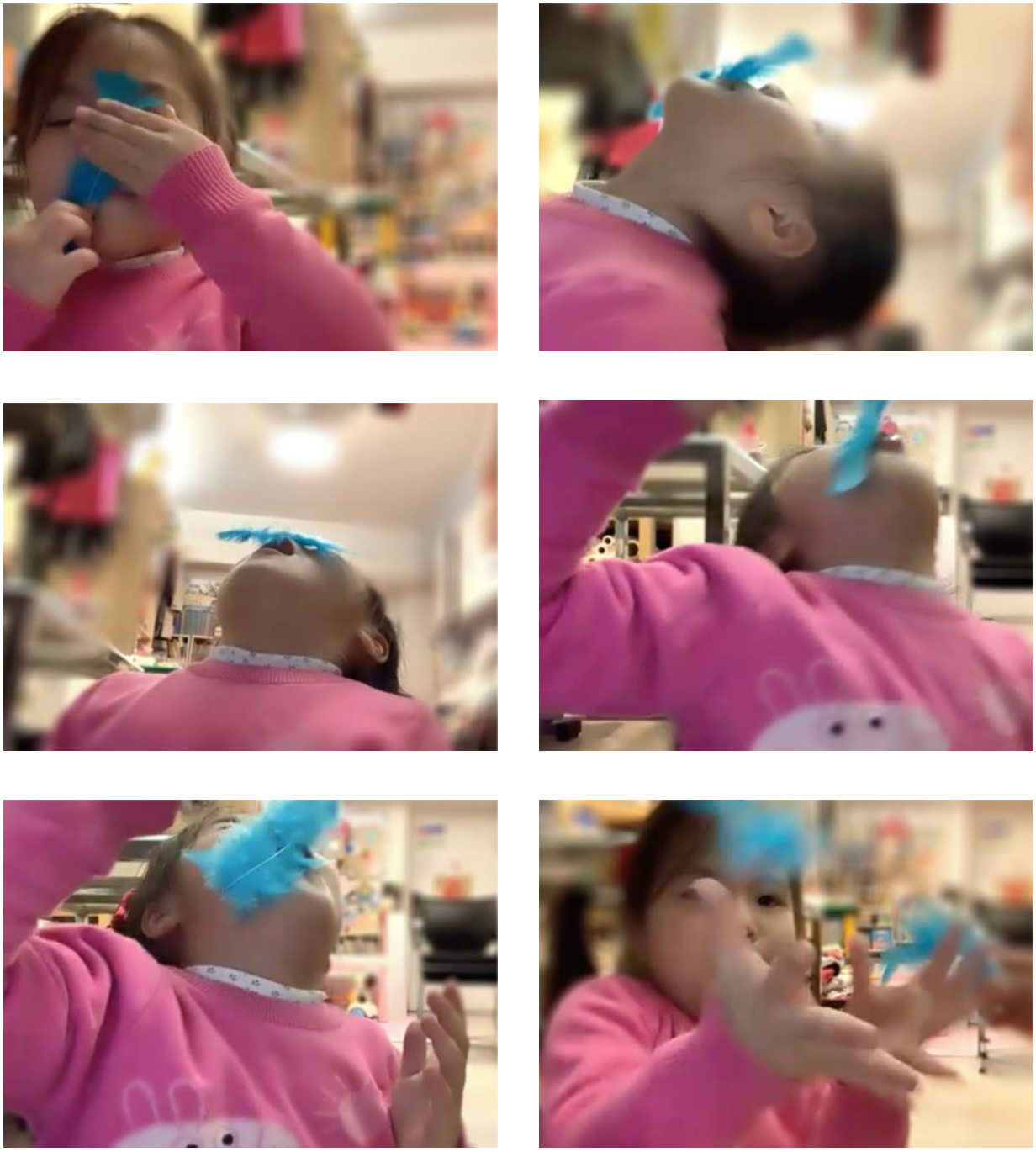

Figure 22: The physical, response-able and affective forces of feather-blowing

In diffracting data on the forces of feather blowing (see *Figure 22*), I was struck by the feather's precarious balance which, being lightweight and unpredictable in its behaviours, had proven challenging for small fingers to keep in place. Initially, I worked with several filters in

the software-as-apparatus, using blur, tint, liquify and noise effects to decentre the child and accentuate the feather's vibrancy (see section 4.1.3.). However, whilst interesting, these filters had the effect of fixing the movement and obscuring the dynamic relations between Blower and Feather. I re-turned to the original video-data and, once again, felt the 'frissons of joy' erupting with each successful feather-blowing event. The large family sharing a single room in a Hong-Kong apartment were all present during this Zoom session, clapping, laughing and celebrating each feather put to flight by the youngest child. Mum was attentive to her little girl's speech and enlisted the encouragement of family members, in a mix of Mandarin and English, whenever words were spoken. The family joy was infectious, and I found myself moved by its forces, welcomed as I had been into this family's story of progress and into their diffractions. As Barad explains: 'In an important sense, this story in its ongoing (re)patterning is (re)(con)figuring me. 'I' am neither outside nor inside; 'I' am of the diffraction pattern. Or rather, this 'I' that is not 'me' alone and never was, that is always already multiply dispersed […] is *of* the diffraction pattern' (Barad, 2014, pp. 181, original emphasis).

Therefore, it seemed important to stay with the data and enjoy the movement that I was multiply dispersed within. Applying the least disruptive effect of an 'iris-blur' software filter to anonymise the apartment contents and facial features allowed me to sense the intra-action and vibrancy of feather-blower-forces in these six images. I attended to the stirring of the feather caused by the lightest movements of breath, the sticky hands poised to chase, catch and reposition it and the big, gusty blows. These intra-actions seemed to create response-abilities and highlighted complex responses to random flight patterns. Free from expectations to conform behaviours, the unpredictability of the feather's flights and chasing hands seemed to fill the atmosphere with electricity, activating joyful responses each time a spittle-blowing flurry produced a cascade of little flights.

Blower's exhalations became stronger in proportion to the feather's instability, creating their own diffractive patterns as they disrupted the air currents and pushed the feather to new trajectories. These minor forces disturbed the status quo, producing what McCormack (2014) calls '[t]urbulence: the felt sense of minor eddies in the rhythms of an ordinary access space' (2014, p. 20). These minor eddies, entangled with everyday nonlingual rhythms, highlighted what mattered in the intimate proximity of this family's bilingual expressions, desires,

turbulence and joys (Barad, 2007). Just as the waves and particles in these eddies were not inherent attributes of Blower's breath but were performed in their intra-action with Feather (Barad, 2014, p. 180), I propose that typicality or non-typicality are not inherent attributes of bodyminds but are performed in their intra-action with the apparatus of environments, politics, social constructions, cultures, and so on. This diffraction exemplifies how relations across nonlingual phenomena are affected and transformed by their intra-actions, and how affective vitalities/effects of difference change with each relational encounter.

Despite the centrality of a human body in these more-than-human data, using software-as-apparatus helped to animate the powerful forces, affects and sensations produced by the intra-action of a feather, the breath of a three-year-old and their multiplicities of movements. Leaving the data largely untouched by software effects enabled the demonstration of complex relations between more-than-human matter as it experimented with new bodyings. This diffractive methodology worked to construct, and re-construct (not destruct) patterns of new understandings around response-ability (Barad, 2014, p. 187). It highlighted that these constructions and interactions do not pivot on bodyminds or words, but on the mutual performativities of both (Mazzei, 2014, p. 745).

Importantly, this diffraction revealed the mutual response-abilities performed by the feather in rendering a nonlingual bodymind a blower, and by the breath of a small bodymind in rendering a feather able to fly, entangled in one movement. In this speculative research, response-ability was not a calculated movement, but an opening up to the iterative possibilities of enabling responsiveness, not by realising some existing possibility that pivots around either speaking or not speaking as the *only* way to be, but 'through the iterative reworking of im/possibility, an ongoing rupturing, a cross-cutting of topological reconfiguring of the space of response-ability' (Barad, 2014, p. 183). Through an improvised approach, there were no expectations or obligations put on Blower's family to participate in this research or to reach a particular outcome. The response-abilities that emerged through the Feather and Blower event were reworkings of the im/possibilities in this family's situation, generating affects that also rendered a family attentive to their youngest child's capabilities, participating as an assemblage in mutual performativities.

Furthermore, the response-abling performativity of Feather and Blower did not start there; it included the mum's response to the recruitment call for this research project, the situation of living in an over-crowded city with little support for nonlingual ways of being, the strongly developmentalist focus of Hong Kong's early education, and the systemic influence of Western policies and cultures since Britain's colonisation of Hong Kong in 1842. The response-abling enactments in this agential cut don't end here either. Blower's mum stayed in touch with other research participants on their Facebook group, sharing creative ideas and support for nonlingual movement. This thesis will hopefully birth other publications that will initiate further thinking around nonlingual bodyings, rendering response-able further ideas and movements. Once again, the ripples from this diffraction pattern around Feather and Blower have many implications for both past and future orientations. As Barad affirms, '…to respond, to be responsible, to take responsibility for that which we inherit (from the past and the future), for the entangled relationalities of inheritance that 'we' are, [… is] to open oneself up to indeterminacy in moving towards what is to-come' (Barad, 2010, p. 264).

5.3. Summary of the diffractive analysis

This chapter has shown that diffracting rather than representing difference can be enacted as an act of care and response-ability, as situated haptic-synaesthetic visualities can 'increase ethical awareness about material consequences' (Puig de la Bellacasa, 2017, p. 116). By reading data in five agential cuts through the key processes of diffraction, namely agenting, superpositioning, mattering, touching and response-abling, I outlined important effects of the differences-within data's ongoing relations. Nonetheless, despite our (researcher-sensing+software-as-apparatus) efforts to activate haptic-synaesthetic frequencies beyond the usual 'dynamic thresholds' of perception (Massumi, 2002, p. 38), many sensations continue to evade linguistic or visual interpretation, forcing me to acknowledge the *unknowability* of other frequencies (Puig de la Bellacasa, 2017, p. 117).

To counter the compulsion for interpretative *knowability* of optic technologies, as I struggled to do when I began viewing my video-data, I heeded Puig de la Bellacasa's proposal to foster 'sensory values' as collective practices embedded in everyday material agencies and situated relationalities that 'ground them in a living web of care' (2017, p. 119). The diffractions revealed that a synaesthetic concept of nonlingual bodying also amplifies a 'web of care' by emphasising that movement does not belong to the body but emerges from a field of forces and divergences as the body orients towards difference (Manning, 2020a). These sensuous encounters that transverse bodyminds, materials, spaces, time, lights and cameras often 'resist codification or categorisation' (Caton, 2019, p. 11).

The agential cuts in this chapter animated some of the scholarship I leaned on in the literature review in Chapter Two, and became-with the methodologies and methods enacted in Chapters Three and Four. The diffractions of Chapter Five enabled reading bodies, atmospheres, politics and situations through each other while 'installing [my]self within the event' (Hultman & Lenz Taguchi, 2010, p. 537), and acknowledging that my sensations are in relation-with each account since 'there is no "I" separate from the intra-active becoming of the world' (Barad, 2007, p. 394)). However, as I have expressed before, words often fail to fully articulate the sensate. There is an awkwardness in inhabiting analyses that cannot be fully 'known' lingually or textually, as discussed in section 3.2.3., especially in analyses that

are expected to produce 'rigorous' and 'valid' findings (Koro-Ljungberg et al., 2018). The agential cuts in this chapter offered but a quantum peek into the potential micro-relations in these intra-actions, and I feel far from capable of offering insights into the complexities of those encounters, since the myriad events generated through this research are still moving me, leaving enchantments and discomforts that may never make sense.

Opening my video-data diffractions to future engagements with these haptic-synaesthetic affects does not imply that sensory events can be shared *equally*, as each cut is experienced in infinitely different ways by every participant. Nor does this method resolve the challenges of nonlingual lives since 'sensing, attuning differently, remaking your body takes time and develops through multiple modes of expression' (Trafí-Prats & Caton, 2020, p. 15). However, I propose that caring for the sensuous in these cuts has opened possibilities to create spaces to think-with, feel-with and move-with *otherwise*, and 'to 'see' that which escapes classification and codification in language' (MacRae & MacLure, 2021, p. 275). A haptic-synaesthetic diffractive analysis allowed me to produce 'new entangled ways of theorizing and performing research practices, co-constituting new possibilities of strengthening and challenging knowledges' (Bozalek & Zembylas, 2016, p. 124).

Chapter Six

6.1. Introduction to the discussion

In this chapter, I summarise the findings from my diffractive analysis and identify the key points that are coming to matter through this research. To do this, I revisit the diffractive analyses of the agential cuts in Chapter Five and synthesise the points they have raised. I then discuss these points in more detail by responding to my three research questions and reading the findings diffractively through the specific posthuman feminist new materialist concepts introduced in my literature review in Chapter Two and the speculative methodologies introduced in Chapter Three. These include the entanglements of all matter and the distributed agencies within, the forces and vitalities of materials, rendering response-able the constituents of agential cuts, and how different conditions of possibility - or apparatus - bring some things to matter and exclude others. In addressing the research questions, I justify the speculative methods of improvisation, affective attunements and synaesthetic sensing practices, leading me to state the contributions this research makes to postqualitative methodologies and the emerging field of arts in early childhood, with the potential to contribute to broader transdisciplinary and transprofessional practices.

6.1.1. Mapping what is coming to matter

> *'Mattering is a matter of what comes to matter and what doesn't. Difference isn't given. It isn't fixed' (Barad, 2014, p. 175).*

Bodying in the more-than-human fissures of postqualitative research

The posthuman feminist new materialist framing of this research has prompted me to closely examine how a speculative inquiry into nonlingual children's bodyings might make a difference in approaching these lives more openly to create alternative understandings and trajectories. Throughout this thesis, I am aware of the paradox of using words to discuss phenomena that do not occur in a lingual domain. Unlike much research with children, my data were not full of children's voices, although there were some verbalisations, and my methods needed to be flexible enough to foster trust and relations without lingual expectations. Because children didn't speak, I became sensitised to working with body languages, minor gestures and attuning to propositions with oddkin in order to connect in different ways. This was a generative practice of speculative improvisations that worked out how to connect beyond words. Movement served as an important map of transit (Alaimo & Hekman, 2008) towards nonlingual bodyings, offering a way of attuning directly to the kinetic and synaesthetic languages of young bodyminds, always already exploring dynamic possibilities. What came to matter in my speculative approach was enabling sensing practices to become more dominant than verbal ones. By working with these practices, I opened up a space that identifies a gap in scholarship, particularly within arts and early childhood studies, that warrants further attention.

Manning cautions that to speak of sensing risks reducing their intensities:

> *'These are the challenges inherent in writing of movement, of bodies, of politics. The tendency remains, through the writing, to give precedence to a stagnant humanist vocabulary that can be disciplined, controlled. It is difficult not to fall prey to this tendency' (Manning, 2007, pp. 160-161).*

Nonetheless, partly due to the constraints of a global lockdown requiring specific instructions or reassurances, and partly due to my own embedded reliance on (and enjoyment of) words to discover and cultivate connections, I struggled to enact sensing-practices without language (although I am not suggesting that words and senses function as independent organs, just that they do different things). This study enacted an ethics of care which acknowledged that response-ability is distributed and rendering each other capable is the intra-active work of the world, a matter of transcorporeal bodying. Humans are always already part of something bigger, as I traced in section 2.3.. Therefore, I was grateful for Land's (2023, p. 75) encouragement that learning to fail as an *individual* is a generative part of bodying in the more-than-human fissures of postqualitative research. It reminded me that this research moved deep within these fissures, producing a different knowledge politics through creative experimentation and its failure of 'the pursuit of predictable and knowable formulas' ensuring that knowledge is 'endlessly uncertain, generative and inconclusive.' (Jayne Osgood, 2024, p. 115). At the start of this thesis, I stated my position that not-speaking is not a problem for this research and therefore speaking is not the solution. Having laid the groundwork for how nonlingual bodying takes place in a problematic landscape where language politics seem to be in constant opposition to nonlingual dynamics (Hohti & Truman, 2021), I have tried through this thesis to invite a sense of *moving-with* the data, of *feeling-toward* its synaesthetic tendencies.

In Chapter Two, I read literature relating to developmental, pathologised and representational perspectives on early childhood through a posthuman feminist new materialist frame, particularly working with scholarship engaged in arts and early education practices. This explored how agential realism could reconfigure these perspectives and suggested new approaches towards generative nonlingual bodying. In Chapters Three and Four, I investigated speculative methodologies and methods to highlight nonlingual ways of being beyond discursive practices that subjectify individuals (Lenz Taguchi et al., 2016). These included considering the conditions that reach toward young children's nonlingual potentials, tuning into minor gestures and recognising the vitalities of affect for divergent ways of being of the world.

Finally, in Chapter Five, I set out with Barad's (2014) diffractive methodology to unfold alternative perspectives on the agency, indeterminacy and response-able mattering of the data. I diffracted knotty data that resonated using software-as-sensing-apparatus to explore new ways of attuning to sensory response-abilities. This entanglement of human (researcher) and nonhuman (video editing software) experimented with new possibilities of becoming-with the emergent data. In using these approaches, a number of findings came to matter which I will now summarise before moving in to my discussion.

Mapping what came to matter

All agential cuts revealed the situated co-compositions of human+nonhuman elements, showing that relations in each entanglement are unstable and cannot be fully 'present' in individual images but offer a glimpse within a quantum boundary of the more-than-human relations and are nonetheless a particular instance of wholeness, as I described in section 1.5.1.. Overlaying frames to amplify movements among the agenting constituents produced the sensations of nonlingual intra-actions, aided by blurring, ghosting and vibrational effects that foregrounded regions of intensity and resisted the fixation of visual optics (section 5.2.1.). I used close-ups of materials like lycra to reveal the superpositions of multiple pasts and presents enfolded into each configuration of creases, and this drew my attention to their ongoing and future affective vitalities. By manifesting the continually changing minor forces of lycra-ghost-dancing through diffractive experiments, I joined forces with software-as-apparatus in experiencing data differently (section 5.2.2.). This collaborative diffraction with software effects continued to unleash intensities that stopped me in my tracks (section 5.2.3.) and made me re-consider what data were doing. The affective charge of a tiny-text revealed in a close-up image of a little girl's pocket challenged me to recalibrate my analyses, recognising the forces of larger scale perspectives entangled with long histories. Shifting the analysis of this image from a subjective, interpretative standpoint focussed on reductive notions of children, towards acknowledging the wider generative as well as oppressive forces entangled within, helped to suggest other ways in which data can move and transform alternative futures.

Foregrounding the haptic-synaesthetic visuality of these images was challenging (section 5.2.4.) as touch is not always comfortable for nonlingual bodyminds that keenly sense the world. Yet this is a sensing that cannot be 'switched off' since the transcorporeal environment is always already *in touch* with bodies. This required politics and practices of care to map divergent ways of being and consider how others might also experience the synaesthetic flows of nonlingual bodyings. I found that rendering collages of images that played with different scales, movement along visible and invisible lines, disrupting the expected geometries of body-parts and drawing closer attention to unusual parts such as legs in movement, made possible different ways of being in touch. This approach highlighted the potential of environments, materials, atmospheres, bodyminds and movements to render each response-able through different kinds of relations by attending 'more care-fully to the atmospheres of particular situations – tensions, silences, sounds, lights, body movements and sensations' (Hohti & Truman, 2021, p. 7). To further explore response-able relations, and to extend my video-data-sensing practice which had given me an inkling of the sensations involved, I explored the intra-actions between a young girl and a feather and discovered complex improvisations responding to unpredictable patterns (section 5.2.5.). Not only did their mutual performativities produce affective vitalities that transformed the phenomena being diffracted, it also revealed the mutuality of response-abilities in rendering each other capable in one movement.

The dynamism of affective vitalities and minor forces in video-data often did not seem to materialise in the diffracted still images, but the software effects did draw attention to both the affective *hotspots* and the porosity of bodies through which these hotspots occurred, enabling the rendered image to care for the sensuousness of relations (MacRae, 2019b) (Trafí-Prats & Caton, 2020) (e.g. section 5.2.2.). Other data drew attention to affective and emotive elements in their close-up frames, revealing the interpretative habits emerging from the histories of justice and injustice brought to each rendering (e.g. section 5.2.3.). Some diffracted data began to 'glow' (MacLure, 2013c) at different temperatures, or 'schizz' (Manning, 2020a, p. 14) at different frequencies, revealing connections between viewer and viewed that changed what the data's entanglement *was* doing, and what it *could* do (e.g. section 5.1.1.). In some cases, these changes drew out conceptual inquiries, in others they highlighted material connections, compelling the eye to notice the flow of movement

between materials (MacRae, 2019a) from unusual angles (e.g. section 5.2.4.). In all cases, the data acted beyond the 'raw' content and situations in which they were generated (Caton, 2019), and always beyond the 'control' of the researcher, often revealing the limitations of research methods (e.g. section 5.2.1.).

Analysing the data by experimentally entangling them with my material-discursive subjectivities and the potentialities of software effects facilitated many surprising discoveries. Working together, inside the speculative middle (Springgay & Truman, 2018), they highlighted 'the potentials nested in the emergence of *minor language[s]'* and articulated 'the speculative lines of ***what if***' (Hohti & Truman, 2021, pp. 2, original emphasis).

In the following discussion, I re-turn to my three research questions to assess the contributions of these discoveries. I discuss key issues that emerged, how they amplified the existing scholarship and how they came to matter in this research area. I also identify limitations of my speculative methods, gaps in scholarship that traverse the arts and early education fields and how the findings might contribute to broader research on nonlingual, sensing practices.

6.1.2. Re-turning to Research Question 1

Research Question 1: How do movement and sensing practices without words open up response-able spaces of mattering with young children who sometimes do not speak?

