Title: The Mesh of Playing, Theorising and Researching in the Reality of Climate Change: Creating the Co-Research Playspace

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Abstract

This chapter develops the concept of the 'co-research playspace' as a methodological figure for working with children as co-researchers and co-artists. This concept emerged through our collaborative research and artistic co-production with 135 children who participated in the Climate Change and Me project (2014-2016) in Northern NSW, Australia. Drawing on Winnicott's concepts of 'transitional space' and 'transitional objects' in relation to children's art and environmental play, we locate the co-research playspace within the mesh of children's playing, theorising and researching in the reality of climate change. In developing the concept of the co-research playspace, we specifically focus on that ways that iPads functioned as transitional objects within the Climate Change and Me project. This leads us to further analyse the ways that children used digital video as a 'transitional medium' that allowed them to experiment with new forms of co-production and creative resistance. Through our analysis of films produced by children in the project, we outline a series of three political-aesthetic modes of response to climate change that break with the predominant moralistic discourse surrounding the issue: I. critical interventions in public space; II. wild, absurd, and improvisational disruptions; and III. the creation of thought experiments and alternative worlds. The chapter concludes with the consideration of 'children as para-academic researchers', a concept that emphasises children's abilities to invent their own modes of co-creation and critical inquiry that disrupt normative research protocols and associated adult expectations.

Keywords: Childhoodnature, Climate Change, Children as Researchers, Children as Theorists, Environmental Play, Transitional Phenomena, Research Playspace

Introduction

> We find ourselves currently facing a global climatic crisis due to each and every one of us, where each new thing is only admired only for a short time before we establish a new desire; a cycle which repeats continually. We must change our values and what we believe is important to us- this change mustn't only occur in a small minority of the population, but almost all seven billion of the humans whom inhabit Earth. (Nikki Whitehead, age 12, co-researcher in the Climate Change and Me project)

In this Chapter we consider an emerging mesh of interconnections between the reality of climate change, children as co-researchers/artists/theorists, and the affordances of environmental play. The above quote introduces our chapter with a critical and insightful series of comments made by a 12-year old co-researcher from our project *Climate Change and Me* (2014-2016). Nikki's words cut to the heart of the argument that we make throughout this chapter, namely that children and young people are capable of producing insightful and intellectually rigorous research outputs if given the opportunity to authentically initiate and develop their own critical and creative projects within what we call the 'co-research playspace'.

Our chapter begins with a discussion of the interpenetrating phenomena of climate change and child-framed research, highlighting the need for innovative and participatory approaches to climate change education that move beyond adult-centred narratives and onto-epistemologies. This leads to a discussion of D.W. Winnicott's (1989) book *Playing and Reality*, focusing on concepts of 'transitional space', the 'transitional object', and the 'good-enough holding environment'. We use these concepts to develop a theoretical understanding of the relational oscillations that occur between children's interior and exterior worlds, focusing on children's play and experimentation as the crux or pivot point for environmental learning and dynamic co-development. We then turn to the Climate Change + Me (CC+Me) Project, which involved working with 135 children and young people as co-researchers over a three-year period in NSW, Australia. We specifically focus on the methodological innovations that emerged through children's improvisational use of iPads to create their own films in

response to the issue of climate change. In theorising the iPad as a transitional object and video as what we call a 'transitional medium', we offer insights into children's use of mobile digital technologies as tools for creative experimentation and knowledge co-production. Through our analysis of films produced by children in the project, we outline a series of three political-aesthetic modes of response to climate change that break with the predominant moralistic discourse surrounding the issue: I. critical interventions in public space; II. wild, absurd, and improvisational disruptions; and III. the creation of thought experiments and alternative worlds. The chapter concludes with the consideration of 'children as para-academic researchers', a concept that emphasises children's abilities to invent their own modes of co-creation and critical inquiry that break with normative research protocols and associated adult expectations.

The Political Realities of Climate Change

> In my first Inaugural Address, I committed this country to the tireless task of combating climate change and protecting this planet for future generations.
> Two weeks ago, in Paris, I said before the world that we needed a strong global agreement to accomplish this goal -- an enduring agreement that reduces global carbon pollution and sets the world on a course to a low-carbon future.
> A few hours ago, we