Knowledge as sensing in nonlingual spaces of mattering

Over several years in arts and early education, I have experienced that, for many young children, what and how they know things are intertwined. This seems an obvious thing to say but it has become amplified in working with non-speaking children across many different settings. Paying attention to their finely tuned nonlingual ways of sensing, absorbing and becoming-with the world has foregrounded how, contrary to prevailing child development discourses, words 'get in the way'. Yet, as discussed in Chapter Two and as Barad has noted, '[l]anguage has been granted too much power' (2007, p. 132). It works to construct boundaries that represent and fix identities and privileges speech as the primary form of communication, proving inadequate for describing the sensorial and synaesthetic affects of nonlingual bodying. Inspired by Bennett (2010), what became significant during my project and in my data diffractions was the shift from thinking about knowledge creation as the recalcitrant language of epistemologies to the 'active, earthy, not-quite-human capaciousness' (2010, p. 3) of ontologies. The *knowing* is in the *being/doing/responding.* In other words, knowledge comes from relating, or becoming-with, across many spheres whether environmental, material, virtual or organic.

The process of video-data-sensing demonstrated, in part, how the research children were always already creating knowledge through relational becomings with objects, materials and movement. Their knowledge was not created or expressed through speaking as much as through sensing, exercising sensory perceptions that were possibly more keenly honed than those who rely on words, evidenced by the strength of sensory responses when words were not forthcoming (such as in the wild dancing with Sockadoodledoo in section 5.2.1., or the

intensities of watery touch in section 5.1.1.). The synaesthetic sensing affects happening *a priori* language were none less real for being *felt* in the bodymind, and highlighted the struggles of these intensities being inarticulable, or lacking a vocabulary that fully articulated their affective vitalities without stifling nuance and ambiguity. Therefore, prompted by Manning (2007), it was through movement that I explored the idea of sense and sensation being rendered intelligible. As I discussed (in section 2.3.3.), sensation cannot be stopped, even when a body is positioned to render it intelligible through language (Manning, 2007, p. 20). Therefore, thinking-with movement and senses, through movement-material-propositions, and within safely curated spaces such as Zoom and an art gallery, became core to this idea of onto-epistemological bodying, enabling nonlingual ways to become more-than-human. Next, I will expand on these three areas - improvisation, oddkin materials and Zoom/gallery spaces - for moving and sensing to clarify how they mattered for young children who sometimes do not speak.

Improvisation opening up response-able spaces of mattering

Initially, I considered movement improvisation as a key method for playing-with nonlingual expression. Over the course of the study, it became clear that movement is not an 'answer' to nonlingual expression nor an alternative to language. Rather, it was an apparatus for helping things *come to matter* (Barad, 2014, p. 175). That is to say, in these entanglements of knowing-being-doing-responding, it was the relational differences that made a difference. Improvisation was a practice that enabled me to explore bodying with more-than-human forces as a way of moving-with the world. It also offered an opportunity to plug into a transdisciplinary body of literature that informed the feminist, posthuman new materialist movements of this project. By thinking-with movement and concepts, materially-discursively entangled in the knowledge creation taking place, I was able to look/sense otherwise, experimenting with what Tsing calls, different arts of noticing (Tsing, 2015). Through this process, my theoretical and methodological understandings and my horizons as a researcher were radically expanded.

As Barad (2007) points out, it was not by standing outside the world that I gained knowledge, but through my intra-acting, expanding my understanding of how relations come to matter.

How we (human+nonhuman) are implicated in these practices is what makes this an ethics of care because each intra-action matters in how other relations become possible (Barad, 2007, p. 185). Improvisation is a way of changing habitual responses and imagining alternative ways of being-with others in the world, opening up the ability to respond differently and to dwell in spaces of possibility (Albright & Gere, 2003). For instance, re-turning to the *friendly neighbour* story (as discussed in section 2.2.4.), their claim of 'one day, I'll get her to talk!' revealed a longing of adults for children to have a 'voice'. By attending to improvisational movement practices, participating families and I were able to shift attention from 'voice' towards different ways of responding with, and to, nonlingual children.

As the research unfolded, this sense of response-able practices mobilised through the speculative methodologies (improvising with bodyminds and materials) and the diffractive approaches to data (improvising with software effects) became anchored. Thus, the intertwining of *what* and *how* things were known by the participating nonlingual children mobilised an ethico-onto-epistemology throughout.

Opening up spaces for nonlingual mattering required focussing not on the people, environments or things in each cut (although these are all part and parcel) but on the relations happening within these gatherings (Tsing, 2015). Finding the significance of these relations, and the differences they might make, seemed to be dependent on the willingness of participants to create an exchange, especially when the outcome was unknown (Springgay & Truman, 2018). Contact improvisation activities such as rock-n-rolling over each other (see *Figure 8*. in section 4.1.1.) brought small and large bodyminds into close exchanges whilst helping each other respond to the forces of gravity, feeling the resonances of the other, and allowing sensations to be experienced in unusual ways, often resulting in exuberant expressions. Parents responded to child movements, moving themselves to help the child feel their way around and over their torsos. Children seemed to relish the challenge to clamber over and swing under their parent, being hugged and held along the way, or to use the foundation of a parent's anatomy to be suspended and swung at heights they could not experience on their own. It was a mutual movement-response, frequently met with desires to repeat or to simply hang in the balances they created, playing-with the push-and-pull of forces. Through these exchanges, adults and children became grounded in each other's bodyminds, experiencing the liveliness of the other and reducing the separation between

each other's worlds. Contact improvisation offered a valuable way to experience worldly forces in the organisation of weight, proximity and balance in such a way as to render bodyminds indeterminate (Manning, 2009a). The skin no longer marked a boundary between the world and the body but was the sensing organ that brought their worlds into awareness (Albright & Gere, 2003, p. 262).

Contact improvisation opened a response-able space for moving-with the other, for sensing the affects of forces on and within bodyminds, and for intimacy with familiar bodies. Nonlingual intimacies of care, affection, protection, joy and love seemed to be shared in these moments of close contact, rendering changes to chemical as well as physical forces of difference-within (Barad, 2007). Through this extension of the corporeal into the transcorporeal, bringing bodyminds into touch with their worlds (Alaimo, 2010), improvisation provided nonlingual pathways to chart different territories, moving-with possibilities through kinetic and affective relations. Thus, the qualities of improvisation to open exchanges, engage with physical and affective forces, bring one into close proximity with the other, and render each response-able to the other, makes it a generative approach for supporting nonlingual spaces of mattering. It is here that improvisation, as a micro-political act, is a 'force of imagination [that] puts us in touch with the possibilities for sensing the insensible, the indeterminate' and 'opens up the possibility of hearing the murmurings, the muted cries, the speaking silence of justice-to-come' (Barad, 2007, p. 216), creating spaces of mattering for young children who sometimes don't speak.

Oddkin materials opening up response-able spaces of mattering

In enacting an ethico-onto-epistemology, I felt it was important to become sensitised to the more-than-human possibilities of nonlingual bodyings, since the mutual response-ability of movement also happened in relations with nonhuman bodies such as sock-puppets, pegs, feathers, bubbles and lycra. By sending out unusual materials in a Suitcase of Adventures to all research participants (see section 3.2.2.), I experimented with how the materials intra-acted with nonlingual bodying, using propositions to disrupt, re-arrange and mobilise alternative narratives, methods and media (Myers in, Loveless, 2020). This was not to find what 'works' to support nonlingual bodyminds, as if children, bodyminds and nonlingual

matters are homogenous states of being with a causal relationship. Rather, thinking-with an agentially distributed methodology made me curious to experiment with materials' vitalities (Bennett, 2010), to experience their infectious capacities, opening myself to new possibilities as a researcher. I became interested in materials' liveliness and how this shapes our intra-actions with them, which required 'paying attention to the webs of relation, movements, rhythms, regions of intensity, and to that which is activated and set in motion' (Kind, 2020, p. 51).

In exploring different ways of relating with the vitalities of nonhuman matter, improvising movements felt like a process of the objects choosing me as much as me them. The swishy swaying of a large silky scarf, for example, would draw me into dancing with it whilst telling Michael Rosen's (1989) story, *We're Going On A Bear Hunt* in one of the Zoom sessions. The scarf became the movement of the grass, the river, the mud, the forest, the snowstorm, the cave and the bed covers in the story as well as helping the children and I perform running, swishing, splashing, jumping, hiding and other lively movements. In this way, objects became extensions of bodyminds (and, to a lesser degree, vice-versa) where their increased texture, malleability, movement and imaginary qualities enhanced the cognitive and the affective experience. It was following this story that one child and a scarf became entangled in their own story-making, unfolding an unexpected response of speech in two languages, in which the 'swishy, splashy' scarf was integral (in section 3.1.3.). The event demonstrated how vitalities of affect emerged through oddkin relations and how nonhuman matter enabled human things to matter in nonlingual *and* lingual ways, rendering all entangled matter response-able.

In another example, re-turning to Agential Cut #5 (section 5.2.5.), a feather rendered a child able to blow it into flight, its lightness enabling easy handling for little fingers. As well as its physical properties, the feather evoked surprise in its unpredictable trajectories causing hilarity and manifesting an affect across all family members that seemed to compel even stronger blowing. Simultaneously, the child's desire, dexterity and breath rendered the feather able to fly. The entanglement of nonlingual bodies was exemplified in the ongoing contact improvisation happening between the blowing, flying and chasing in all directions; a dance of oddkin bodies mutually implicated in rendering each other response-able (Haraway,

2016). My diffraction of this event sought to render visible the oddkin ties across human and nonhuman forces that co-composed new kin and new ways of being lively. In doing so, I embraced the diversity of oddkin and exercised my feminist 'leadership in imagination, theory, and action to unravel the ties of both genealogy and kin, and kin and species' (Haraway, 2016, p. 102).

As I mentioned in section 1.5.1., each agential cut creates exclusions, enabling certain agential intra-actions by preventing others. Even though relations with some materials like bamboo-stick-brush-bundles and EDA sensors were unable to become responsive, in their constraints were held opportunities for other possibilities to unfold. For instance, in removing the EDA sensors and abandoning the bamboo-stick-brush-bundles (in section 4.1.4.), the intimacies of touching and moving-with paint allowed small bodyminds to become in-touch with the vibrant, responsive vitalities of this fluid, sticky, slippy matter (Bennett, 2010). This demonstrated how propositions must respond to the emergent entanglements (in this case, paint materials, small bodyminds and a large floor space) filled with a compulsion of forces that 'push the children's energy to the limit of what their bodies can do' (Lenz Taguchi et al., 2016, p. 711). In focussing on the generative productivity of skin-on-paint, I demonstrated how these were not 'good' or 'bad' outcomes, but an accounting for how phenomena becomes entangled and reworks the boundaries of the response-able practices implicated in those cuts (Barad, 2007). Where language-based encounters might have excluded nonlingual bodyminds on social, cultural, educational, and economic levels, more-than-human relations with feathers, paint, scarves and other sensory materials disrupted this status quo, inviting vital sensations, expressions and movements that had been all-too-often often suppressed or regulated (Massumi, 2002). This proved an important way for this research to open up response-able spaces of mattering for nonlingual practices by sensing and valuing different bodyings and ways of knowing (Myers in, Loveless, 2020).

Zoom and an art gallery opening up response-able spaces of mattering

With Stage One of the research being held on Zoom and Stage Two in an art gallery, each 'space' brought different capacities for responding to what mattered. On Zoom, children seemed enthusiastic to dance spontaneously with all sorts of movement-material-

propositions (see section 3.1.2.) in the familiar surroundings of their family home. I propose that the timeliness of Zoom encounters happening in the present engendered a sense of close proximity between us, since the geographic distance was not evident through a screen, which perhaps felt less risky for nonlingual bodyminds. Thus, a sense of being in touch developed over the sessions, where the vital forces of contact with humans and nonhumans across the digital divide mobilised innovative ideas, enabling affective and material maps of transit to be re-drawn (Alaimo, 2010; Puig de la Bellacasa, 2017).

In section 2.3.3., I explored the idea of affect as '*virtual synesthetic perspectives* anchored in [the] particular things that embody them' (Massumi, 2002, pp. 35, original emphasis). In the Zoom sessions, it felt like synaesthetic frequencies were present in all object-sharing and movement improvisations. As bodies directly absorbing our environments (2002, p. 29), and with many of the participants' Zoom environments being unpredictable and unfamiliar to me, humans and nonhumans on each Zoom call responded to the changing material and affective situations in each moment. A a researcher, this required *close looking* from me in terms of stopping to look (rather than being close to the screen), *careful listening* in the sense of resisting interpretation of the often-non-sensible things being witnessed, and *open sensing* in terms of being open for anything and ready to respond to improvisation propositions from the participants. For me, the need for open sensing was important to tune in to synaesthetic frequencies that might reveal a minor gesture or tiny response that would be missed amongst general looking or talking. When I became absorbed into my participants' environments, synaesthetic sensations arose without individual volition or choice, and became a reaching towards and a *feeling-with* each other, as an always response-able movement (Manning, 2016; 2002, p. 29). It felt vital to reach-towards a nonlingual child's sensory fields and registers of sensation, if they connected, to feel the pulse of what moved them or was moved by them (Manning, 2020a, p. 249). Added to this, participants' technical difficulties with audio or video sometimes closed off channels of communication and we seemed to rely more heavily on sensing connections to receive and parse the digital, biological and imaginative information being shared. This form of bodying allowed us space to parse the intensities of improvisation and become response-able as a relating bodymind.

An example of this was the peg-dance with a two-year-old (in section 4.1.2.) who loved to sing and dance regardless of using very few spoken words. Enacting a finger-dance with soft-grip pegs attached to our fingers, we had fun responding to gravity which exaggerated the flicking-flapping movements of our long fingers. As our peg-fingers absorbed the forces in this gravitational environment, made stronger by the waving around of our hands and arms during the dance, uncomfortable sensations emerged as a *pinch-point* for me physically and affectively and, it seemed, for the child who whispered 'Ouchy! Ouchy!' through her dance. Through open sensing, I gained a virtual synaesthetic perspective that led to altering our improvised dancing whilst repositioning the pegs onto less painful parts of the body. This event was also composed of a *haptic-synaesthetic* visuality (discussed in section 4.1.3.) as the visual sensations on the screen of the child enacting an 'ouchy' dance became located in my bodymind (Marks, 2000, p. 132). It seemed Zoom-as-apparatus facilitated intra-actions that reshaped human-nonhuman bodies (see section 2.3.1.) through transcorporeal exchanges of matter, including the sensory and affective (Alaimo, 2010). In this research, Zoom became an environment that absorbed bodies in complex, intimate connections because of its response-ability to sensation.

In other sessions, the sharing of objects such as pictures and favourite toys became a frequent refrain, being held quiveringly in front of the laptop camera (or somewhere in its vicinity) as I improvised movements in response to them, which often sparked new ideas or movements from the participating child, and off we would go into new territory (see section 4.1.2.). Objects, humans, electrical currents, glitchy Wi-Fi, narrow-view cameras and dancing bodyminds became multiply entangled, creating surprising and humorous intra-actions, demonstrating how 'nonlingual' and 'child' were becoming-imperceptible (Lenz Taguchi et al., 2016) as they rendered me capable of responding to their ideas. Through silliness, humour, awkwardness, limited viewing angles and distances from microphones, Zoom enabled intimacy-at-a-distance, making it possible for nonlingual bodyings to become generative ways of exchange, connection, contact and sensing. It rendered families and myself response-able during the pandemic in allowing us to gather and create ways of becoming-with each other in difficult times (Haraway, 2016, p. 18), opening up new possibilities through the sharing of ideas and creating a space for shifting the focus onto moving bodyminds, thus reducing the expectation for talk.

The gallery was chosen for Stage Two sessions for its spacious, light-filled environment conducive to movement and sensing practices on a different scale (see section 3.2.1. and section 3.2.2.). In organising the space with pop-up tents, comfortable soft furnishings, materials and objects for movement propositions, such as lycra, water, sticks, paint, wool and torches, I was able to experiment with improvisations in a relaxed and curious environment. With the space being larger, involving face-to-face responses which were sometimes awkward for some children, I allocated time before and after each session for families to become familiar with the space, which often involved children running around many times, or investigating their tent/soft furnishings area. I suggest these 'settling in' periods contributed to the building of trust and ways in which nonlingual bodyminds were able to relax and respond during the sessions.

My initial intentions for tents as places of refuge for divergent bodyminds were upturned as the tents became play-partners, creating multiple creases and folds in which to hide torch lights that were being chased (see section 3.2.2.), movable structures for jumping over, or anchor points for intricate wool-webs. They drew children into complex multisensory engagements with their fabric dens, often for unknowable reasons, just as children seemed attracted to unexpected movements and using the space in surprising ways. The gallery space often became lively, animating alternative atmospheres, sensations, movements and ideas that sparked different experiences, thought and action (Hackett, Holmes, et al., 2020, p. 78). I surmise that the novelty of moving with unusual objects as pollinators of possibility (see section 4.1.1.) in this large gallery space engendered movements on a different scale that were generative for nonlingual bodying. For instance, the lycra-ghost-dancing that rendered a young girl capable of twirling under a lycra sheet for many revolutions until collapsing in a dizzy heap would not have been possible in a smaller space full of obstacles (see section 5.2.2.). Neither would the unwrapping, weaving and winding of long balls of wool around all the possible structures in the gallery in order to create a huge woolly web for dancing through, resonating with and becoming tangled up inside (see section 4.1.3.). The flows of movement, from elegant enfoldments with dynamic materials to staccato jumps, hops and rolls, offered spaces for nonlingual expression to multiply without expectation of assessment or interpretation.

As a result, and with several families moving simultaneously, I discovered afterwards from the GoPro footage the huge range of experimentation with movements that I had missed during the session. Parents and children became used to creating their own improvisations with whatever propositions were offered. Bodies, matter, movements, atmospheres, even time became dynamic in those sessions, seeming to stretch in several ways beyond developmental expectations (Lenz Taguchi et al., 2016; Olsson, 2009). I propose this was partly due to having space to experiment with larger materials and movements, such as using lycra for hammocks, boats and skipping ropes. Larger materials elicited a proportionally more active response than on Zoom, as children moved freely around the gallery at pace, weaving around the tents, the pillars and other furniture with lycra, wool, stomping sticks, and many different movements. This showed how the larger space and materials were lively and had an impact on small bodyminds curious to move with the ideas that flowed, enabling a response-able environment to emerge (Kind, 2023a). Ideas gathered force and iteratively transformed into new ideas which again birthed new possibilities (Lenz Taguchi et al., 2016). As such, the gallery space had a vibrancy that became infectious as its inhabitants affected and were affected by each other, touching, dancing, sensing and knowing each other through nonlingual modes (Hackett, Holmes, et al., 2020). This was also an example of how agencies became distributed amongst all participants, not belonging to humans or nonhumans as individuals, but emerging through their intra-active encounters (Barad, 2007).

Therefore, in response to this research question, I have demonstrated how movement and sensing practices enable a relational onto-epistemology that involves being, making, doing and responding to mattering in ways that are often not perceptible through word-based knowledge-making. To support nonlingual bodyings, I have argued for the arts of noticing, sensing and valuing the synaesthetic frequencies that inhabit the vitalities of materials and spaces for exchange. This attunement requires humans (for instance, educators, artists, parents and carers) to recognise how oddkin materials and environments continue to work on and in nonlingual bodyings as a fundamental step to supporting response-able spaces for nonlingual mattering.

6.1.3. Re-turning to Research Question 2

Research Question 2: How are speculative methods generative of nonlingual ways of being?

Speculative methods unfolding what a body can do

Shaping the methods of this research, Haraway's (2016) notion of SF (string figuring, speculative fabulation, so far…) to trace the knotty patterns of more-than-human entanglements, has been central to developing response-able practices that support nonlingual bodyings. It has informed my approach to research-creation, designing, creating and diffracting the data in ways that cut across normative constraints and create transversal que(e)ryings (MacLure, 2024) (see section 3.1.1.). With these que(e)ryings, I have unearthed unexpected openings for nonlingual being that resist measurement according to developmental or pathologised concepts of what a nonlingual body can do (Lenz Taguchi et al., 2016). In doing so, I have participated in creating thick tentacular webs, welcoming the affective vitalities of sensing practices that traverse nonlingual ways, by experimenting with the four apparatuses of contact improvisation with movement-material-provocations, Zoom, GoPro cameras and editing software, and EDA sensors. These allowed me to engage in divergent practices which attuned to the minor synaesthetic forces, connections and knottings of nonlingual ways, rendering possible minor ways of being and knowing (Manning, 2020a).

Entangled with these research methods and participants, I have experimented with '*what-if*' thinking, imagining knowledge-making/being/responding as emerging from the middle of the event where entanglements revealed their (in)tensions and potentialities (Springgay & Truman, 2018, p. 207). For example, the rock-n-rolling over each other's bodyminds (see *Figure 8*. in section 4.1.1.) was triggered by the hand-puppet, Bobble's, claim to enjoy upside-down dancing (in section 3.2.4.), from which emerged lively and daring movements exploring

the forces of gravity, balance and momentum. This speculative proposition sparked physical and sensory imaginings that re-worked the boundaries of what bodies could do in relation and in response to alternative ideas (Barad, 2007).

As a researcher, I have employed Kind's (2020) practice of listening differently to bodyminds, materials, movements and sensing frequencies to experience how they moved and responded, and to inform how they and I could invite responses from children. I have used different arts of noticing the effects of these speculative methods (Tsing, 2015), attending to the marks left in the data and on my researcher-bodymind including wonder, humour, speech events, disruption, not-knowing, wild dancing and unusual atmospheres or sensations that could not be easily pinned down (Kind, 2020).

I have found these methods to be generative of nonlingual children's responses, building relations of trust in the process where expectations for outcomes are relaxed and not-speaking is not a problem. I have also found that speculative processes take practice to break the habitual re-turns to familiar ways of knowing and expectations for normative solutions. It has taken leaps of faith and a willingness to experiment, to become more comfortable with challenging the troubles, cultures and politics of not-speaking that continually try to define what nonlingual bodyminds *cannot* do. It is 'these leaps of faith, in attending to the smallest units of movement and change, [that] have cut us adrift from the common sense of the linear, progressive and standardising narratives that dominate early childhood about learning and development' (MacRae & MacLure, 2021, p. 275).

I have tried to practice various forms of SF throughout my data creation and diffractive analysis by centring on an ethics of care that embraces nonlingual becomings-with, and by looking for the intersections of complexity, perplexity, incomplete ideas, experiences-in-the-making and choreographies-in-motion that cannot be easily understood (Kind, 2023b, p. 384; Manning, 2009a). In doing so, I have discovered that the riskiness and unpredictability of these experiments has enabled spaces for divergent expression in excess of language, enabling participants to challenge social and structural orientations that exclude fugitive modes of perception (Manning, 2020a). Spaces like Zoom video-conferencing have attuned me to the ambiguities and fugitivity of expressing otherwise by inhabiting proximity without

expectations for speech. I have argued that these methods have kept alternative scenarios and futures open, including the possibilities for transdisciplinary practices (Åsberg et al., 2015) that problematise deficit narratives, promote nonlingual ways of knowing and contribute new methodological ideas to the field of arts and early childhood education, which I will expand on in section 6.1.4.

Speculative methods stretching toward nonlingual ways

Throughout this thesis, speculative methods have helped me acknowledge the entangled, unpredictable and wonder-full possibilities and spacetimematterings in which nonlingual knowledge (as an ontology of being/doing/responding) is created and expressed (Gullion, 2018; Koro-Ljungberg et al., 2017). Multi-sense practices are important ways of creating response-able and responsive knowledge in divergent bodyminds (Manning, 2020a). Speculative methods, including diffraction, have helped me generate maps of transit towards what comes to matter in sensing and synaesthetic practices, and how these may contribute to alternative approaches in arts and early education, which I will discuss in the last section of this chapter. The speculative methods in this research have also enacted micro-activisms that problematise conventional representations of divergent ways of being, challenged contemporary 'solutions' to nonlingualism through developmental or pathologised practices (introduced in Chapter Two) (Goodley et al., 2018; Murris, 2021), and turned the notion of a normative neurotype on its head (Manning, 2020a).

In response to this que(e)ry, I re-turn to Kind (2020), whose extensive experimentations with speculative arts practices provoke an ongoing curiosity. Intra-acting with Kind's speculative approach as part of the thick web of relations in this research (discussed in section 3.2.3.), I used the apparatus of movement improvisation to create speculative possibilities for creating sense-data that did not rely on words and meaning to be understood. Kind does not focus on what young children mean or intend when they follow the trajectories or movements of materials. Rather, she asks, 'what kind of responses are necessary. What is being set in motion, how might I participate with this?' (2020, p. 58). This was an important question that underpinned my speculative methods both during the fieldwork and in the diffractive processes of writing about and analysing the data. It made me think about how a researcher,

parent, educator or adult-as-apparatus can become attuned to child-material-movement potentials so that nonlingual modalities can emerge without the pressure of scrutiny and evaluation (Murris, 2018). The importance of this was demonstrated by the minor gesture of bilingual switching that happened during a child's storytelling in the swishy-splashy-scarves-puddle event (in section 3.1.3.), and in several data fragments that demonstrated how nonlingual ways often harnessed small speech events when I responded to and participated with children's ideas. These events happened when I was present with an attitude of expectant listening but not for words or meaning, just attuning to, and engaging with, the emerging sensorium of connectivity (Taylor & Hughes, 2016, p. 15).

By attuning to the rhythms and resonances of material-movement vitalities in play with children, and allowing for experimentation with ideas to unfold over long periods (Kind, 2020, p. 51), my speculative methods mobilised new possibilities and a different order of attentiveness from both myself and the participants (Kind, 2020, p. 51; Manning & Massumi, 2014, p. 11). This attentiveness seemed key to both children and parents becoming relaxed, engaged and productive of ideas for moving with materials, as if this was a space carved out of their busy lives just to enjoy playing in unusual ways together. Kind confirms the aetiology of the word *attend* which, coming from the Latin *attendere*, suggests *stretching toward*. This resonates with how I perceive speculative methods like contact improvisation (CI) to stretch towards a deeper understanding of what entangled, nonlingual bodyminds can do on physical and sensory levels.

Mobilising speculative nonlingual methodologies required an openness in stretching toward potential, or what Manning calls the 'extra-linguistic' (Manning in, Colin & Sachsenmaier, 2015) in relations, which happens before perception has reached words, very often in the not-quite-articulate sensory registers of the bodymind. (Manning, 2016, p. 29). In stretching toward the extra-linguistic of nonlingual ways, I was open to sensations becoming 'palpable across registers' (Manning in, Colin & Sachsenmaier, 2015, p. 137), such as the movements, rhythms and twirling intensities of the dancing-lycra-ghost (in section 5.2.2.). The liveliness of the lycra enfoldments twisting, untwisting, and re-twisting over the top of two little legs dancing and numerous squeals being emitted, combined to animate a superposition of multiple vitalities, including within my synaesthetic bodymind, enabling me to dance

alongside and within the entanglement. In another event with stick-stomping along a masking tape line in the gallery (see AC#4 in section 5.2.4.), a speculative approach produced new nonlingual bodyings as the gathering of limbs, locomotion and lines gradually became a happening greater than the sum of its parts (Tsing, 2015, p. 23). Here, improvisation-as-apparatus encouraged a transversal re-working of boundaries (Barad, 2007) as sticks-lines-sounds-vibrations-textures-jumps resonated through the absorbed bodymind of a four-year-old explorer as well as through the vibrations of air molecules inside all heads, hands and feet present, producing new ways of moving-without-words and stretching toward new lines of nonlingual possibility.

In using a diffractive method to explore the vital forces in a young-girl-wool-untangling event (see AC#3 in section 5.2.3.), I argued that haptic-synaesthetic sensing of video-data offered ways of becoming attuned to the palpable registers of the extra-linguistic. By freezing and enlarging the video-data fragment to reveal the tiny-text, '*always be kind*', on the pocket of a three-year-old's dress, I stayed with the agitating and frictional (in)tensions that came from the speculative middle of this research event (Springgay & Truman, 2018), giving rise to thinking differently about the affective forces acting on nonlingual ways of being. Using the speculative method of diffraction, I was able to think-in-movement with these data, understanding their past and future trajectories on a different scale (2018, p. 204). Thinking-in-movement with the rich histories entangling this tiny-text with global economics, farming and manufacturing industries, consumer cares and local responsibilities enabled these data to generate a wider perspective, de-activating the power of injustices around who should be kind and the consequences this held. In this and other events, the speculative method moved myself as a researcher away from an interpretative standpoint towards revealing different scales of connection and influence, unravelling dominant lines of thought that often led to binary conclusions and suggested alternative possibilities for different ways of being. In revealing these knotty, indeterminacies, speculative methods never offered a 'solution' or guarantee of 'better' futures but demonstrated that the past and future are iteratively reworked and enfolded through relational agentings that compel a deeper understanding of the possibilities and responsibilities at play (Barad, 2010, pp. 260-261).

In engaging with the speculative middle of this research, I put to work possibilities for sensing the heterogeneous infoldings of divergent, more-than-human ways of relating that are generative of what entangled nonlingual bodyminds can do. What the entangled bodies in the above cut could do included picking cotton, embroidering dresses and making a living, as well as unravelling a knotty ball of wool, securing the end, and considering with the help of a fluffy guineapig how next to play with its lively strands. The skills, relations and potentialities in these entanglements were animated through the speculative experimentation engaged with by all nonlingual participants, whether children, wool or cameras (Ivinson & Renold, 2016), activating extra-linguistic responses and response-abilities that shaped what was coming to matter. Valuing extra-linguistic expressions, such as synaesthesia (see section 2.3.3.), helped me reconfigure the nonlingual bodymind as a complex correspondence of organic, inorganic, sensorial, material and discursive oddkin absorbing their environment. Improvising with bodyminds and with editing software amplified the minor gestures and precarity with which divergent, oddkin networks worked to survive among the dominant gestures of normativity. In this case, the intensities of the minor served to undermine the structural integrity of normative standards (Manning, 2016, p. 1) and was an act of research-creation by a child attuning to the '*what-if*' of a wool thread. In revealing this using software effects, digital diffraction as a speculative method helped me stretch toward the seemingly insignificant ordinary affects (Stewart, 2007) that are often missed in conventional methods (Mazzei & Jackson, 2012). This is because conventional '[m]ethod stops potential on its way, cutting into the process before it has had a chance to fully engage with the complex relational fields the process itself calls forth' (Manning, 2016, pp. 33-34).

In section 2.3.3., I discussed how attuning to minor forces can sensitise us to the affective qualities of an event, though their quotidian nature makes them hard to perceive. The above cut showed how affects emerge vaguely in the interstices between things, thoughts and happenings, registering intensities 'regularly, intermittently, urgently, or as a slight shudder' (Stewart, 2007, p. 10). In this research, speculative methods helped me attune to oddkin senses, vibrations, twitches, rhythms, textures, shudders and noises that were often unexpected, uncomfortable or missed. It was impossible to define these as human or nonhuman affects but, without exception, all these reverberations happened *in relation*. The synaesthetic vitalities of nonlingual oddkin disrupted and stirred up the sedimentations of

histories and present experiences, but these never seemed to start and end, or wholly reside, within the corporeal. This aligns with Manning's (2016) view that affective vitalities activate multiple relations *breaking out* of their 'containers' for lingual, cultural, technological or social expectations, out of the habits of certainty that constrain non-normative tendencies, asking, '*what else*?' (2016, pp. 202, original emphasis).

Speculative methods enabling subversive thinking

I used diffraction as a speculative method in this research to perform a micro-political act, aligning with Lenz Taguchi's (2016) recommendation to think subversively, beyond normalising social behaviours. Through my different ways of diffracting - attuning to sensations rather than words, creating agential cuts, writing with theory and practice intertwined, and improvising with different apparatus including video editing software - I moved-with her call to consider the moving, dancing child as becoming-imperceptible. This way of reading events from their multiplicity helped me to shift from thinking about nonlingualism as a subjective practice that signifies levels of mastery to nonlingual bodying as a more-than-human process of continuous re-connecting and moving-with the world.

For instance, the video-data of the water-pouring event (in section 5.1.1.) in our first gallery session could have been analysed from the perspective of a nervous young girl with a stiffened body inching forwards and finally acquiescing to having water poured on her hand, resulting in a relaxed body and further engagements in water-sharing activities. From this perspective, the onus is on the child to *do* something to change her body, behaviours and levels of engagement, measured against someone else's consideration of 'normal'. Using software-as-apparatus to merge the human bodyminds into an amorphous mass with different textural effect filters gave me the possibility to shift attention from what a *child's* bodymind can do onto what the *relations* happening across all bodies - water, pourer, conjoined hands, air and atmosphere - are doing. It also highlighted the direction of sensory attentiveness from the two adults towards the child in the middle, suggesting their care for the sensuousness of the movements (MacRae, 2019b). My diffraction was mapping where the *effects* of these relations appeared (Barad, 2007), generating sensuous knowledge about how care emerges between, and transforms, human and more-than-human elements (Ivinson &

Renold, 2016). In this way, this diffraction invited new perspectives on nonlingual bodying by enacting Lenz Taguchi's notion of a child becoming-imperceptible, accentuating data's affective intensities in this entangled composition of the more-than-human. Here, speculative methods allowed for more than one generative narrative that valued nonlingual bodying as never moving towards an ideal or 'complete' way of being but remaining always indefinite, differing, and full of possibilities, exemplifying what 'a body, a movement, dancing, the floor, the camera, or image on the screen *is* or *can* do' (Lenz Taguchi et al., 2016, p. 708).

This example highlighted how speculative methods enabled subversive ways for nonlingual bodyminds to become-imperceptible as separate objects, humans and movements, whilst creating surprising and powerful intra-actions among their material-discursive, more-than-human assemblage. I used these methods subversively as 'counter-acting practices that enable individuating 'sparks' or 'flickers of life' of a differentiated Child – a Child always in a process of becoming-different-in-itself' (Lenz Taguchi et al., 2016, p. 707).

In responding to the second research question, I re-aligned with Kind's (2020) wondering how to participate in, and respond to, whatever is being set in motion. The speculative methods in this research have both participated in and responded to the emerging more-than-human entanglements, keeping my research practices oriented towards the conditions of possibility for how different things come to matter. In doing so, the body of knowledge in this study reveals only that we do not yet know what a body can do (Olsson, 2009); we do not know what a child, or not-speaking, or upside-down dancing or a water-pouring event can do. In other words, working with speculative methods with an attitude of *not presuming to know* what a body can do is how nonlingual potential has a chance to be continually realised.

6.1.4. Re-turning to Research Question 3

Research Question 3: How could nonlingual sensing practices help reconceptualise alternative narratives around not-speaking, and contribute to transdisciplinary approaches in arts and early childhood education?

Nonlingual sensing practices reconceptualising alternative narratives

The two parts to research question three can be answered by addressing what the contribution is of this research to bringing nonlingual arts practices to the field of early childhood education and how this has the potential to contribute to a transdisciplinary and a transprofessional approach. In the dominant fields of education, speech and language and psychology, conventional practices designate not-speaking as something to be fixed, or at least minimised, due to the privileging of spoken language as the dominant form of communication and expression, particularly in early education (Manning, 2020b). Educators, speech therapists, educational psychologists and other professionals involved in the schooling of young bodyminds are trained to view not-speaking as a problem, to which solutions usually involve child-centred speech interventions and treatments (see section 2.2.2.) which do not necessarily take into account the environmental, cultural, social and historical influences on nonlingual behaviours (Burman, 2017; Murris, 2016). Consequently, children who sometimes don't speak carry the mantle of a non-speaking identity conferred on them by a society that subscribes to non-divergent ways of being (despite the increasing prevalence in child diagnoses of various 'kinds' of divergence, as discussed in Chapter Two). My research has demonstrated how conventional approaches serve to de-value the rich and generative possibilities held in nonlingual ways of being in the world, and offers alternative ways to notice, theorise, practice and support nonlingual bodyings. This study has addressed how nonlingual sensing practices can help to reconceptualise alternative narratives on what matters for young children who sometimes don't speak, and how arts practices have a strong contribution to make, particularly with regard to early childhood education.

I have reframed nonlingual being in the world as valid, shaped by other mechanisms beyond issues of language, dis/ability, psychology and developmental progress. The data have created an important space for the sensory and affective world to break in (Mazzei, 2021), allowing the movement of sensation to continue outside of a linguistic signifying system (Manning, 2007). This is important for registering the complexity of relations in sensing practices that cannot be reduced to lingual categories and acknowledging their agential dynamics of being more-than-one and less-than-two (Barad, 2010). An example of this came in the agenting data of Sockadoodledoo-child-wild-dancing created over Zoom (see section 5.2.1.). This event engaged contact improvisation as an arts practice, entangled with exuberant nonlingual expressions, proliferating wavelengths, haptic-synaesthetic sensing, and the molecular exchange of woolly textiles intra-acting with skin, muscles, air temperature, sweat and music to produce affective gestures.

These worldly enactments of bodying later became re-activated in pixelated, blurry diffracted images that embraced the co-compositions of arts improvisation, researcher, participants, histories, responsive presents, and possible futures generated in this event (Kind, 2020). These present beings and possibilities for other futures were important to notice because Sockadoodledoo-child-wild-dancing might be one of many ways of performing nonconformity in the face of society's expectations of speech. In other words, this event facilitated by an arts practice may have allowed an important act of subversion for a nonlingual child whose divergent ways are pathologised in normalising cultures. In this situation where sensing practices were paramount to the knowledges being produced, all vitalities emerging in the wild-dancing-superposition performed a boundary-making/re-making practice, changing the narrative of what was included and excluded in performing wild dancing, and inviting other possibilities for being a nonlingual, capable, expressive, more-than-human child.

In Chapter Two I discussed how Yergeau (2018), Runswick Cole (2016), Goodley et al (2014) and Manning (2016) all called for reconceptualisations of the labels and languages that depict divergent bodyminds as insufficient, incapable and not fully human. My research has demonstrated that this is not straight-forward. While it is crucial to respond to the ontoepistemic injustices and violence caused by such naming (Murris, 2021) (Osgood &

Robinson, 2019) (Fairchild, 2024), some labels bring necessary support for difficult everyday living and learning situations which allow an inclusion in, and a becoming-with, the world (Braidotti, 2013; Stewart, 2007). In this study, I have embraced complexity by recognising nonlingual bodying as a constellation of all kinds of languages, encounters and 'vibrations of the everyday […] that shape themselves in the interstices, in the cracks, on the paths of existence in the making' (Manning, 2020a, p. 159). In respectfully following what mattered to the research families, their talk of labels, diagnoses and lingual possibilities seemed important as they searched out tangible reasons, and created maps of transit, for navigating social awkwardness. Simultaneously, by foregrounding organic+digital haptic-synaesthetic sensing practices, research participants (human and nonhuman) were also respected and valued for their generative nonlingual bodyings which brought rich contributions to this study.

Tsing (2015) acknowledges the paradox of sometimes needing but not always wanting labels and suggests we keep names-in-motion. I enacted this in my diffractive discussions by keeping in mind the porous boundaries and leaky affects (Manning, 2009b) of names/ languages/ bodies that might otherwise seem clearly-embodied or well-defined. By diffractively reading my nonlingual data through the multiplicity of affects, biologies, histories and genetics that were implicated in each cut, it became possible to grapple with Alaimo's notion of transcorporeality (in, Kuznetski & Alaimo, 2020), revealing broader relations to named phenomena (such as situational mutism or neurodivergence), beyond the spaces the research participants and I inhabited together. I argue this facilitated a reconceptualisation of nonlingual narratives and has the potential to re-shape transdisciplinary practices that might not yet have considered these possibilities. Focusing on relational becomings (Nxumalo, 2012), I have used arts practices to destabilise taken-for-granted narratives about homogenised bodyminds that preserve theories of developmentalism, biological maturation, and neurotypicality (Burman, 2017; Murris, 2016; Osgood & Robinson, 2019). Re-working these boundaries has produced new sedimentations that render possibilities for nonlingual children to determine their futures, taking into account what a nonlingual-body-environment-politics-of-care can do (Nxumalo, 2012; Puig de la Bellacasa, 2017).

Nonlingual sensing practices contributing to transdisciplinary approaches

The research-creation event of Sockadoodledoo-child-wild-dancing involved practices relevant across arts, education, speech and language and psychology disciplines. Pursuing research in experimental ways like this opens possibilities for transdisciplinary and transprofessional inquiries into divergent forms of expression that explore beyond language and uncover new ways of thinking (Manning in, Loveless, 2020, p. 247; MacLure, 2024). Mobilising transdisciplinary approaches through improvisational practices informed by the arts has the potential to reconceptualise alternative narratives for nonlingual sensing practices that also help to avoid *othering* the nonlingual. I have discussed in my responses to the previous two research questions how my speculative methods and art practices supported alternative bodyings. Here, I advocate for how an experimental methodology such as improvisational movement inspired by contact improvisation, and living/sensing in the present moment, has something particular to offer early education.

My research has demonstrated how a nonlingual arts practice that is attuned and capacious creates space for divergent bodyings and recognises the capabilities of children when thinking about supporting nonlingual ways of being. For me, this is not a binary situation. Nonlingual ways are not opposite states of being to lingual ways, and the issue is not about creating accommodations for an either/or state in early education, or for arts practices to become instrumental for educational outcomes. From all of the agential cuts in Chapter Five emerged an understanding of nonlingual bodying as a constellation of sensory attunements with the world which, as Manning explained (in, Colin & Sachsenmaier, 2015), is extra-linguistic and pre-language. This synaesthetic-sensing dynamic does not exclude speaking but seeks to create space for sensing-events to breathe, entangle, innovate and become-with their histories and futures without being held accountable to standards and assessments that do not yet have provision for nonlingual bodyings. What this research has demonstrated is how an improvised, experimental arts practice can facilitate that space and open new perspectives on the generative potentialities of nonlingual ways.

My improvisational sensing practices through movement-material-propositions resonated with Kind's (2020) ideas of listening to materials, considering how children think creatively through materials as they intra-act, and how materials and children create ways of knowing

together in movement. Kind advocates for listening through lingering, waiting to discover a child's particular orientations as their sensitivities attune to the sensations of the world. This is something I would have appreciated more time to do had the research sessions been longer, in order to attune to the multiple ways of knowing and the different rhythms and movements, of the research participants. Throughout my research, I have always presumed competence of nonlingual children's ways of knowing, as I would all young children. With nonlingual children, this is more-than an assumption of ability. It requires a sensitive reciprocity, an openness to having an open body, mind and environment through which sensing can flow. From this starting point, response-ability, or the ability to respond, has always been central to my arts practice, informing my curiosity and refining the art of paying attention to find out how best to respond, to participate, to generate with nonlingual bodyings. Kind refers to this as 'co-compositional processes' (Kind, 2023a, p. 37) which involve many partners, not just human, and involves being open to being affected (Davies, 2014).

In the example of the child who invited me to engage with a number of items, including a leaflet (see section 3.2.3.), I did have the opportunity to linger and await the becoming-with, which eventually became a cutting-apart together event as we played with the leaflet's textural and flight qualities. Through this event, I let go of trying to interpret what this little girl might be meaning in her enthusiasm to express ideas with me. This relinquishing of a habitual need to understand did not come out of frustration but out of moving my perspective away from the end point and allowing myself to be affected from the middle of what was happening. As we played together, I felt-with the sensations arising from co-composing the leaflet-play, responding to its malleability and willingness to become something other (Lenz Taguchi, 2010). In addition, I was affected by the unexpected, shared gazes, the unknowing of what was happening, the oddkin relations inviting me to care for something that mattered to this little girl, and the realisation that this was not so much her things but my responsiveness of attending in the moment to what interested her, and how.

Matters of concern for developmental, health or speech goals could not have been further from the heart of what was important in this co-composing. And, in the decomposition of normative expectations, space grew for a capacious, synaesthetic connectivity, subverting

expectations to conform by caring for nonlingual ways of being. These were indeterminate events, relational-becomings that could not be known in advance but required the presence of bodyminds and willing attentions to plug-in to affective and sensory connections and be present with extra-linguistic expressions (Manning, 2016; Mazzei & Jackson, 2017). This encounter affirmed the importance of minor sensing practices to break-out of familiar, majoritarian trajectories, with powerful possibilities to open early childhood practices to new trajectories and not-know in advance what they might become.

These in-the-moment knowledge-creations, or agential cuts, have qualities shared by experimental arts practices such as contact improvisation. And these practices are quite different from the conventional approaches of some professions affecting nonlingual children where the focus is on mastering verbal expression for communication, language and literacy goals. This is why, I argue, transdisciplinary and transprofessional working has the potential to offer vital ways of developing tentacular maps of transit, and to cultivate generative power asymmetries, across bodies of knowledge (e.g. the arts, early childhood education, health, psychology and dis/ability fields) and communities of practice (e.g. arts networks, early childhood settings, health practitioners, educational psychologists, and speech and language therapists), that can generatively support nonlingual ways. These maps of transit are tentacular in extending inwardly and outwardly to reach toward new models of interconnections and exchange (Alaimo & Hekman, 2008, p. 244) whose co-compositions turn a gathering into a happening greater than the sum of its parts (Tsing, 2015). This is important for diversity, for world-making projects and the emergence of new directions (2015, p. 29).

Haraway confirms the vitality of such collaborations:

> *'The tentacular ones make attachments and detachments; they make cuts and knots; they make a difference; they weave paths and consequences but not determinisms; they are both open and knotted in some ways and not others' (Haraway, 2016, pp. 31, original emphasis).*

I propose that mapping the pollination of threads, knots, knowing and making across disciplines and practices, as in my second tanglegram (see section 5.1.2.), helped to unravel habitual practices and reveal unexpected connections (discussed in section 3.1.1.) that contributed to knowledge production beyond limiting categories, names or narratives. This research used diffractive, speculative, sensing methodologies to contribute to arts and early

childhood practices. These were ethical practices that imbricated the researcher as much as the researched, not to observe differences but to make space for them. These were critical practices for understanding which differences mattered, how and for whom because diffraction patterns trace the interconnections, interferences and differences that have mattered in the past and will matter differently in the future (Haraway, 1997). As such, diffractive thinking-with sympoiesis (making-with) (Haraway, 2016), transcorporeality (Alaimo, 2010) and transdisciplinarity (Barad, 2007) allows us to tap into the vast networks of more-than-human potentialities 'capable of "hosting" radical incommensurable differences' (de Freitas & Truman, 2021, p. 524) that are often otherwise excluded (Braidotti, 2013). I propose that working transversally with other disciplines, practices and fields of knowledge will help identify other apparatuses that could open future possibilities for how we talk about divergent bodying. It matters what stories we use to tell stories (Haraway, 2016) about the differentiations of nonlingual ways without binarising or othering them.

6.2. Summary of the discussion

In summarising my key findings and entering into my discussion, I considered how the speculative methods employed in this research opened potentialities for nonlingual bodyings to flourish and be valued. Revisiting the research questions enabled me to address important theoretical concepts. This research opened nonlingual spaces of mattering, through wondering-with the vitalities of materials and synaesthetic perspectives, entangling humans and nonhumans in a shared distribution of agencies. I emphasised the importance of attuning to sensing bodies by deviating from linguistic boundaries and considering sensing as pre-lingual expression. I explored how specific conditions of possibility facilitated thinking-with the world, enabling some things to come to matter and excluding others. Specifically, I examined how improvisation, minor gestures, affective attunements and synaesthetic sensing practices enabled an attunement to oddkin senses and material vitalities that might otherwise have been foreclosed, rendering humans and nonhumans response-able and responsive.

Following Kind, I explored how to become attuned to and participate in nonlingual bodyings becoming sensorially productive. The importance of stretching-toward potential, thinking-in-movement and becoming-imperceptible were discovered to be vital in this process, as exemplified through contact improvisation and data-sensing diffractions. Extending Marks' (2000) notion of haptic visuality, I described how my data-sensing practice, which I termed *haptic-synaesthetic-visuality,* enabled environments and bodyminds to be 'in touch' (Puig de la Bellacasa, 2017) in ways that challenged reductive notions of 'nonlingual' and 'child' (Burman, 2017).

My speculative methods required a response-ability that *did not presume to know* what a nonlingual bodymind can do in order that potentiality might be continually realised. In responding to the final research question, I discussed how the generative possibilities opened through speculative research might change the deficit narratives around divergent bodying that have become stuck in logics of 'progression' and 'normalisation'. Acknowledging the challenges and tensions created by language, categorisations and labelling was crucial for the ethico-onto-epistemological framing of this research. Tsing's concept of names-in-motion

highlighted the ambiguities on which entangled ontologies of relations are built. Through these tentacular networks, I argued that ambiguity was at the heart of becoming-with, making it vital to always see (sense/feel/think-with) the *other* intertwined in material-discursive research. Finally, I highlighted the contributions this research makes to the emerging field of arts in early childhood, with the potential for broader transdisciplinary knowledge creation useful for transprofessional practices.

Chapter Seven

7.1. Contribution to research and practice

I have discussed the contributions of this research to building alternative narratives around nonlingual ways of being, and how an approach grounded in feminist new materialisms and speculative methodologies connected to research-creation, help for living with nonlingual bodyminds in generative and more ethically affirmative ways. Following Fairchild's (2023, p. 146) advice, I explored how writing-with inquiry fosters alternative modes of thinking and knowing, especially when amplifying geopolitical marginalisation by offering 'affirmative readings that contest dominant narratives and binarized positions to reimagine connections with the world in more meaningful ways' (2023, p. 146). I proposed speculative methods for creating data through haptic-synaesthetic practices to foreground and amplify the important sensing modalities of nonlingual bodyminds. I also addressed (see section 2.2.4.) the problematics of inclusion-based ethics, where research is only considered 'trustworthy' if children's voices are heard (Bodén, 2021). This assumes children are lingual and articulate, that they have sufficiently coherent self-knowledge, and that their voice is 'the most authentic source of knowledge about themselves and their lives' (Gallacher & Gallagher, 2008, p. 502). I argued that this raises questions for nonlingual ways of bodying through sensory and synaesthetic practices, in terms of how the 'unknowable' sense-data of transcorporeal relations can be understood in the ordinary situations of nonlingual families. The approach I have proposed is not to reify right or wrong ways to listen to children but to attune to what is 'always already differentiating, becoming different' (St. Pierre in, Mazzei & Jackson, 2023, p. xxi). In other words, it is not about trying to create change but about becoming-with the lived differences already being made when living, making and learning with nonlingual children.

For professionals, parents and carers supporting nonlingual bodyminds, I propose that experiencing sensing practices makes a difference by helping us to think-with agenting. Sensing attunes us to the qualities of relations rather than properties of their constituents, to

what bodyminds can become through entanglements rather than what is expected of individuals. It is a process that goes beyond the shortcomings of the category and the label, and helps us to 'sense its liveliness, its lifeline' (Tsing, 2015, p. 242). Linked with this, the research contributes improvisational movement and sensing ideas towards bodying practices that amplify children's ordinary, minor gestures and, I would advocate, should have much greater traction especially in arts and early childhood settings. It contributes to an ethics that challenges the over-focus on speech and language in early education and asks, how has talk been granted so much power as a marker of identity and communication? This thesis suggests a politics of care (Puig de la Bellacasa, 2017) for other ways of languaging, such as movement, stillness, listening, contact, thinking, and engaging with unspoken sensations because 'the agency of the body demands an acceptance of unpredictability and not-quite-knowing' (Alaimo & Hekman, 2008, p. 250).

My experience through this study suggests that improvisation can be an effective and generative force for divergent bodyminds. While educators working within tightly defined frameworks of practice may struggle to unfold pedagogies where improvisation is central, the speculative practices and data developed in the study offers evidence on the great potential of these practices for education, health or SLT professionals interested in affirmative approaches to supporting nonlingual ways of being. Nonlingual bodying, in this study, was a collective encounter with children and parents 'figuring out how to live well together in the worlds we inherit and inhabit' (Land, 2023, p. 75). This might be one of the spaces Land describes where 'bodies, research, and pedagogy collide […] a space where we might wonder together how blurring and blowing up the lines around data, method, and clarity with bodying change how we body our pedagogies.' (2023, p. 75). If this research contributes to collisions, frictions, and (in)tensions in the fissures of humanist projects in the future, it is part of the same generative bodying that is valued at the heart of this project.

Sensing/feeling/thinking-with the other intertwined

Taking a data-sensing-approach to my analysis aligned my findings with Barad's (2007) call for rendering 'each' 'other' response-able by revealing the many performative co-constituents in

each agential cut. According to Barad, response-ability is a matter of (relational not geographical/topographical) scale in which humans are already implicated.

> *'I want to [make] an attempt at putting "us" more intimately in touch with this infinite alterity that lives in, around, and through us, by waking us up to the inhuman that therefore we are, to a recognition that it may well be the inhuman, the insensible, the irrational, the unfathomable, and the incalculable that will help us face the depths of what responsibility entails' (Barad, 2012, pp. 217-218)*

Extending this concept, I propose that multi-sensing, transcorporeal flourishing involves being *in service-with* the other to render the *whole assemblage* response-able / respons-ive. This does not imply being 'in servitude' as if this were a moral choice or duty, but an infinitely intertwined existence where there is no 'self' or 'other'. Barad describes the 'self' as, 'this 'I' that is not 'me' alone and never was, that is always already multiply dispersed and diffracted throughout spacetime(mattering), […] in its ongoing being-becoming' (Barad, 2014, p. 181). By foregrounding the other that is also within, responding with the other intertwined and enacting agential cuts open to difference-making, this research has become part of the assemblage that is re-working boundaries.

I found throughout my research that 'being-becoming' required a radical resistance to binary 'self' and 'other' thinking, inspired by Murris' use of the pronoun 'iii' to challenge binary discourses embedded in everyday language (2016, p. 36). In my research, I found a radical resistance emerged through the reconfiguring of how 'relations' are viewed (theoretically and methodologically) which now seems more important than the names and categories used to define the constituents. In viewing (sensing/feeling/thinking) relations differently, it became possible to experience how we/they became entangled in our constellations, how specific entanglements produced different things, and how each made a difference. This ethico-onto-epistemological perspective of entanglement, which I have enacted through my speculative and diffractive methods for data creation and analysis, made it possible to see with, and through, the other. Or rather, it became *impossible to see the self without the other intertwined*.

Therefore, one of the most important contributions of this research to 'foster constructive engagements across (and a reworking of) (trans)disciplinary boundaries' (Barad, 2007, p. 25)

in arts and early childhood is exactly this; to never consider child, nonlinguality, divergence, creativity, politics, privileges, ability, ethnicity, economics or any one of a number of sector priorities without always thinking (sensing/feeling/responding-with) the other intertwined.

Reconfiguring how to talk about voice

The use of speculative sensing methods in this research to attune to nonlingual entanglements has addressed the question I asked at the start of section 2.2.4., *why should languages end at the voice?* Thinking-, sensing-, responding-with the other intertwined means returning to alternative notions of 'giving voice' in ways that attend respectfully to the diverse array of sensations that more-than-human languages produce. Throughout this research, I have aligned with Mazzei and Jackson's (2012) call to complicate voice (i.e. bodying) by unveiling its nuanced, ambiguous, insufficiencies to 'mean' everything it claims to (MacLure, 2009). I extended Mazzei and Jackson's process of 'plugging-in' to multiple narratives and situations of voice, addressing its confusions and fragments that serve to disrupt clarity, meaning and unsituated assumptions, opening new perspectives on how to think-with theory and data intertwined. This process has helped me enact a radical resistance to the oversimplification and decontextualization of voice by using video-data-sensing methods (Caton, 2019) and mobilised an ethico-onto-epistemological framing that reconfigured voice 'data' as inclusive of the many minor textures, utterances, vibrations, images, forms and gestures that also account for nonlingual ways of being. This has become an important contribution of this research in producing 'a retelling that displaces many of the normalizing features of (voice) in qualitative inquiry, that relishes in the promise of uncertainty and the thrill that such ambiguity might indeed produce' (Mazzei & Jackson, 2012, p. 747). For instance, the curation of unusual materials in the Suitcase of Adventures, and the subsequent use of materials for movement and sensing propositions, created the conditions of possibility for participants to express nonlingually, reducing the expectation for talk.

By plugging my data into diffractive sensing methods in this way, I have troubled the typical representation of a nonlingual 'voice' and distorted normalising assumptions. By engaging a haptic-synaesthetic visuality, the relations between improvisation, bodies, movement, and synaesthetic connections were augmented, changing the perspective on what matters. The

agential cuts and digital diffractions of this project reinforced Mazzei and Jackson's suggestion that 'viewing' the voice(s) of all more-than-human participants allows us to think of voice as a multidimensional, agentic assemblage, which compels us to 'give up on a search for meaning and, instead, look for the places of rupture that signal the partial, incomplete, and always-in-process tellings' (Mazzei & Jackson, 2012, p. 750). Complicating the voices of nonlingual bodyings so that all accounts were present 'all-at-once-and-at-the-same-time' required complex diffraction methods to reveal the intimacies and intensities which would have been missed in mechanistic data analysis processes. As response-able phenomena, my diffractions contributed a method of attending to, reaching toward and sensing the agentic assemblage, foregrounding the entanglements of nonlingual bodyings and of what else is animated in their production. This methodological contribution of sensing the agentic forces intertwined was a way of exceeding language or the individual; it became-with everything that co-constituted nonlingual expressions, demonstrating that 'there is no voice to be extracted from the assemblage that stands alone' (Mazzei & Jackson, 2017, p. 1095).

7.2. Limitations of the research

In section 2.2.2., I asked, how do educators, practitioners, artists and clinicians talk about difference without reinforcing marginalising and homogenising discourses around dis/abilities and inclusion practices that isolate children diverging from normative standards? Even highlighting these tensions risks presenting deficit narratives as a binary position, potentially making this research complicit in *othering* practices. In research that relies on geometrical optics, the other is constituted as the Other. 'Difference as apartheid' (Barad, 2014, p. 170). Whilst I have argued that nonlingual ways are not in opposition to lingual ways, there is still a limitation in this research (and in the early education field) in terms of how to engage non-binary methods that do not continually draw attention to the 'non' in 'nonlingual'. I have subverted conventional naming protocols around situational mutism, neurodivergence and dis\abled bodyminds by referring to nonlingual or divergent bodyminds (including children who sometimes don't speak), without defining specific borders. However, I shoulder the discomfort that these names still represent a dialectical opposition which defines 'difference' against a dominant norm. There is still a need to think about difference differently. Watson et al (2020) suggests that exclusionary practices might be disrupted in more generative ways:

> *'Perhaps […] we could stop creating difference as problematic, and something that needs to be silenced, changed or fixed. We could interrupt our incessant speaking of 'otherness' and instead challenge 'sameness', […] and with that become curious and open to the uncertainty' (Watson et al., 2020, p. 112).*

For instance, I discussed how stillness and silence could be welcomed as regular expressions of sensing, or how listening through lingering could take place (Kind, 2020), without awkwardness or pressure to conform to 'sameness'. Limitations in researcher-thesis-time, managing large amounts of data, software skills and video-data-sensing meant this research lacked capacity to fully express the complexity of sensing practices across multiple dimensions. The speculative methods I used may have opened up specific synaesthetic experiences for readers/viewers of the data. This is important because 'the senses prosthetically alter the dimensions of the body, inciting the body to move in excess of its-self toward the world. Sensing toward the world implicates the body in a worlding that re-

organizes conceptions of space and time' (Manning, 2007, p. xiii). But any rendering of data can never convey the senses moving through every micro-relation in these entanglements.

A diffractive analysis can only hint at the complex web of lively intra-actions, where affective vitalities are mobilised as 'patternings, risky comakings, speculative fabulations' (Haraway, 2016, p. 14) that have only emerged so far and are yet to come. It is an impossible task, of course, due to the infinite potentials in each cut, as string figures 'do not touch very many, much less all, of the threads tied with and by [them]' (Haraway, 2016, p. 16). Nonetheless, I propose this is both a limitation of this study and a possibility to be further explored by future research. Using speculative methods with a commitment to more experimental orientations that not only read data through other theories and practices, but also sense data's affective vitalities, future research can more actively respond to 'the tugs of affect upon the web of the research, whose threads extend from the world to the depths of the body from which that web is simultaneously being spun' (MacLure, 2024, p. 252). Research that practices sensing will reveal richer threads of sensing possibilities that align with nonlingual bodying, reducing the othering of divergent bodyminds, and further informing transdisciplinary and transprofessional narratives amongst arts, health and early education professionals.

7.3. Gaps for future research

The process of researching nonlingual sensing practices has uncovered three gaps in research, as I will outline. First, while much research addresses children's multimodal, embodied and somatic languages, I suggest there is still a gap regarding nonlingual modes. In particular, there is room for speculative research attuned to affective nonlingual forces that inhabit the spaces between other linguistic practices to 'occasionally allow the emergence of wild potentials for creating something new' (Hohti & Truman, 2021, p. 12). By *wild* potentials, Hohti and Truman refer to that which exceeds propositional meaning (Manning, 2020a) and representation (MacLure, 2013b), as I have discussed. This research has also emphasised the challenges of valuing nonlingual bodying beyond the neat classifying and interpreting ways of words (MacLure, 2013c), recognising that language is deeply embedded into nonlingual ways too. Thinking-with synaesthesia as a sensing practice, for instance, can prove impossible for some non-divergent bodyminds to grasp without using words. There is also a danger that thinking-with sensing practices can pull back to the familiar notion of separate sensory organs located in, and corresponding with, humans alone if the entangled roles of the environment and other nonhumans aren't emphasised (see section 2.3.3.). A renewed focus on how nonhuman sensing practices flourish might help here, considering what this contributes to an understanding of children as more-than-human in entangled nonlingual relations. Research that experiments with synaesthetic-sensing methods is increasingly important and I advocate that future research into sensing practices would benefit from thinking-with 'cosmopraxis' where nonlingual bodying is sensed as part of the 'pluriversal relationality [that] take into account entangled relationships in different cosmologies' (Fairchild & Koro, 2024, p. 62).

Second, another gap to explore incorporates the concept of *nonlingual* bodying as an arts practice and how it might sit in the emerging field of arts in early education. In theatre, dance and music there has been tremendous work towards exploring sensory practices in the early education and health sectors. Companies such as Oily Cart[37], Speech Bubbles Theatre[38], Circus Starr[39] and the early years network run by the national dance body, People Dancing[40] have a

[37] See: https://oilycart.org.uk/
[38] See: https://www.speechbubbles.org.uk/
[39] See: https://www.circus-starr.org.uk/sensorystory/
[40] See: https://www.communitydance.org.uk/

long experience of the affective potentials of using contact improvisation, somatic and other sensory approaches with nonlingual children. Unfortunately, the growth of this field is limited by funding priorities that often align with formal curricula or health outcomes. However, I would recommend initiatives that include sensory theatre, music or dance practitioners as part of the mix of professionals bringing their expertise into early childhood education. There is also a case for more bodying research that works with young children who are not necessarily identified as non-speaking, since this kind of practice might be generative for all children in the current climate where anxiety seems to be rising in line with an increasing focus through the media and in education settings on when children speak, the number of words they utter, and the alleged links to outcomes later in life (Burman, 2017).

Third, issues of supporting intra-sectional (Leppänen & Tiainen, 2018) nonlingual bodyings are pertinent as black or brown children were *not* participants in my study, mainly because black and brown families are often not 'on the radar' of the support organisations involved in situational mutism. The unprecedented situation of the Covid pandemic enforcing a lockdown requiring a redesign of this study meant that time was not on my side to find other ways of connecting with black and brown families with nonlingual children. I suspect this is often the case in research studies operating in 'non-professionalised' fields of knowledge. Thus, practising a speculative methodology outside of academia is problematic when it reproduces whiteness through the over-representation of white, speaking bodyminds.

In my early research, I found studies showing a higher proportion of black and brown children diagnosed with situational mutism (Elizur & Perednik, 2003), yet I found a gap in literature referring to how black and brown nonlingual bodyminds are differently psychologised, colonialised and oppressed. I agreed with Kromidas' (2019) claim that this has significant implications for multilingual education and participation in the world (see section 2.2.3.). In particular, it highlights the need to dismantle exclusions in early childhood settings for black and brown children, whose multilingual voices remain 'so absent from mainstream accounts' (Burman, 2017, p. 196). Whilst this research has not sought to foreground children's lingual voices, there is still a relevant link between nonlingual sensing practices and the fact that language expression is often confounded by poverty and racism issues (Badwan, 2021) (Burman, 2017) (Viruru, 2001). Additionally, social developmental theories limit the

complexity of 'multilingual, multimodal, multisensory and multisemiotic' (Hua et al., 2017, p. 413) body languages (Badwan, 2021; Hackett, MacLure, et al., 2020), which is extremely relevant to this research going forward.

Viruru (2001) cautions that non-English and nonlingual children are socialised into dominant ways of functioning, diverting attention from children's complex expressions which might be considered unstable, uncontainable and uninterpretable, citing several instances where '[t]heir knowledge is subjugated, since it is not expressed through the dominant (and superior) form of language' (2001, p. 39). Linked to my first point above, Viruru calls for thinking about silence as presence rather than absence (Mazzei & Jackson, 2017) which I have discussed (see section 2.2.4.) as being a powerful way of *knowing* through *being present*, rather than as being 'less-than' language. Future research might consider focussing more on this concept of silence as presence, to reconceptualise intra-sectional nonlingualism, disrupting and re-working any colonial and ableist boundary around languaging 'which reproduces whiteness through ideological narrow expectations of young children's talk' (Shannon & Hackett, 2024, p. 118). Drawing from research-creation, I propose there is potential here to explore what data centred on the notion of '*what if…?*' can do to go beyond representation by ethnicity, class, and ability, and open up new horizons of transformative potential for marginalised children (Shannon & Hackett, 2024).

7.4. Last but not least: what matters and what else?

In considering what might come to matter through this research, I re-turn to Butler's words at the start of this thesis; 'All that you touch you change. All that you change changes you' (Butler & Jemisin, 2019). Ethico-onto-epistemologies require a commitment to unequal reciprocities that destabilise human-nonhuman hierarchies and call into question what it means to be relational. To use sensing practices response-ably that account for what matters and how this can be enacted in the future, an ethics of care is required that is invariably uncomfortable and troublesome. The senses of intimate connection that emerged through the extended gaze with research participants whilst I, as researcher, resisted the grand narrative of pathologisation and attended to our generative relations, was a tentative tiptoeing, a reaching-towards, a politics of care (Puig de la Bellacasa, 2017). In other words, attending care-fully to bodies of difference is a political act, an 'awareness of alterity marked by the unexpected of being alongside with other kinds' (Trafi-Prats in, Schulte, 2020, p. 135).

I wonder, can humans 'meet the universe *halfway*, to take responsibility for the role that we play in the world's differential becoming' (Barad, 2007, pp. 396, emphasis added)? The life of the universe is not dependent on human action, despite the marks that will be left on it long after humans have aggrandised ourselves into extinction. It seems to me humility, or 'epistemic modesty' (Flewitt, 2022, p. 210) is required to overcome human exceptionalism whilst living-with the imperialist damage '*written into our bones'* (Barad, 2007, p. 233). Learning to be open to the entangled power of worldly relations, to live well with posthumanism in a humanist world where individualistic power is not ready to be given up, creates tensions that this research cannot resolve.

If nothing pre-exists its relations, and things/relations only come into being holding the traces of all memories in their enfoldings (Barad, 2007, p. 383), then it is easier to understand that the past and the future are *already a part of us* (everything that makes up our entanglements) now. These enfoldings reframe nonlingual futures and give hope for the possibilities to come. This thesis cannot counter the multi-million-dollar 'Big Pharma' industry fuelling pathologised notions of the divergent human (see *Footnote 12* in section 2.2.2.), or undo centuries of embedded developmentalism that carries dangerous representations of normality. Ethico-

onto-epistemologies open inclusions in one agential cut that create exclusions in another. These are the peculiarities of this research's entanglements that I have sought to approach and understand. However, I argue that the ethico-onto-epistemologies in this study can and have made a difference, rendering the research response-able and response-ive by accounting for the nonlingual phenomena that are intrinsic to the world's vitality and its possibilities for flourishing (Barad, 2007, p. 396). That is to say, this thesis invites us to never consider our 'selves' without also attending to the 'other' that is 'in one's skin, […] in one's bones, in one's belly, in one's heart, in one's nucleus, in one's past and future' (Barad, 2007, p. 393).

Thinking with nonlingualism as a practice of sensing rather than speaking blurs the boundaries of human essentialism and reveals the richness of worldly entangling. It is a chance to encounter what synaesthetic forces can do that exceed language, to enact different boundary-making practices where 'things don't just come out any way we'd like them to; there is a sense in which "the world kicks back"' (Barad, 2007, p. 215). This is the epitome of agential realism, where the world's frequencies are greater in their diffractive enactments than words, identities or classifications can convey. It is from this entangled, participatory, relational, affecting and affected position that humans gain a more complex understanding of the fundamentals of bodying in nonlingual worlds, including the nature of material-discursive dynamics, identities, being, knowing and responding as an integral part of the other within (Barad, 2007, p. 49). The world kicks back when nonlingual, more-than-human ways of being are cared-for, when sensing practices are invited with awe and wonder, and with a sense of humility for what else a body can do.

References

Ahmed, S. (2010). Happy Objects. In M. Gregg & G. J. Seigworth (Eds.), *The affect theory reader* (pp. 29-51). Duke University Press. https://doi.org/10.1515/9780822393047-003

Ahmed, S. (2017). *Living a feminist life*. Duke University Press. https://doi.org/10.1515/9780822373377

Alaimo, S. (2010). *Bodily natures: science, environment, and the material self*. Indiana University Press. https://www.jstor.org/stable/j.ctt16gzmvh

Alaimo, S., & Hekman, S. (2008). *Material Feminisms*. Indiana University Press. https://doi.org/10.1080/08164640802680643

Albright, A. C., & Gere, D. (2003). *Taken by surprise: a dance improvisation reader*. Wesleyan University Press. https://www.hfsbooks.com/books/taken-by-surprise-albright-gere/

APA. (2013). *Diagnostic and statistical manual of mental disorders: DSM-5* (5th ed.). American Psychiatric Association. http://www.PsychiatryOnline.org

Åsberg, C., Thiele, K., & Van Der Tuin, I. (2015). Speculative Before the Turn: Reintroducing Feminist Materialist Performativity. *Cultural studies review*, *21*(2), 145-172. https://doi.org/10.5130/csr.v21i2.4324

Ash, J., & Gallacher, L. A. (2015). Becoming Attuned: Objects, Affects, and Embodied Methodology. In C. L. M. Mia Perry (Ed.), *Methodologies of Embodiment* (Vol. 1, pp. 69–85). Routledge. https://doi.org/10.4324/9780203582190-5

Badwan, K. (2021). *Language in a Globalised World Social Justice Perspectives on Mobility and Contact*. Springer International Publishing. https://doi.org/10.1007/978-3-030-77087-7

Barad, K. (2003). Posthumanist Performativity: Toward an Understanding of How Matter Comes to Matter. *Signs: Journal of Women in Culture and Society*, *28*(3), 801-831. https://doi.org/10.1086/345321

Barad, K. (2007). *Meeting the universe halfway: quantum physics and the entanglement of matter and meaning*. Duke University Press. https://doi.org/10.1215/9780822388128

Barad, K. (2010). Quantum Entanglements and Hauntological Relations of Inheritance Dis/continuities, SpaceTime Enfoldings, and Justice-to-Come. *Derrida Today*, *3*(2), 240-268. https://doi.org/10.3366/drt.2010.0206

Barad, K. (2012). On Touching—the Inhuman That Therefore I Am. *23*(3), 206-223. https://doi.org/10.1215/10407391-1892943

Barad, K. (2014). Diffracting Diffraction: Cutting Together-Apart. *Parallax*, *20*(3), 168-187. https://doi.org/10.1080/13534645.2014.927623

Barad, K. (2015). Transmaterialities: Trans/matter/realities and queer political imaginings. *GLQ*, *21*(2-3), 387-422. https://doi.org/10.1215/10642684-2843239

Bardet, M. (2018). The Paradox of Dancing in a Museum. https://www.pewcenterarts.org/post/paradox-dancing-museum

Bardet, M., & Noceti, F. (2012). With Descartes, against dualism. *Journal of Dance & Somatic Practices*, *4*(2), 195-209. https://doi.org/10.1386/jdsp.4.2.195_1

Batson, G., & Wilson, M. (2014). *Body and mind in motion: dance and neuroscience in conversation*. Intellect. https://doi.org/10.2307/j.ctv36xvstf

Bennett, J. (2010). *Vibrant Matter: A Political Ecology of Things*. Duke University Press Books. https://doi.org/10.1515/9780822391623

Bennett, J. (2016). *The Enchantment of Modern Life: Attachments, Crossings, and Ethics*. Princeton University Press. https://doi.org/10.1515/9781400884537

BERA. (2024). Ethical Guidelines for Educational Research. https://www.bera.ac.uk/publication/ethical-guidelines-for-educational-research-fifth-edition-2024

Betancourt, M. A., Dethorne, L. S., Karahalios, K., & Kim, J. G. (2017). Skin Conductance as an In Situ Marker for Emotional Arousal in Children with Neurodevelopmental Communication Impairments: Methodological Considerations and Clinical Implications. *ACM Trans. Access. Comput.*, *9*(3), Article 8. https://doi.org/10.1145/3035536

Bodén, L. (2021). On, to, with, for, by: ethics and children in research. *Children's Geographies*, 1-16. https://doi.org/10.1080/14733285.2021.1891405

Bozalek, V., & Zembylas, M. (2016). Diffraction or reflection? Sketching the contours of two methodologies in educational research. *International Journal of Qualitative Studies in Education*, *30*(2), 111-127. https://doi.org/10.1080/09518398.2016.1201166

Braidotti, R. (2013). *The posthuman*. Polity Press. https://www.politybooks.com/bookdetail?book_slug=the-posthuman--9780745641577

Braidotti, R., & Bignall, S. (2019). *Posthuman ecologies: complexity and process after Deleuze*. Rowman & Littlefield International Ltd. https://rowman.com/ISBN/9781786608239/Posthuman-Ecologies-Complexity-and-Process-after-Deleuze

Braidotti, R., & Hlavajova, M. (2018). *Posthuman glossary*. Bloomsbury Academic. https://doi.org/10.5040/9781350030275

Brown, H. R., Harvey, E. A., Griffith, S. F., Arnold, D. H., & Halgin, R. P. (2017). Assent and Dissent: Ethical Considerations in Research With Toddlers. *Ethics and Behavior*, *27*(8), 651-664. https://doi.org/10.1080/10508422.2016.1277356

Bruner, J. S. (1996). *The culture of education*. Harvard University Press. https://doi.org/10.2307/j.ctv136c601

Burman, E. (2012). Deconstructing Neoliberal Childhood: Towards a Feminist Antipsychological Approach. *Childhood: A Global Journal of Child Research*, *19*(4), 423-438. https://doi.org/10.1177/0907568211430767

Burman, E. (2017). *Deconstructing developmental psychology* (Third ed.). Routledge. https://doi.org/10.4324/9781315727127

Butler, O. E., & Jemisin, N. K. (2019). *Parable of the sower* (Reissued 2019 with a new foreword. ed.). Grand Central Publishing. https://www.grandcentralpublishing.com/titles/octavia-e-butler/parable-of-the-sower/9781538732182/

Caton, L., & Hackett, A. C. (2019). Head mounted, chest mounted, tripod or roaming? Ontological possibilities for doing visual research with children and GoPro cameras. https://doi.org/10.4324/9781315143040-26

Caton, L. C. (2019). Video Data Sensing: Working Post Qualitatively in Classroom Based Video Inquiry. *Video Journal of Education and Pedagogy*, *4*(1), 23-45. https://doi.org/https://doi.org/10.1163/23644583-00401001

Churchill Dower, R. (2022a). Contact Improvisation as a force for expressive reciprocity with young children who don't speak. *LEARNing Landscapes*, *15*(1). https://www.learninglandscapes.ca/index.php/learnland/issue/view/48

Churchill Dower, R. (2022b). Too Much Kin in the Game? The Intimate Reciprocities Available in Not Speaking. *Cultural and Pedagogical Inquiry*, *14*(1), 139-151. https://doi.org/10.18733/cpi29656

Colin, N., & Sachsenmaier, S. (2015). *Collaboration in performance practice: premise, workings and failures*. Palgrave Macmillan. https://doi.org/https://doi.org/10.1057/9781137462466

Craft, A. (2002). *Creativity and early years education: a lifewide foundation*. Continuum. https://oro.open.ac.uk/6527/

Dahlberg, G., Moss, P., & Pence, A. R. (2013). *Beyond quality in early childhood education and care : languages of evaluation*. Routledge, Taylor & Francis Group. http://catalogue.londonmet.ac.uk/record=b1794567~S1

Davies, B. (2014). *Listening to children: being and becoming*. Routledge, Taylor & Francis Group. https://doi.org/10.4324/9781315770390

de Freitas, E. (2012). The Classroom as Rhizome: New Strategies for Diagramming Knotted Interactions. *Qualitative Inquiry*, *18*(7), 557-570. https://doi.org/10.1177/1077800412450155

de Freitas, E. (2018). The biosocial subject: sensor technologies and worldly sensibility. *Discourse-studies in the cultural politics of education*, *39*(2), 292-308. https://doi.org/10.1080/01596306.2018.1404199

de Freitas, E. (2019). Digital research methods and sensor technologies: Rethinking the temporality of digital life. In J. Lynch, J. Rowlands, T. Gale, & S. Parker (Eds.), *Practice Methodologies in Education Research* (pp. 20). Routledge. https://doi.org/10.4324/9780429202063-4

de Freitas, E., & Trafí-Prats, L. (2023). Atmospheric data and software arts. In L. A. Mazzei & A. Y. Jackson (Eds.), *Postfoundational Approaches to Qualitative Inquiry*. Taylor & Francis Group. https://doi.org/10.4324/9781003298519-6

de Freitas, E., & Truman, S. (2021). New empiricisms in the Anthropocene: thinking with speculative fiction about science and social inquiry. *Qualitative Inquiry*, *27*(5), 522-533. https://doi.org/10.1177/1077800420943643

Deleuze, G., & Guattari, F. l. (2004). *A thousand plateaus: capitalism and schizophrenia*. Continuum. https://www.bloomsbury.com/uk/thousand-plateaus-9781780935379/

Dixon, K., Murris, K., Peers, J., Giorza, T., & Lawrence, C. (2024). Playing with Lenses: from "Object', to 'Subject', to 'Phenomenon'. In K. Dixon, K. Murris, o. Peers, T. Giorza, & C. Lawrence (Eds.), *Postdigital Play and Global Education: Reconfiguring Research* (1 ed.). Routledge. https://doi.org/10.4324/9781003205036

Dolphijn, R., & Tuin, I. v. d. (2012). *New materialism: interviews and cartographies*. Open Humanities. https://doi.org/10.3998/ohp.11515701.0001.001

Douglas, P., Rice, C., Runswick-Cole, K., Easton, A., Gibson, M. F., Gruson-Wood, J., Klar, E., & Shields, R. (2019). Re-storying autism: a body becoming disability studies in education approach. *International Journal of Inclusive Education*, 1-18. https://doi.org/10.1080/13603116.2018.1563835

Elizur, Y., & Perednik, R. (2003). Prevalence and description of selective mutism in immigrant and native families: A controlled study. *Journal of the American Academy of Child and Adolescent Psychiatry*, *42*(12), 1451-1459. https://doi.org/10.1097/00004583-200312000-00012

Erickson, D. (2012). *Selective Mutism And Art Therapies* University of North Dakota]. Theses and Dissertations. 1283. https://commons.und.edu/theses/1283

Fairchild, N. (2023). Writing-with Feminist Materialist And Posthumanist Qualitative Inquiry. In D. L. Carlson, A. M. Vasquez, & A. Romero (Eds.), *Writing and the articulation of postqualitative research* (pp. 133-148). Routledge. https://doi.org/10.4324/9781003280590-12

Fairchild, N. (2024). Multiverse, Feminist Materialist Relational Time, and Multiple Future(s): (Re)configuring Possibilities for Qualitative Inquiry. *Qualitative Inquiry*. https://doi.org/10.1177/10778004231176753

Fairchild, N., & Koro, M. (2024). Cosmopraxis: Living Relational (Qualitative) Questions. In N. K. Denzin & M. D. Giardina (Eds.), *Qualitative Inquiry in the Present Tense Writing a New History*. Taylor & Francis Group. https://doi.org/10.4324/9781032620541-8

Fairchild, N., & Mikuska, É. (2024). String Figuring young children's perspectives of quality in English early childhood education and care. *British Educational Research Journal*, *n/a*(n/a). https://doi.org/10.1002/berj.3990

Fernandez, K. T. G., Serrano, K. C. M., & Tongson, M. C. C. (2014). An Intervention in Treating Selective Mutism Using the Expressive Therapies Continuum Framework. *Journal of Creativity in Mental Health*, *9*(1), 19-32. https://doi.org/10.1080/15401383.2013.873706

Flewitt, R. (2022). Ethical provocations for early childhood research. In K. Kumpulainen, A. Kajamaa, O. Erstad, A. s. Mäkitalo, K. Drotner, & S. l. Jakobsdóttir (Eds.), *Nordic Childhoods in the Digital Age* (pp. 207-213). Routledge. https://doi.org/10.4324/9781003145257-23

Flewitt, R., & Ang, L. (2020). *Research methods for early childhood education*. Bloomsbury Academic. https://doi.org/10.5040/9781350015449

Flinker, A., Korzeniewska, A., Shestyuk, A. Y., Franaszczuk, P. J., Dronkers, N. F., Knight, R. T., & Crone, N. E. (2015). Redefining the role of Broca's area in speech. *Proceedings of the National Academy of Sciences*, *112*(9), 2871-2875. https://doi.org/10.1073/pnas.1414491112

Fox, N. J., & Alldred, P. (2017). *Sociology and the new materialism: theory, research, action*. Sage. https://doi.org/10.4135/9781526401915

Fullagar, S. (2021). Re-turning to embodied matters and movement through postqualitative inquiries. In K. Murris (Ed.), *Navigating the postqualitative, new materialist and critical posthumanist terrain across disciplines : an introductory guide*. Routledge, Taylor et Francis Group. https://doi.org/10.4324/9781003041177-7

Gabrys, J. (2019). Sensors and Sensing Practices Reworking Experience across Entities, Environments, and Technologies. *Science, Technology, & Human Values*, *44*(5), 723-736. https://doi.org/10.1177/01622439198602

Gallacher, L. (2020). F*rom milestones to wayfaring: Geographic metaphors and iconography of embodied growth and change in infancy and early childhood*. *GeoHumanities*. https://researchportal.northumbria.ac.uk/en/publications/from-milestones-to-wayfaring-geographic-metaphors-and-iconography

Gallacher, L.-A., & Gallagher, M. (2008). Methodological Immaturity in Childhood Research?: Thinking through "Participatory Methods". *Childhood: A Global Journal of Child Research*, *15*(4), 499-516. https://doi.org/10.1177/0907568208091672

Gardner, H. (2011). *Frames of mind: the theory of multiple intelligences*. Basic Books. https://www.hachettebookgroup.com/titles/howard-e-gardner/frames-of-mind/9780465024346/

Gensthaler, A., Khalaf, S., Ligges, M., Kaess, M., Freitag, C. M., & Schwenck, C. (2016). Selective mutism and temperament: the silence and behavioral inhibition to the unfamiliar. *European Child & Adolescent Psychiatry*, *25*(10), 1113-1120. https://doi.org/10.1007/s00787-016-0835-4

Gesell, A. (1971). *The first five years of life: a guide to the study of the preschool child*. Methuen. https://www.lib.berkeley.edu/nrlf-electronic-copy/b24450834

Gilbert, S. F., Sapp, J., & Tauber, A. I. (2012). A symbiotic view of life: we have never been individuals.(Report). *Quarterly Review of Biology*, *87*(4), 325(317). https://doi.org/10.1086/668166

Goodley, D., Lawthom, R., Liddiard, K., & Runswick-Cole, K. (2018). Posthuman Disability and DisHuman Studies. In R. B. M. Hlavajova (Ed.), *Posthuman Glossary* (pp. 342-345). Bloomsbury Academic. https://doi.org/10.5040/9781350030275.article-123

Goodley, D., Lawthom, R., & Runswick Cole, K. (2014). Posthuman disability studies. https://doi.org/10.1057/sub.2014.15

Goodley, D., & Runswick-Cole, K. (2016). Becoming dishuman: thinking about the human through dis/ability. *Discourse: Studies in the Cultural Politics of Education*, *37*(1), 1-15. https://doi.org/10.1080/01596306.2014.930021

Goodley, D., Runswick-Cole, K., & Liddiard, K. (2016). The DisHuman child. *Discourse: Studies in the Cultural Politics of Education*, *37*(5), 770-784. https://doi.org/10.1080/01596306.2015.1075731

Grosz, E. (2008). *Chaos, Territory, Art: Deleuze and the Framing of the Earth*. Columbia University Press. https://doi.org/10.7312/gros14518

Gul Airij, A., Sudirman, R., Ullah Sheikh, U., Yoot Khuan, L., & Aini Zakaria, N. (2020). Significance of electrodermal activity response in children with autism spectrum disorder. *The Indonesian Journal of Electrical Engineering and Computer Science (IJEECS)*, *19*. https://ijeecs.iaescore.com/index.php/IJEECS/article/view/21865

Gullion, J. S. (2018). *Diffractive ethnography : social sciences and the ontological turn*. Routledge. https://doi.org/10.4324/9781351044998

Hackett, A. (2021). *More-Than-Human Literacies in Early Childhood*. Bloomsbury Academic. https://doi.org/10.5040/9781350144750

Hackett, A. (2022). Unruly edges: Toddler literacies of the Capitalocene. *Global Studies of Childhood*, *12*(3), 263-276.

Hackett, A., Holmes, R., & Macrae, C. (2020). *Working with Young Children in Museums*. Routledge/Taylor & Francis Group. https://doi.org/10.4324/9780429434457

Hackett, A., MacLure, M., & McMahon, S. (2020). Reconceptualising early language development: matter, sensation and the more-than-human. *Discourse (Abingdon, England)*, *ahead-of-print*(ahead-of-print), 1-17. https://www.tandfonline.com/doi/full/10.1080/01596306.2020.1767350

Hackett, A., & Rautio, P. (2019). Answering the world: young children's running and rolling as more-than-human multimodal meaning making. *International Journal of Qualitative Studies in Education*, *32*(8), 1019-1031. https://www.tandfonline.com/doi/pdf/10.1080/09518398.2019.1635282

Haraway, D. J. (1991). *Simians, cyborgs, and women : the reinvention of nature*. Routledge. https://doi.org/10.4324/9780203873106

Haraway, D. J. (1997). *Modest_Witness@Second_Millennium. FemaleMan_Meets_OncoMouse : feminism and technoscience*. Routledge. https://doi.org/10.4324/9780203731093

Haraway, D. J. (2008). *When species meet*. University of Minnesota Press. https://www.upress.umn.edu/book-division/books/when-species-meet

Haraway, D. J. (2013). A Game of Cat's Cradle: Science Studies, Feminist Theory, Cultural Studies. In K. Arthur & K. Marilouise (Eds.), *Critical Digital Studies* (pp. 59-69). University of Toronto Press. https://doi.org/10.3138/9781442666702-005

Haraway, D. J. (2016). *Staying with the trouble: making kin in the Chthulucene*. Duke University Press. https://doi.org/10.1215/9780822373780

Haraway, D. J., & Goodeve, T. N. (2000). *How like a leaf : an interview with Thyrza Nichols Goodeve*. Routledge. http://catdir.loc.gov/catdir/enhancements/fy0651/99030617-d.html

Hayward, E. V. A. (2010). FINGERYEYES: Impressions of Cup Corals. *Cultural Anthropology*, *25*(4), 577-599. https://doi.org/https://doi.org/10.1111/j.1548-1360.2010.01070.x

Hickey-Moody, A. (2013). Affect as Method: Feelings, Aesthetics and Affective Pedagogy. In R. Coleman & J. Ringrose (Eds.), *Deleuze and research methodologies* (pp. 79-95). Edinburgh University Press. https://doi.org/10.1515/9780748644124-006

Hodder, I. (2023). *ENTANGLED: an archaeology of the relationships between humans and things*. JOHN WILEY & SONS. https://doi.org/10.1002/9781118241912

Hohti, R., & Truman, S. E. (2021). Anglocentrism in the Academy: On Linguistic Privilege, Mastery and Hoito. *Reconceptualizing Educational Research Methodology*, *12*(2). https://doi.org/10.7577/rerm.4675

Hollin, G. (2017). Failing, hacking, passing: Autism, entanglement, and the ethics of transformation. *BioSocieties*, *12*(4), 611-633. https://doi.org/10.1057/s41292-017-0054-3

Holmes, R., & Jones, L. (2016). Flickering, spilling and diffusing body/knowledge in the posthuman early years. https://doi.org/10.1057/9781137453082_8

Hua, Z., Wei, L., & Lyons, A. (2017). Polish shop(ping) as Translanguaging Space. *Social Semiotics*, *27*(4), 411-433. https://doi.org/10.1080/10350330.2017.1334390

Hultman, K., & Lenz Taguchi, H. (2010). Challenging anthropocentric analysis of visual data: a relational materialist methodological approach to educational research. *International Journal of Qualitative Studies in Education*, *23*(5), 525-542. https://doi.org/10.1080/09518398.2010.500628

Ivinson, G., & Renold, E. (2016). Girls, camera, (intra)action: Mapping posthuman possibilities in a diffractive analysis of camera-girl assemblages in research on gender, corporeality and place. In C. A. Taylor & C. Hughes (Eds.), *Posthuman Research Practices in Education* (pp. 168-185). Palgrave MacMillan. https://doi.org/10.1057/9781137453082_11

Jackson, A. Y., & Mazzei, L. A. (2012). *Thinking with theory in qualitative research: viewing data across multiple perspectives*. Routledge. https://doi.org/10.4324/9780203148037

Johnson, M., & Wintgens, A. (2016). The Selective Mutism Resource Manual. https://doi.org/10.4324/9781315174068

Jones, K., & Odell-Miller, H. (2022). A theoretical framework for the use of music therapy in the treatment of selective mutism in young children: Multiple case study research. *Nordic Journal of Music Therapy*, 1-25. https://doi.org/10.1080/08098131.2022.2028886

Kind, S. (2020). Wool Works, Cat's Cradle, and the Art of Paying Attention. In C. M. Schulte (Ed.), *Ethics and research with young children: new perspectives* (pp. 49-62). Bloomsbury Academic. https://doi.org/10.5040/9781350076495.ch-005

Kind, S. (2023a). Movements, Synchronicities, Choreographies. In M. Sakr, K. Sherbine, & J. Rowsell (Eds.), *Postdevelopmental Approaches to Pedagogical Observation in Childhood* (pp. 224). Bloomsbury Publishing. http://digital.casalini.it/9781350369658

Kind, S. (2023b). Photographic Doings: Considering the Force of Photographs in Early Childhood Studio Research. *Studies in Art Education*, *64*(3), 379-387. https://doi.org/10.1080/00393541.2023.2220103

Kolb, D. A. (1984). *Experiential learning: experience as the source of learning and development*. Pearson Education LTD. https://www.researchgate.net/publication/315793484_Experiential_Learning_Experience_as_the_source_of_Learning_and_Development_Second_Edition

Koro-Ljungberg, M., Löytönen, T., & Tesar, M. (2017). *Disrupting data in qualitative inquiry: entanglements with the post-critical and post-anthropocentric*. Peter Lang. https://doi.org/10.3726/b11070

Koro-Ljungberg, M., & MacLure, M. (2013). Provocations, Re-Un-Visions, Death, and Other Possibilities of "Data". *Cultural Studies ↔ Critical Methodologies*, *13*(4), 219-222. https://doi.org/10.1177/1532708613487861

Koro-Ljungberg, M., MacLure, M., & Ulmer, J. (2018). D...a...t...a..., Data++, Data, and Some Problematics. In N. K. Denzin & Y. S. Lincoln (Eds.), *The SAGE handbook of qualitative research (5th Edition)* (pp. 805-844). SAGE. https://uk.sagepub.com/en-gb/eur/the-sage-handbook-of-qualitative-research/book242504

Kovac, L. M., & Furr, J. M. (2019). What Teachers Should Know About Selective Mutism in Early Childhood. *Early Childhood Education Journal*, *47*(1), 107-114. https://doi.org/10.1007/s10643-018-0905-y

Kress, G. R. (2010). *Multimodality: a social semiotic approach to contemporary communication*. Routledge. https://doi.org/10.4324/9780203970034

Kromidas, M. (2019). Towards the human, after the child of Man: Seeing the child differently in teacher education. *Curriculum Inquiry*, *49*(1), 65-89. https://doi.org/10.1080/03626784.2018.1549924

Kuznetski, J., & Alaimo, S. (2020). Transcorporeality: An interview with Stacy Alaimo. *Ecozon@: European Journal of Literature, Culture and Environment*, *11*(2), 137-146. https://doi.org/10.37536/ecozona.2020.11.2.3478

Land, N. (2023). *Bodying postqualitative research : on being a researching body within fissures of humanism*. Routledge. https://doi.org/10.4324/9781003353676

Latour, B. (2004). Why Has Critique Run out of Steam? From Matters of Fact to Matters of Concern. *Critical Inquiry*, *30*(2), 225-248. https://doi.org/10.1086/421123

Lebedeva, L. (2012). Animated Treatment: the method of art therapy used with children having communication problems. *Social Welfare Interdisciplinary Approach*, *Vol 1, No 2 (2012)*, 123-130. http://socialwelfare.eu/index.php/sw/article/download/172/129

Lenz Taguchi, H. (2010). *Going beyond the theory/practice divide in early childhood education: introducing an intra-active pedagogy*. Routledge. https://doi.org/10.4324/9780203872956

Lenz Taguchi, H. (2012). A diffractive and Deleuzian approach to analysing interview data. *Feminist Theory*, *13*(3), 265-281. https://doi.org/10.1177/1464700112456001

Lenz Taguchi, H., Palmer, A., Gustafsson, L., Stockholms, u., Barn- och ungdomsvetenskapliga, i., & Samhällsvetenskapliga, f. (2016). Individuating 'sparks' and 'flickers' of 'a life' in dance practices with preschoolers: the 'monstrous child' of Colebrook's Queer Vitalism. *Discourse: Studies in the Cultural Politics of Education: Fabulous monsters: alternative discourses of childhood in education*, *37*(5), 705-716. https://doi.org/10.1080/01596306.2015.1075710

Leppänen, T., & Tiainen, M. (2018). *New Materialism Almanac - Intersectionality*. https://newmaterialism.eu/almanac/i/intersectionality.html

Lines, D. (2018). Jazz departures - Sustaining a pedagogy of improvisation. In C. Naughton , G. Biesta , & D. Cole (Eds.), *Art, artists and pedagogy: philosophy and the arts in education* (1st ed., pp. 52-60). Routlege. https://doi.org/10.4324/9781315143880-6

Lorimer, J. (2014). On Auks and Awkwardness. *Environmental Humanities*, *4*, 195-206. https://read.dukeupress.edu/environmental-humanities/article/4/1/195/26193/On-Auks-and-Awkwardness

Loveless, N. (2020). *Knowings & knots : methodologies and ecologies in research-creation*. The University of Alberta Press. https://doi.org/10.1515/9781772125061/html

MacLure, M. (2009). Broken voices, dirty words: On the productive insufficiency of voice. In A. Y. Jackson & L. A. Mazzei (Eds.), *Voice in qualitative inquiry: challenging conventional, interpretive, and critical conceptions in qualitative research* (pp. 97-113). Routledge. https://doi.org/10.4324/9780203891889-13

MacLure, M. (2010). The offence of theory. *Journal of Education Policy*, *25*(2), 277-286. https://doi.org/10.4324/9780203701652-2

MacLure, M. (2013a). Classification or wonder? Coding as an analytic practice in qualitative research. In R. Coleman & J. Ringrose (Eds.), *Deleuze and research methodologies*. Edinburgh University Press. https://www.dawsonera.com/abstract/9780748644124

MacLure, M. (2013b). Researching without representation? Language and materiality in post-qualitative methodology. *International Journal of Qualitative Studies in Education*, *26*(6), 658-667. https://www-tandfonline-com.mmu.idm.oclc.org/doi/full/10.1080/09518398.2013.788755

MacLure, M. (2013c). The Wonder of Data. *Cultural Studies ↔ Critical Methodologies*, *13*(4), 228-232. https://doi.org/10.1177/1532708613487863

MacLure, M. (2016). The Refrain of the A-Grammatical Child. *Cultural Studies, Critical Methodologies*, *16*(2), 173. https://doi.org/10.1177/1532708616639333

MacLure, M. (2024). Transversal inquiry: The "adventure of the involuntary". In L. A. Mazzei & A. Y. Jackson (Eds.), *Postfoundational approaches to qualitative inquiry* (pp. 243-255). Routledge. https://doi.org/10.4324/9781003298519-16

MacLure, M., Holmes, R., Jones, L., & MacRae, C. (2010). Silence as resistance to analysis: Or, on not opening one's mouth properly. *Qualitative Inquiry*, *16*(6), 492-500. https://doi.org/10.1177/1077800410364349

MacRae, C. (2019a). 'Grace Taking Form' - Re-animating Piaget's Concept of the Sensori-motor through and with Slow-motion Video. https://doi.org/10.1163/23644583-00401003

MacRae, C. (2019b). The Red Blanket: A dance of animacy. *Global Studies of Childhood*, 204361061983289. https://doi.org/10.1177/2043610619832899

MacRae, C., & MacLure, M. (2021). Watching two-year-olds jump: video method becomes 'haptic'. *Ethnography and Education*, 1-16. https://doi.org/10.1080/17457823.2021.1917439

Malone, K., Tesar, M., & Arndt, S. (2020). *Theorising Posthuman Childhood Studies*. Springer. https://doi.org/10.1007/978-981-15-8175-5

Mandell, N. (1988). The Least-Adult Role in Studying Children. *Journal of Contemporary Ethnography*, *16*(4), 433-467. https://doi.org/10.1177/0891241688164002

Manning, E. (2007). *Politics of touch: sense, movement, sovereignty*. University of Minnesota Press. http://site.ebrary.com/id/10202565

Manning, E. (2009a). *Relationscapes: movement, art, philosophy*. MIT Press. https://doi.org/10.7551/mitpress/9780262134903.001.0001

Manning, E. (2009b). What if it Didn't All Begin and End with Containment? Toward a Leaky Sense of Self. *Body & Society*, *15*(3), 33-45. https://doi.org/10.1177/1357034x09337785

Manning, E. (2010). Always More than One: The Collectivity of a Life. *Body & Society*, *16*(1), 117-127. https://doi.org/10.1177/1357034x09354128

Manning, E. (2013). *Always more than one: individuation's dance*. Duke University Press. https://doi.org/10.1215/9780822395829

Manning, E. (2016). *The minor gesture*. Duke University Press. https://doi.org/10.1515/9780822374411-002

Manning, E. (2019). Toward a Politics of Immediation. *Front*, *3*. https://www.frontiersin.org/journals/sociology/articles/10.3389/fsoc.2018.00042/full

Manning, E. (2020a). *For a Pragmatics of the Useless* (Vol. 45). Duke University Press. https://doi.org/10.2307/j.ctv17db477

Manning, E. (2020b). Not at a Distance: On Touch, Synaesthesia and Other Ways of Knowing. In C. *e. a.* Nirta (Ed.), *TOUCH*. University of Westminster Press. https://doi.org/10.16997/book37.e

Manning, E., & Massumi, B. (2014). *Thought in the act: Passages in the ecology of experience*. https://doi.org/10.5749/minnesota/9780816679669.001.0001

Marks, L. U. (2000). *The skin of the film: intercultural cinema, embodiment, and the senses*. Duke University Press. https://doi.org/10.1215/9780822381372

Marks, L. U. (2002). *Touch: sensuous theory and multisensory media*. University of Minnesota Press. https://www.jstor.org/stable/10.5749/j.ctttv5n8

Massumi, B. (2002). *Parables for the virtual: movement, affect, sensation*. Duke University Press. https://doi.org/10.2307/j.ctv11smvr0

Massumi, B. (2015). *Politics of affect*. Polity. https://www.politybooks.com/bookdetail?book_slug=politics-of-affect--9780745689814

Massumi, B. (2021). *The Art of The Relational Body: From Mirror-Touch to The Virtual Body* (Vol. 0). Duke University Press. https://doi.org/10.1215/9781478021964-027

Maturana, H. R., & Varela, F. J. (1992). *The tree of knowledge: the biological roots of human understanding* (Rev. ed.). Shambhala. https://www.shambhala.com/the-tree-of-knowledge.html

Mazzei, L. A. (2007). *Inhabited silence in qualitative research: putting poststructural theory to work*. Peter Lang. https://www.peterlang.com/document/1104047

Mazzei, L. A. (2009). An Impossibly Full Voice. In. Routledge. https://doi.org/10.4324/9780203891889-10

Mazzei, L. A. (2014). Beyond an Easy Sense: A Diffractive Analysis. *Qualitative Inquiry*, *20*(6), 742-746. https://doi.org/10.1177/1077800414530257

Mazzei, L. A. (2021). Speculative Inquiry: Thinking With Whitehead. *Qualitative Inquiry*, *27*(5), 554–566. https://journals-sagepub-com.mmu.idm.oclc.org/doi/epub/10.1177/1077800420934138

Mazzei, L. A., & Jackson, A. Y. (2012). Complicating Voice in a Refusal to "Let Participants Speak for Themselves". *Qualitative Inquiry*, *18*(9), 745-751. https://doi.org/10.1177/1077800412453017

Mazzei, L. A., & Jackson, A. Y. (2017). Voice in the agentic assemblage. *Educational Philosophy and Theory*, *49*(11), 1090-1098. https://doi.org/10.4324/9781351186674-2

Mazzei, L. A., & Jackson, A. Y. (2023). *Postfoundational Approaches to Qualitative Inquiry*. Taylor & Francis Group. https://doi.org/10.4324/9781003298519

McCormack, D. P. (2014). *Refrains for Moving Bodies: Experience and Experiment in Affective Spaces*. Duke University Press. http://ebookcentral.proquest.com/lib/mmu/detail.action?docID=1603779

Meloni, M., Williams, S., & Martin, P. (2016). The Biosocial: Sociological Themes and Issues. *The Sociological Review*, *64*(1_suppl), 7-25. https://doi.org/10.1111/2059-7932.12010

Mohandas, S., & Osgood, J. (2023). Feminist New Materialist Approaches to Childhood Studies. *Oxford Bibliographies*. https://doi.org/10.1093/OBO/9780199791231-0286

Moss, P. (2014). *Transformative change and real utopias in early childhood education : a story of democracy, experimentation and potentiality*. Routledge. https://doi.org/10.4324/9781315779904

Moss, P., Dahlberg, G., Grieshaber, S., Mantovani, S., May, H., Pence, A., Rayna, S., Swadener, B. B., Vandenbroeck, M., Stockholms, u., Barn- och ungdomsvetenskapliga, i., & Samhällsvetenskapliga, f. (2016). The Organisation for Economic Co-Operation and Development's International Early Learning Study: Opening for Debate and Contestation. *Contemporary Issues in Early Childhood*, *17*(3), 343. https://doi.org/10.1177/1463949116661

Muris, P., & Ollendick, T. H. (2021). Selective Mutism and Its Relations to Social Anxiety Disorder and Autism Spectrum Disorder. *Clinical child and family psychology review*, *24*(2), 294-325.

Murris, K. (2016). *The posthuman child: educational transformation through philosophy with picturebooks*. Routledge. https://doi.org/10.4324/9781315718002

Murris, K. (2018). Posthuman Child and the Diffractive Teacher: Decolonizing the Nature/Culture Binary. In A. Cutter-Mackenzie, K. Malone, & E. Barratt Hacking (Eds.), *Research Handbook on Childhoodnature : Assemblages of Childhood and Nature Research* (pp. 1-25). Springer International Publishing. https://doi.org/10.1007/978-3-319-51949-4_7-2

Murris, K. (2020). *Navigating the postqualitative, new materialist and critical posthumanist terrain across disciplines: an introductory guide*. Routledge. https://doi.org/10.4324/9781003041177

Murris, K. (2021). *A Glossary for Doing Postqualitative, New Materialist and Critical Posthumanist Research Across Disciplines*. Taylor Francis Group. https://doi.org/https://doi.org/10.4324/9781003041153

Murris, K. (2022). *Karen Barad as educator agential realism and education*. Springer. https://doi.org/10.1007/978-981-19-0144-7

Murris, K., & Bozalek, V. (2023). *In conversation with Karen Barad: doings of agential realism*. Routledge. https://doi.org/10.4324/9781003282877

Murris, K., Haynes, J., & Schwarz, V. (2018). *Literacies, literature and learning : reading classrooms differently*. Routledge is an imprint of the Taylor & Francis Group, an informa business. https://doi.org/10.4324/9780203732090

Nicholson, J. M., Berthelsen, D., Abad, V., Williams, K., & Bradley, J. (2008). Impact of Music Therapy to Promote Positive Parenting and Child Development. *Journal of Health Psychology*, *13*(2), 226-238. https://doi.org/10.1177/1359105307086705

Nxumalo, F. (2012). Unsettling Representational Practices: Inhabiting Relational Becomings in Early Childhood Education. *Child & Youth Services*, *33*(3-4), 281-302. https://doi.org/10.1080/0145935X.2012.745783

Oerbeck, B., Overgaard, K. R., Stein, M. B., Pripp, A. H., & Kristensen, H. (2018). Treatment of selective mutism: a 5-year follow-up study. *European Child & Adolescent Psychiatry*, *27*(8), 997-1009. https://www.sportpedagogy.org.ua/index.php/PPS/article/view/694

Olsson, L. M. (2009). *Movement and experimentation in young children's learning: Deleuze and Guattari in early childhood education*. Routledge. https://doi.org/10.4324/9780203881231

Osgood, J. (2019). 'You can't separate it from anything': Glitter's doings as materialised figurations of childhood (and) art. In *Postdevelopmental approaches to childhood art*. Bloomsbury Academic. https://doi.org/10.5040/9781350042575.ch-007

Osgood, J. (2024). Adventures Requiring care and Recklessness: A Playful Archive. In L. A. Mazzei & A. Y. Jackson (Eds.), *Postfoundational approaches to qualitative inquiry* (pp. 101-118). Routledge. https://doi.org/10.4324/9781003298519-11

Osgood, J. (2024). Exploring possibilities for gender to become otherwise: what do child-snail relations make possible? In S. Gannon, A. Pasley, & J. Osgood (Eds.), *Gender Un/bound: Traversing Educational Possibilities*. Taylor & Francis (Routledge). https://repository.mdx.ac.uk/item/141409

Osgood, J., & Hackett, A. (2024). Unlikely Qualities of Writing Qualitatively: Porous Stories of Thresholds, In-Betweeness and the Everyday. *International Review of Qualitative Research*. https://doi.org/10.1177/19408447241242425

Osgood, J., & Robinson, K. H. (2019). *Feminists researching gendered childhoods: generative entanglements*. Bloomsbury Academic. https://doi.org/10.5040/9781474285810

Pacini-Ketchabaw, V., Taylor, A., & Blaise, M. (2016). Decentring the human in multispecies ethnographies. In C. A. Taylor & C. Hughes (Eds.), *Posthuman research practices in education* (pp. 149-167). Palgrave Macmillan. https://doi.org/10.1057/9781137453082_10

Petrenko, N. B., & Filippov, M. M. (2017). Potentials of speech disorders correction in 4-6 yrs children by means of ergo and art therapy. *Pedagogics, psychology, medical-biological problems of physical training and sports*, *21*(2), 28. https://www.sportpedagogy.org.ua/index.php/PPS/article/view/694/621

Piaget, J. (1973). *To understand is to invent: the future of education*. Grossman. https://catalog.hathitrust.org/Record/001055375

Pink, S. (2009). *Doing sensory ethnography*. SAGE. https://doi.org/https://dx.doi.org/10.4135/9781446249383

Pollitt, J., Blaise, M., & Rooney, T. (2021). Weather bodies: experimenting with dance improvisation in environmental education in the early years. *Environmental Education Research*, *27*(8), 1141-1151. https://doi.org/10.1080/13504622.2021.1926434

Poole, K. L., Cunningham, C. E., McHolm, A. E., & Schmidt, L. A. (2021). Distinguishing selective mutism and social anxiety in children: a multi-method study. *European Child & Adolescent Psychiatry*, *30*(7), 1059-1069. https://doi.org/10.1007/s00787-020-01588-3

Puig de la Bellacasa, M. a. (2009). Touching technologies, touching visions. The reclaiming of sensorial experience and the politics of speculative thinking. *Subjectivity*, *28*(1), 297-315. https://doi.org/10.1057/sub.2009.17

Puig de la Bellacasa, M. a. (2017). *Matters of care: speculative ethics in more than human worlds* (Vol. 41.;41;). University of Minnesota Press. https://ebookcentral.proquest.com/lib/mmu/detail.action?docID=4745533

Rautio, P. (2013). Children who carry stones in their pockets: on autotelic material practices in everyday life. *Children's Geographies*, *11*(4), 394-408. https://doi.org/10.1080/14733285.2013.812278

Reynolds, R.-A. (2022). Re-membering as a sacred practice. In K. Murris, & Bozalek, V. (Ed.), *In Conversation with Karen Barad: Doings of Agential Realism* (pp. 59-74). Routledge. https://doi.org/10.4324/9781003282877

Ringrose, J., Warfield, K., & Zarabadi, S. (2020). *Feminist posthumanisms, new materialisms and education*. Routledge, Taylor & Francis Group. https://doi.org/10.4324/9781351186674

Roberts-Holmes, G. (2015). The 'datafication' of early years pedagogy: 'if the teaching is good, the data should be good and if there's bad teaching, there is bad data. *Journal of Education Policy*, *30*(3), 302-315. https://doi.org/10.1080/02680939.2014.924561

Rosen, M., & Oxenbury, H. (1989). *We're going on a bear hunt*. Walker Books.

Runswick-Cole, K., Mallett, R., & Timimi, S. (2016). *Re-thinking autism: diagnosis, identity and equality*. Jessica Kingsley Publishers. https://doi.org/10.1080/09687599.2016.1221666

Schulte, C. M. (2020). *Ethics and research with young children: new perspectives*. Bloomsbury Academic. https://doi.org/10.5040/9781350076495

Shannon, D. B. (2021). A/autisms: a "queer labor of the incommensurate": holding onto the friction between different orientations towards autism in an early childhood research-creation project. *International Journal of Qualitative Studies in Education*, 1-19. https://doi.org/10.1080/09518398.2021.2003894

Shannon, D. B., & Hackett, A. (2024). Opaque reciprocity: or theorising Glissant's 'right to opacity' as a communication and language praxis in early childhood education. *Discourse: Studies in the Cultural Politics of Education*, *45*(1), 118-130. https://doi.org/10.1080/01596306.2023.2273336

Sheets-Johnstone, M. (2011). *The primacy of movement* (Expand 2nd ed., Vol. 82). John Benjamins Pub. Co. https://doi.org/10.1075/aicr.82

Sheets-Johnstone, M. (2015). *The phenomenology of dance* (Fiftieth anniversary edition. ed.). Temple University Press. https://doi.org/10.2307/j.ctvrf88jc

Spinoza, B. d. (1949). *Ethics: On the improvement of the understanding*. Hafner.

Springgay, S. (2019). 'How to Write as Felt' Touching Transmaterialities and More-Than-Human Intimacies. *Studies in Philosophy and Education*, *38*(1), 57-69. https://doi.org/10.1007/s11217-018-9624-5

Springgay, S. (2020). The Fecundity of Poo. In B. Dernikos, N. Lesko, S. D. McCall, & A. Niccolini (Eds.), *Mapping the Affective Turn in Education: Theory, Research, and Pedagogy* (pp. 149–163). Taylor & Francis Group. https://doi.org/10.4324/9781003004219-16

Springgay, S., & Truman, S. E. (2018). On the Need for Methods Beyond Proceduralism: Speculative Middles, (In)Tensions, and Response-Ability in Research. *Qualitative Inquiry*, *24*(3), 203-214. https://doi.org/10.1177/1077800417704464

St. Pierre, E. A. (2011). Post qualitative research: The critique and the coming after. In *The Sage handbook of qualitative research, 4th ed* (pp. 611-625). Sage. http://capitadiscovery.co.uk/mmu/items/1955627

St. Pierre, E. A. (2013). The posts continue: Becoming. *International Journal of Qualitative Studies in Education*, *26*(6), 646-657. https://doi.org/10.1080/09518398.2013.788754

St. Pierre, E. A., Jackson, A. Y., & Mazzei, L. A. (2016). New empiricisms and new materialisms: Conditions for new inquiry. *Cultural Studies - Critical Methodologies*, *16*(2), 99-110. https://doi.org/10.1177/1532708616638694

Stein, M. B., Yang, B.-Z., Chavira, D. A., Hitchcock, C. A., Sung, S. C., Shipon-Blum, E., & Gelernter, J. (2011). A Common Genetic Variant in the Neurexin Superfamily Member CNTNAP2 Is Associated with Increased Risk for Selective Mutism and Social Anxiety-Related Traits. *Biological Psychiatry*, *69*(9), 825-831. https://doi.org/10.1016/j.biopsych.2010.11.008

Stern, D. N. (1985). *The interpersonal world of the infant: a view from psychoanalysis and developmental psychology*. Basic Books. https://doi.org/10.4324/9780429482137

Stewart, K. (2007). *Ordinary affects*. Duke University Press. http://read.dukeupress.edu/content/ordinary-affects

Strom, K., & Mills, T. (2021). Affirmative Ethics and Affective Scratchings: A Diffractive Re-View of Posthuman Knowledge and Mapping the Affective Turn. *Matter: Journal of New Materialist Research*, *2*(1), 200-223. https://doi.org/10.1344/jnmr.v2i1.33382

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.2012.13.2.1

Taylor, A., Pacinini-Ketchabaw, V., & Blaise, M. (2012). Children's Relations to the More-Than-Human World. *Contemporary Issues in Early Childhood*, *13*(2), 81-85. https://doi.org/10.2304/ciec.2012.13.2.81

Taylor, C. A., & Hughes, C. (2016). *Posthuman research practices in education*. Palgrave Macmillan. https://doi.org/10.1057/9781137453082

Taylor, C. A., Quinn, J., & Franklin-Phipps, A. (2020). Rethinking research 'use': Reframing impact, engagement and activism with feminist new materialist, posthumanist and postqualitative research. In K. Murris (Ed.), *Navigating the postqualitative, new materialist and critical posthumanist terrain acros s disciplines: an introductory guide* (1st Edition ed., pp. 21). Routledge. https://doi.org/10.4324/9781003041177-10

Todd, Z. (2016). An Indigenous Feminist's Take On The Ontological Turn: 'Ontology' Is Just Another Word For Colonialism. *Journal of Historical Sociology*, *29*(1), 4-22. https://doi.org/10.1111/johs.12124

Trafí-Prats, L., & Caton, L. (2020). Towards an Ethico-Aesthetic of Parenting: Sensing Ritornellos of Play with GoPro Data. *Genealogy*, *4*(2), 34. https://doi.org/10.3390/genealogy4020034

Trafí-Prats, L., & Schulte, C. M. (2022). *New images of thought in the study of childhood drawing*. Springer. https://doi.org/10.1007/978-3-031-07143-0

Tronto, J. C. (1993). *Moral boundaries: a political argument for an ethic of care*. Routledge. https://www.taylorfrancis.com/books/mono/10.4324/9781003070672/moral-boundaries-joan-tronto

Truman, S. (2019). *Feminist New materialisms*. Sage. https://doi.org/10.4135/9781526421036808740

Truman, S. E. (2022). *Feminist speculations and the practice of research-creation: writing pedagogies and intertextual affects*. Routledge, Taylor & Francis Group. https://doi.org/10.4324/9781003104889

Truman, S. E., & Springgay, S. (2015). The Primacy of Movement in Research-Creation: New Materialist Approaches to Art Research and Pedagogy. In *Art's Teachings, Teaching's Art : Philosophical, Critical and Educational Musings* (pp. 151-162). Dordrecht : Springer Netherlands : Springer. https://doi.org/10.1007/978-94-017-7191-7_11

Tsing, A. L. (2015). *The mushroom at the end of the world: on the possibility of life in capitalist ruins*. Princeton University Press. https://doi.org/10.1515/9781400873548

Tsing, A. L., Bubandt, N., Gan, E., & Swanson, H. A. (2017). *Arts of Living on a Damaged Planet : Ghosts and Monsters of the Anthropocene*. University of Minnesota Press. https://public.ebookcentral.proquest.com/choice/publicfullrecord.aspx?p=4745557

Universities-UK. (2019). The concordat to support research integrity. https://www.universitiesuk.ac.uk/sites/default/files/field/downloads/2021-08/Updated%20FINAL-the-concordat-to-support-research-integrity.pdf

Van der Kolk, B. A. (2015). *The body keeps the score: mind, brain and body in the transformation of trauma*. Penguin Books.

https://www.penguin.co.uk/books/259420/the-body-keeps-the-score-by-kolk-bessel-van-der/9780141978611

van Leeuwen, T. M., Neufeld, J., Hughes, J., & Ward, J. (2020). Synaesthesia and autism: Different developmental outcomes from overlapping mechanisms? *Cognitive Neuropsychology*, *37*(7-8), 433-449. https://doi.org/10.1080/02643294.2020.1808455

Viruru, R. (2001). Colonized through Language: The Case of Early Childhood Education. *Contemporary Issues in Early Childhood*, *2*(1), 31-47. https://doi.org/10.2304/ciec.2001.2.1.7

Vogel, F., Gensthaler, A., Stahl, J., & Schwenck, C. (2019). Fears and fear-related cognitions in children with selective mutism. *European Child & Adolescent Psychiatry*, *28*(9), 1169-1181. https://doi.org/10.1007/s00787-019-01281-0

Vygotsky, L. S., & Cole, M. (1978). *Mind in society: the development of higher psychological processes*. Harvard University Press. https://doi.org/10.2307/j.ctvjf9vz4

Walker, N. (2021). *Neuroqueer heresies: notes on the neurodiversity paradigm, autistic empowerment, and postnormal possibilities*. Autonomous Press. https://neuroqueer.com/neuroqueer-heresies/

Watson, K., Millei, Z., & Bendix Petersen, E. (2020). Silence and its mechanisms as the discursive production of the 'normal' in the early childhood classroom. *Journal of Childhood, Education and Society*, *1*(2), 103-115. https://doi.org/10.37291/2717638x.20201236

Wong, P. (2010). Selective mutism: a review of etiology, comorbidities, and treatment. *Psychiatry (Edgmont (Pa. : Township))*, *7*(3), 23-31. https://pubmed.ncbi.nlm.nih.gov/20436772/

Yelland, N. (2010). *Contemporary perspectives on early childhood education*. McGraw-Hill Open University Press. https://www.mheducation.co.uk/contemporary-perspectives-on-early-childhood-education-9780335237876-emea-group

Yergeau, M. (2018). *Authoring autism: on rhetoric and neurological queerness*. Duke University Press. https://doi.org/10.1215/9780822372189

Appendix A: Manchester Metropolitan University Ethics Application

Have you completed relevant training?

Thank you for visiting the Ethics Online System (EthOS)

The University seeks to lead the sector in ensuring that the decisions we make concerning research ethics align with our values as an institution as well as meeting all regulatory requirements. (Manchester Metropolitan University, Research and Knowledge Exchange Strategy 2017).

EthOS is an important part of our efforts to achieve "beyond compliance" status in research ethics and governance.

All members of staff and students who are about to undertake a project or investigation in the broad area of research are required to use EthOS to determine what form of ethical approval, if any is required.

This system will guide you through the process of determining what form of ethical approval is required for your project.

The questions within EthOS will be automatically generated based on your previous answers to ensure that only relevant sections are displayed.

The RKE Strategy can be found by clicking the following link: http://www2.mmu.ac.uk/rke-strategy/

A1 The University is committed to adhering to the principles of the Concordat for Research Integrity and we expect all staff and students to complete the relevant online training. Have you completed the Manchester Metropolitan University Research Integrity training course?

- (•) Yes
- ( ) No

A2 Health and Safety

Every member of staff and students have a responsibility for their own health, safety, and wellbeing, and those around them who may be affected by their acts and omissions. Have you completed any University Health and Safety training?

- ( ) Yes
- (•) No

A3 Data Protection

The University is responsible for complying with the General Data Protection Regulation whenever personal data is processed. Under the Data Protection Policy, all staff and students have a responsibility to comply with the regulation in their day-to-day activities. The first step you can take to understand these responsibilities is to complete the University's Mandatory Data Protection Training. The Data Protection Training can be accessed from the web page https://www2.mmu.ac.uk/data-protection/. To make sure your knowledge up to date, all staff and students must complete the training annually.

Have you completed the Data Protection Training?

- (•) Yes
- ( ) No

Applicant

Page 1 of 30

Project Information - from full application

X1 Your Full Project Title is

Spaces of Difference – attuning through immersive dance with children who sometimes don't speak

X2 Are you the Principal Investigator for the project?

- (•) Yes
- ( ) No

X3 Principal Investigator

Title	First Name	Surname
Mrs	Ruth	Churchill Dower

Organisation	Manchester Metropolitan University
Faculty	Education
Telephone	[redacted]
Email	[redacted]

X4 In what capacity are you carrying out your project? (see information button for guidance)

As a postgraduate research student

X5 Which Faculty is responsible for the project?

Education

X6 What is the proposed start date of your data collection?

01/06/2020

Page 1 of 6

Appendix B: Manchester Metropolitan University Ethics Approval

07/07/2020
Project Title: Spaces of Difference

EthOS Reference Number: 11937

Ethical Opinion

Dear Ruth Churchill Dower,

The above application was reviewed by the Education Research Ethics and Governance Committee and, on the 07/07/2020, was given a favourable ethical opinion. The approval is in place until 30/09/2022 .

Conditions of favourable ethical opinion

Application Documents

Document Type	File Name	Date	Version
Project Protocol	PhD-RD1ResearchProposal-RuthChurchillDower-18042949	04/02/2020	01
Consent Form	Consent Withdrawal Form (v1.1)	14/04/2020	1.1
Consent Form	Consent Stage One - Parents (V1.2)	22/06/2020	1.2
Consent Form	Consent Stage One - Teachers & Professionals (V1.2)	22/06/2020	1.2
Consent Form	Consent Stage Two - Teachers & Professionals (V1.2)	22/06/2020	1.2
Information Sheet	PIS Stage One - Parents, Teachers & Professionals (V1.2)	22/06/2020	1.2
Information Sheet	PIS Stage Two - Parents, Teachers & Professionals (V1.2)	22/06/2020	1.2

The Education Research Ethics and Governance Committee favourable ethical opinion is granted with the following conditions

Adherence to Manchester Metropolitan University's Policies and procedures

This ethical approval is conditional on adherence to Manchester Metropolitan University's Policies, Procedures, guidance and Standard Operating procedures. These can be found on the Manchester Metropolitan University Research Ethics and Governance webpages.

Amendments

If you wish to make a change to this approved application, you will be required to submit an amendment. Please visit the Manchester Metropolitan University Research Ethics and Governance webpages or contact your Faculty research officer for advice around how to do this.

We wish you every success with your project.

Education Research Ethics and Governance Committee

Education Research Ethics and Governance Committee

For help with this application, please first contact your Faculty Research Officer. Their details can be found here

Page 1 of 1

10/10/2020
Project Title: Spaces of Difference

EthOS Reference Number: 11937

Ethical Opinion

Dear Ruth Churchill Dower,

The above amendment was reviewed by the Education Research Ethics and Governance Committee and, on the 10/10/2020, was given a favourable ethical opinion. The approval is in place until 30/09/2022 .

Conditions of favourable ethical opinion

Application Documents

Document Type	File Name	Date	Version
Additional Documentation	Consent Stage One - Parents & Guardians (V1.3)	28/09/2020	1.3
Additional Documentation	Consent Stage Two - Parents & Guardians (V1.3)	28/09/2020	1.3
Additional Documentation	PIS Stage One - Parents & Guardians (V1.3)	28/09/2020	1.3
Additional Documentation	PIS Stage Two - Parents & Guardians (V1.3)	28/09/2020	1.3

The Education Research Ethics and Governance Committee favourable ethical opinion is granted with the following conditions

Adherence to Manchester Metropolitan University's Policies and procedures

This ethical approval is conditional on adherence to Manchester Metropolitan University's Policies, Procedures, guidance and Standard Operating procedures. These can be found on the Manchester Metropolitan University Research Ethics and Governance webpages.

Amendments

If you wish to make further changes to this approved application, you will be required to submit an amendment. Please visit the Manchester Metropolitan University Research Ethics and Governance webpages or contact your Faculty research officer for advice around how to do this.

We wish you every success with your project.

Education Research Ethics and Governance Committee

Education Research Ethics and Governance Committee

For help with this application, please first contact your Faculty Research Officer. Their details can be found here

Appendix C: Participant Information Sheets

Participant Information Sheet

Spaces of Difference – attuning through movement with children who sometimes don't speak

A PhD research project from Manchester Metropolitan University funded by the White Rose Doctoral Training Partnership

1. Invitation to research – Autumn Term 2020

I would like to invite you *and* your child to become involved in this important research project. My name is Ruth Churchill Dower, and I am a PhD doctoral student at Manchester Metropolitan University. I also am a former teacher, now involved in research and training in early education, and I have trained in music, dance, theatre and teaching as well as working with children with SEN or disabilities.

For this project I will be working in partnership with local families to explore how three-to-four-year olds communicate through movement and their senses. I am especially interested in children who don't speak in certain situations for whatever reason.

This letter is to explain about the project and ask if you and your child would like to take part.

2. Why have I been invited?

My research is about how three-to-four-year olds who sometimes don't speak can express themselves fluently through movement and their senses. **I am inviting a select group of six children and their parents or guardians to participate in the study**.

You may have been recommended through a local speech and language therapist (SLT) or through the SMIRA network (Selective Mutism Info and Research Assoc). However, no-one else will be at these sessions – these are just for the selected parent/guardians and their child.

3. What are the benefits in participating?

The movement sessions are completely free to attend and will provide lots of new ideas for you to have fun together at home! The project will give you a relaxed, dedicated space out of your busy day to play together and may also give you insights into different ways that your child communicates through their bodies and senses, without any pressure.

4. Do we have to take part in every session?

It is up to you to decide. I will describe what is involved in the sessions and am happy to answer any questions. I will then ask you to sign a consent form to show you agreed for you and your child to take part. You are free to withdraw at any time, without giving a reason.

5. What will I and my child be asked to do?

Stage One (Jan-March 2021) will involve me as the researcher doing some sensory movement activities online with a small group of parents and children. Each week (for about 6 weeks), we will meet on zoom for no more than half an hour at an agreed time. This is to give you and your child a chance to see me and get to know me.

The zoom sessions will be fun and easy, where we will play gentle mirroring games using our hands and faces (where comfortable). Instead of using words, we will have movement-based conversations. At no point will there ever be any expectations for your child to speak and any interaction they offer will be treated with care, integrity and respect.

Stage Two (May-June 2021) will involve playing some more movement games in a lovely, quiet gallery space (fully sanitised and covid-safe). Whilst being there in person, you and your child will be invited to choose your own 'den' where you can explore the movement games in a little pop-up tent, reducing any anxiety caused by the new environment (which you will be welcome to visit before the sessions to familiarise yourselves).

You will be welcome to play outside of the tent as well, if you feel comfortable. Some of the other families may also be there but you will only ever be in contact with your own child in your bubble. There will be a separate consent form with all the information on for this. All tents and materials used will be completely sanitised.

In these sessions we will have fun exploring activities where we use body language rather than words. Sometimes we might use music or objects such as feathers, fans or floaty scarves. The sessions will be simple, relaxed and fun. There will be no expectation to speak and I will guide us through each activity, so your child knows what is going on.

Participants (adults and children) may be invited to wear a multi-sensory device on their wrists. These devices are a bit like Fitbits, and will record your heart rate, temperature and movement. We won't analyse personal stats but we will project the data from the devices onto a screen so we can see our insides dancing around while we move with our children. You are free to have a go but there is no obligation to wear a device if you prefer not to.

6. Why is this research important?

I am interested in seeing what sorts of physical or sensory movements our children use to tell us what interests them, or how they want to communicate. Sometimes children want to express big ideas using their body because they can't express the feelings inside using words. Your playing together will help us to see more clearly how children express themselves and how they interact through ways other than words.

As well as the movement activities, I will also be writing notes, taking photos and recording short videos of children's movement play. This helps me to see how much body interaction is used all the time by our children. With your consent, I might also use some of these photos, video clips or notes in writing up my PhD thesis (by October 2022) and you are welcome to have an electronic or paper copy of the research publication.

The project may produce some interesting training and research materials for parents, teachers, SLTs looking for creative ways to support children who sometimes do not speak. The findings will also be shared nationally in education conferences to influence policy and practice in this field. Aspects of it might also be shared through book chapters, journals, education seminars, and on relevant websites (e.g. health or educational research websites).

7. Confidentiality

Any photos, notes or recordings that are made will be anonymised from the start of the project so no individual child or adult will be identifiable by name or location in the project reports or any other publication, web site or training materials from this project.

Whilst all data will be anonymised as far as possible, faces may still be recognisable in the photo and video images, even in the absence of identifying names or locations. Therefore, only images of faces that have the full consent of the parents will be used in the publications. Even if you give your consent at the start, I will ask you for specific permission later on before publishing data that includes a face or other identifying features.

8. Are there any risks if my child and I participate?

There are no potential risks involved in participating in this research. Throughout the sessions, we will take care to keep a calm and relaxed environment, tuning in to each other's wellbeing and trying to avoid anxiety. If your child is anxious for any reason, they are free to leave the activity at any time and to return to it if and when they are ready.

9. What will happen with the information collected?

When you agree for your child to participate in this research, we will collect personally identifiable information (such as name, email, tel number or age of child), so that we can contact you to make arrangements for the sessions and to send you the final report.

This will not be attached to the information collected during the research sessions, where children's names will be changed into code (e.g. numbers) to make it anonymous. We will not collect special category data (e.g. medical, faith or ethnicity info) for this research.

The Manchester Metropolitan University (MMU) is the Data Controller in respect of this research and manages personal data in accordance with the General Data Protection Regulation (GDPR) and the University's Data Protection Policy.

All information collected for this study will be kept strictly confidential and will be seen only by myself and my university supervisors, Professor Maggie MacLure and Dr Christina MacRae. If you withdraw from the study, we will only retain your personal information for as long as is necessary to complete the project, and it will not be used in the analysis or publication.

All data (video, photographic, audio, bio-data and fieldnotes) will be stored on the project computer, or an encrypted password protected data storage device. When not in use these will be stored in a locked cupboard in the Faculty of Education, MMU. After five years, all data will be destroyed except for what is published in reports and training materials, all of which will be anonymous. For further information about use of your personal data and your data protection rights please see the University's Data Protection Pages.

10. Who has officially reviewed this research project?

This project has been reviewed by Professor Rachel Holmes and Dr Abigail Hackett at Manchester Metropolitan University, and by the White Rose Doctoral Training Partnership. This is to check the project meets rigorous legal and ethical standards before commencing. The researcher also has full DBS clearance to work with children and vulnerable adults.

11. Who do I contact if I have concerns about this study or I wish to complain?

For any questions about the research, please email: ruth.churchill-dower@stu.mmu.ac.uk. If you have any concerns about the ethics of this research, please contact Ricardo Nemirovsky (Chair of the Ethics Committee) at r.nemirovsky@mmu.ac.uk.

If you have any concerns regarding the personal data collected from you, our Data Protection Officer can be contacted by email at legal@mmu.ac.uk, by calling 0161 247 3331 or in writing to: Data Protection Officer, Legal Services, All Saints Building, Manchester Metropolitan University, Manchester, M15 6BH. You also have a right to lodge a complaint in respect of the processing of your personal data with the Information Commissioner's Office as the supervisory authority. Please see: https://ico.org.uk/global/contact-us/

THANK YOU FOR CONSIDERING TAKING PART IN THIS PROJECT

Appendix D: Participant Consent Forms

Manchester Metropolitan University

EthOS ID: Participant Identification Number:

CONSENT FORM FOR PARENTS AND GUARDIANS – Stage One

Title of Project: **Spaces of Difference - Attuning through immersive dance with children who sometimes don't speak**

Name of Researcher: **Ruth Churchill Dower**

	Please tick one box YES	NO
1. I confirm that I have read the information sheet dated..... for the above study. I have had time to consider the information, ask questions and have had these answered satisfactorily.	☐	☐
2. I understand that my, and my child's, participation is voluntary and that we are free to withdraw at any time without giving any reason, without our legal rights being affected. I understand that we can still take part in the activities even after consent is withdrawn but that our information will not be used.	☐	☐
3. I understand that Ruth Churchill Dower will invite the views of participants in the study, both adults and children, using appropriate methods such as choosing images or making gestures, and that no expectation will be placed on any participant to speak at any time.	☐	☐
4. I agree to photos, video clips, audio recordings and fieldnotes (*the data*) of myself and my child being made as part of the research process.	☐	☐
5. I agree that this data may be used for training purposes, in professional or academic conferences or published in printed reports, websites and training materials directly related to this study, subject to the conditions relating to anonymity in 6 below.	☐	☐
6. I understand that, although the data will be anonymised so that there will be no identifying names or locations linked to the photos or videos, faces might still be recognisable in the images. Therefore:	☐	☐
a) I agree to the use of data in the form of audio-recordings and fieldnotes……..	☐	☐
b) I agree to the use of data in the form of photos and video images……..	☐	☐
7. I agree that my child can take part in the above study.	☐	☐

Name of Adult Participant	Date	Signature
Name of Person taking consent	Date	Signature

When completed: _____ EthOS ID number: _____ Parental Consent, Version: 1.3, 28.09.2020

Manchester Metropolitan University

EthOS ID: Participant Identification Number:

CONSENT FORM FOR PARENTS AND GUARDIANS – Stage Two

Title of Project: **Spaces of Difference - Attuning through dance with children who sometimes don't speak**

Name of Researcher: **Ruth Churchill Dower**

	Please tick one box YES	NO
1. I confirm that I have read the information sheet dated..... for the above study. I have had time to consider the information, ask questions and have had these answered satisfactorily.	☐	☐
2. I understand that my, and my child's, participation is voluntary and that we are free to withdraw at any time without giving any reason, without our legal rights being affected. I understand that we can still take part in the activities even after consent is withdrawn but that our information will not be used.	☐	☐
3. I understand that Ruth Churchill Dower will invite the views of participants in the study, both adults and children, using appropriate methods such as choosing images or making gestures, and that no expectation will be placed on any participant to speak at any time.	☐	☐
4. I agree to photos, video clips, audio recordings and fieldnotes (*the data*) of myself and my child being made as part of the research process.	☐	☐
5. I agree that this data may be used for training purposes, in professional or academic conferences or published in printed reports, websites and training materials directly related to this study, subject to the conditions relating to anonymity in 6 below.	☐	☐
6. I understand that, although the data will be anonymised so that there will be no identifying names or locations linked to the photos or videos, faces might still be recognisable in the images. Therefore:	☐	☐
a) I agree to the use of data in the form of audio-recordings and fieldnotes……..	☐	☐
b) I agree to the use of data in the form of photos and video images……..	☐	☐
7. I agree that my child or I may wear a multi-sensory device at times during the project and that data from these devices may be used in the same way as in no. 5.	☐	☐
8. I agree that my child can take part in the above study.	☐	☐

Name of Adult Participant	Date	Signature
Name of Person taking consent	Date	Signature

When completed: _____ EthOS ID number: _____ Parental Consent, Version: 1.3, 28.09.2020

Appendix E: Propositions for oddkin movement

Examples of oddkin propositions during the fieldwork sessions

Stage One: Zoom one-to-one sessions

Session 1 Propositions for exploring touch & hand dancing	• Intro song with Bobble (hand-puppet). • Exploring hands – stroking, poking, drawing, waving, holding, shaking, washing, clasping, tickling, patting, scratching, clapping, wiping, touching. Closer looking at lines, creases, bumps, cracks, colours, different textures. • Moving hands – mirroring patterns. • Dancing hands – mirrored dances, finger dances, hand & arm dances. • Dancing materials+hands – peg explorations, finger+peg dances, hand+peg dances, peg family stories. • Bobble dancing & movement reflections.
Session 2 Propositions for exploring feet, legs & blanket dancing	• Intro song with Bobble. • Exploring gentle rocking movements – pushing to the edges of falling • Exploring gentle rolling movements - pushing to the edges of momentum • Feet dancing • Blanket dancing • Bobble dancing & movement reflections.
Session 3 Propositions for exploring animal & sock-puppet dancing	• Intro song with Bobble. • Animal dancing. • Giraffes Can't Dance – twirling, rock'n'rolling, tango-ing, cha-cha-cha-ing, reel-ing, disco-ing. • Suitcase of Adventures – unwrapping & exploring 1st gift. • Sock-puppets moving together. • Improvised sock-puppet adventure & violin folk dancing. • Bobble dancing & movement reflections.
Session 4 Propositions for exploring close-up bodies, flight & feather dancing	• Intro song with Bobble • Suitcase of Adventures – unwrapping & exploring 2nd gift • Distorted body/finger/hand dancing w magnifying sheets. • Suitcase of Adventures – unwrapping & exploring 3rd gift. • Flying with feathers & ribbons. • Feather races & mirror feather movements across space. • Feather weaving. • Bobble dancing & movement reflections.

Session 5 Propositions for exploring stick dancing & body shapes with balls & maquette	• Intro song with Bobble. • Sticks dancing with small branches. • Sticks exploration of bodies. • Ball crawling, rocking & flying. • Suitcase of Adventures – unwrapping & exploring 4th gift. • Body-shape-making with wooden maquette • Punchinello song with movement exploration, entangled body shapes, balances, flights. • Bobble dancing & movement reflections.
Session 6 Propositions for exploring floating, wrapping & climbing dances	• Intro song with Bobble. • Suitcase of Adventures – unwrapping & exploring 5th gift. • Silk scarf dancing, twirling, flapping, wafting. • Wrapping dances with vibrational feels. • Animal dancing entangling new movements. • Mountain climbing. • Rock'n'roll body climbing • Suitcase of Adventures – unwrapping & exploring 5th gift. • Bubble play, floating, dancing. • Bobble dancing & movement reflections.

Stage Two: gallery group sessions

Session 1 (Transition to group working on Zoom) Propositions for exploring Hands & materials	• Introductions (including Bobble) • Welcoming group together • Hide and Seek with movement materials • Peg Family hand dances • Scarf dances – flying with insects • Animal dancing songs, rock'n'rolling • Sharing favourite materials/objects with Bobble • Bobble dancing & movement reflections
Session 2 Propositions for exploring water & forces	• Intro song with Bobble • Intro to space - Tents, toilets, sanitisers, café, safety in movement, etc. • Intros to people – Parents to intro themselves & kids • Intros to environment - Paintings tour, dances to painting movements & forces • Rock 'n' roll dancing • Water & brush dancing • Tent discovery • Bobble dancing & movement reflections

Session 3 Propositions for exploring sticks, webs & lines	• Intro song with Bobble • Sticks dancing song with small branches • Sticks balance, flying & line walking • Wool webs & dancing with wool • Lycra boats in between wool webs • Bobble dancing & movement reflections
Session 4 Propositions for exploring paint & projections	• Intro song with Bobble • Finger dancing with body parts • Tent-torch dancing • Collaborative paint dancing w bamboo-stick-paint-brushes • Projector bio-sensor dancing to traces on screen • Reflections dancing to video assemblages to date • Bobble dancing & movement reflections

Appendix F: List of research data

Data created during this study includes:

- Zoom recordings of the Stage One fieldwork sessions (34 hrs)
- Fieldnotes from reviewing the above Zoom recordings
- Emails with feedback from research families after individual Zoom sessions
- Zoom recordings of feedback discussions with parents after all the Stage One sessions (5 hrs)
- Fieldnotes from reviewing the above feedback recordings
- Video footage of the Stage Two gallery sessions recorded on GoPro cameras (16 hrs)
- Fieldnotes from reviewing the above GoPro video footage
- Emails with feedback from research families after individual gallery sessions
- Transcript of discussions on private Facebook Messenger group for all participants

Data created on dates as set out below:

Fieldwork session date	Fieldwork session type	Human participants involved	Data created
03.12.20	Zoom session 1	SB + CB	Zoom video - 1 hr Video fieldnotes + Email feedback
04.12.20	Zoom session 1	SN + FN	Zoom video - 1 hr Video fieldnotes + Email feedback
04.12.20	Zoom session 1	KS +AS + IS + NS	Zoom video - 1 hr Video fieldnotes + Email feedback
05.12.20	Zoom session 1	ES + OS	Zoom video - 1 hr Video fieldnotes + Email feedback
08.12.20	Zoom session 2	SN + FN	Zoom video - 1 hr Video fieldnotes + Email feedback
10.12.20	Zoom session 2	SB + CB	Zoom video - 1 hr Video fieldnotes + Email feedback
11.12.20	Zoom session 1	FW + CW	Zoom video - 1 hr Video fieldnotes + Email feedback
11.12.20	Zoom session 2	KS +AS + IS + NS	Zoom video - 1 hr Video fieldnotes + Email feedback
12.12.20	Zoom session 2	ES + OS	Zoom video - 1 hr Video fieldnotes + Email feedback
17.12.20	Zoom session 3	SB + CB	Zoom video - 1 hr Video fieldnotes + Email feedback
18.12.20	Zoom session 3	SN + FN	Zoom video - 1 hr Video fieldnotes + Email feedback
18.12.20	Zoom session 2	FW + CW	Zoom video - 1 hr Video fieldnotes + Email feedback
18.12.20	Zoom session 3	KS + IS	Zoom video - 1 hr Video fieldnotes + Email feedback
19.12.20	Zoom session 3	ES + OS	Zoom video - 1 hr Video fieldnotes + Email feedback
06.01.21	Zoom session 1	LW + PW	Zoom video - 1 hr Video fieldnotes + Email feedback
07.01.21	Zoom session 4	SN + FN	Zoom video - 1 hr

			Video fieldnotes + Email feedback
07.01.21	Zoom session 4	SB + CB	Zoom video - 1 hr Video fieldnotes + Email feedback
08.01.21	Zoom session 3	FW + CW	Zoom video - 1 hr Video fieldnotes + Email feedback
08.01.21	Zoom session 4	KS + IS	Zoom video - 1 hr Video fieldnotes + Email feedback
09.01.21	Zoom session 4	ES + OS	Zoom video - 1 hr Video fieldnotes + Email feedback
13.01.21	Zoom session 2	LW + PW	Zoom video - 1 hr Video fieldnotes + Email feedback
14.01.21	Zoom session 5	SN + FN	Zoom video - 1 hr Video fieldnotes + Email feedback
14.01.21	Zoom session 5	SB + CB	Zoom video - 1 hr Video fieldnotes + Email feedback
15.01.21	Zoom session 4	FW + CW	Zoom video - 1 hr Video fieldnotes + Email feedback
15.01.21	Zoom session 5	KS + IS	Zoom video - 1 hr Video fieldnotes + Email feedback
16.01.21	Zoom session 5	ES + OS	Zoom video - 1 hr Video fieldnotes + Email feedback
20.01.21	Zoom session 3	LW + PW	Zoom video - 1 hr Video fieldnotes + Email feedback
21.01.21	Zoom session 6	SN + FN	Zoom video - 1 hr Video fieldnotes + Email feedback
21.01.21	Zoom session 6	SB + CB	Zoom video - 1 hr Video fieldnotes + Email feedback
22.01.21	Zoom session 5	FW + CW	Zoom video - 1 hr Video fieldnotes + Email feedback
22.01.21	Zoom session 6	KS + IS	Zoom video - 1 hr Video fieldnotes + Email feedback
23.01.21	Zoom session 6	ES + OS	Zoom video - 1 hr Video fieldnotes + Email feedback
03.02.21	Zoom session 4	LW + PW	Zoom video - 1 hr Video fieldnotes + Email feedback
10.02.21	Zoom session 5	LW + PW	Zoom video - 1 hr Video fieldnotes + Email feedback
18.02.21	Zoom session 6	FW (feedback)	Email feedback
23.02.21	Zoom session 7	SN (feedback)	Zoom video - 1hr transcription notes
03.03.21	Zoom session 7	ES (feedback)	Zoom video - 1hr transcription notes
04.03.21	Zoom session 7	SB (feedback)	Zoom video - 1hr transcription notes
12.03.21	Zoom session 7	KS (feedback)	Zoom video - 1hr transcription notes
18.03.21	Zoom session 6	LW (feedback)	Zoom video - 1hr transcription notes

Total Stage One data: 39 hrs

18.05.21	Gallery Session - Pre-visit	SN + FN	Fieldnotes
15.05.21	Gallery Session 1 (on Zoom as intro to group)	SB + CB SN + FN ES + OS KS + IS + AS + NS	Zoom video - 1hr Video excerpt fieldnotes Stills extracted for software manipulation
22.05.21	Gallery Session 2	SB + CB SN + FN ES + OS KS + IS + AS + NS	GoPro videos x4 (diff positions) - 1 hr GoPro360 video - 1 hr Video excerpt fieldnotes Stills extracted for software manipulation
05.06.21	Gallery Session 3	SB + CB SN + FN ES + OS KS + IS	GoPro videos x4 (diff positions) - 1 hr GoPro360 video - 1 hr Video excerpt fieldnotes Stills extracted for software manipulation
12.06.21	Gallery Session 4	SB + CB SN + FN KS + IS	GoPro videos x4 (diff positions) - 1 hr GoPro360 video - 1 hr Video excerpt fieldnotes Stills extracted for software manipulation

Total Stage Two data: 16 hrs

Total research data: 55 hrs

01.12.20 - 30.07.21	Private Facebook Messenger Group	SB SN ES KS FW LW	Several messenger posts from participating parents sharing ideas and feedback on the fieldwork sessions.
01.12.20 - 06.09.21	Email correspondence	SB SN ES KS FW LW	Several emails between myself and participating parents for information and feedback on the research, consent forms and fieldwork sessions.

Appendix G: Permissions for reproduction of published material

Ruth Churchill Dower **Monday, September 2, 2024 at 19:12:55 British Summer Time**

Subject: FW: Permission granted to reproduce Ruth Churchill Dower 's CPI article.
Date: Monday 2 September 2024 at 18:18:43 British Summer Time
From: *Contact details redacted*
To:

Attention: The PhD Examiners for Ruth Churchill Dower's PhD dissertation

This e-letter grants permission to Ruth Churchill Dower to reprint her informative article, (identified below), in whole or in part, in her Doctor of Philosophy (PhD) Dissertation submitted to the Manchester Metropolitan University.
Quite understandably, as the sole author, Ruth Churchill Dower, has full copyright to the article, and full permission to use and reuse it as the author sees fit.

Author's Name: Ruth Churchill Dower
Article entitled: "Too Much Kin in the Game? The Intimate Reciprocities Available in Not Speaking".
Published in the special issue of Cultural and Pedagogical Inquiry (CPI), edited by Nikki Fairchild, Carol Lee, and Kay Sidebottom.
Issue entitled: Posthumanism: A Desire for a New Humanity.
In: CPI, Vol. 14, No. 1 (2022), pages 139-151.

If you have any questions about the work,do not hesitate to contact me at the following:

Contact details redacted in final publication

Yours sincerely,
Dr. Cecille DePass.
Co-founder and Co-editor, Cultural and Pedagogical Inquiry.
Former Chair/President, Education Sectoral Commission CC-UNESCO.
Associate Professor Emerita,
University of Calgary.

Appendix H: List of publications

Recent Publications:

Churchill Dower, R., 2024. Moving Stories: Case studies in attuning to children's unspoken expressions through movement. In, 'That's my story! Drama for confidence, communication and creativity in KS1 and beyond' by Adam Power-Annand. Routledge.

Churchill Dower, R., 2023. Body-listening as an act of anthropocentric resistance. 6th European Congress of Qualitative Inquiry proceedings book, p.10-16 (2023).

Churchill Dower, R., 2022. Contact Improvisation as a force for expressive reciprocity with young children who don't speak. LEARNing Landscapes Journal (2022).

Churchill Dower, R., 2022. Too Much Kin in the Game? The Intimate Reciprocities Available in Not Speaking. Cultural and Pedagogical Inquiry (2022).

Churchill Dower, R., 2020. Creativity and the arts in early childhood – supporting young children's development and wellbeing. Jessica Kingsley publishers (2020).

Forthcoming Publications:

Churchill Dower, R., 2024. Movement methodologies for postdevelopmental pedagogies - Or why movement play is important. In *Postdevelopmental Approaches to Play,* Eds: Osgood, J., and de Rijke, V. Bloomsbury.

Churchill Dower, R., 2024. How might body-listening open up space for body-languaging? In, *Language, Place and the Body in Early Childhood Literacies: Theory, Practice and Social Justice*, a volume in the Expanding Literacies in Education series. Eds: Hackett, A., Badwan, K., Churchill Dower, R., Farah, W., Flewitt, R., Holmes, R., MacRae, C., Nair, V.,, Shannon, D. Routledge.

Academic Conference Presentations:

Becoming apparatuses: cutting research(ers) together-apart (with Hannah Hogarth and Charlotte Rankin, University of Bath) for the European Congress of Qualitative Inquiry (ECQI), Helsinki, January 2024

Diffractive body-listening as anthropocentric resistance for Reconceptualising Early Childhood Education (RECE) conference, Manchester, September 2023

Co-creating a pedagogy of body-listening to value the small languages of relationality as part of Child + Care-full + Creative Practices in multiple contexts seminar for the Craft of Care Lab Manchester, September 2023

Body-listening as an act of anthropocentric resistance - European Congress of Qualitative Inquiry (ECQI), Portsmouth, January 2023

The infrathin of post-graduate scholarship: Stories of thinking-with/apart/together/alongside (with Dr Christina MacRae and Dr Laura Trafí-Prats) for 'Thinking Intersections: Research, relations and

reconfigurations' as part of York University and Western University's *Disrupting Early Childhood* series 2023 (online).

Moving bodies in shifting fields (with Dr Christina MacRae, Dr Laura Trafí-Prats) - Arts Based Educational Research Symposium for the British Educational Research Association (BERA), Liverpool, September 2022.

To be or not to be – how Zoom unwraps a 3 year old's liminal spaces seminar for 'Leaping into the Liminal', Education Social Research Institute (ESRI) Postgraduate Research Conference, June 2021 (online).

Spaces of difference: attuning through immersive dance with children who sometimes don't speak, seminar for the White Rose Doctoral Training Partnership (WRDTP) Postgraduate Research Conference, 2020 (online).

Spaces of difference: supporting nonlingual ways of being in movement, seminar for the Education Social Research Institute (ESRI) Postgraduate Research Conference, June 2020 (online).

Appendix I: Inspiration for this journey

Poem written for a postgraduate conference presentation at MMU in 2019, to introduce this research.

Prelude of a Posthuman Parent

Dance is dis-comfortable. Discomfort is dance.
The precise placement of a heel, a toe, or a torso
To me is like felling trees.
I have no idea where each one will land or how.
The potentiality of expressing my matter
Is to be resisted and contended
The attention to sensation and
The lapse of my lips
Is a modern foreign language
I have not yet learned.
And yet…
And yet when you don't speak
And everyone looks with their eyes
full of expectation and coercion and suggestion
They are blind to your already myriad expressions
Covert, playful, inviting, resisting
But not lacking in possibility or intentionality
Just apparently invisible to the eye
that doesn't listen with its whole body
Diverted by Descartes to gaze away from the sensorium
Subverted by colonialist notions of 'cherished child'
Hidden, repackaged and labelled by reductive measure…
Well, I want to see *you*, to know-with you, to not-speak-for you
And for that, my dis-comfortable dance will suffice

Case Study at a Children's Centre, Higher Blackley, Manchester:

When Daniel's dog died, he showed no outward signs of emotional response to the death of his best friend. Not speaking was de rigueur for this four-year-old. In fact, he tried hard to avoid drawing any attention to his movements or expressions. Until the day a dance artist worked in his nursery. She offered curious propositions with unusual, tactile materials, spent time interacting with the children through movement and carefully chosen music instead of words. Daniel became gradually engrossed in this music and, donning his favourite ballerina dress and grasping a tambourine, delineated long, graceful lines with his body to the rhythms. He didn't appear to see or hear anyone else and, even when the music faded out, his body carried on moving, immersed in, and responding to, forces beyond our understanding. At this point he sang a simple song about his dog having died and being happy in heaven, whilst his body continued to make graceful shapes with the tambourine across the space. None of his educators or parents had witnessed this intensity of his bodily and verbal expression before. This, and many similar examples in early years settings, form the backdrop to this research.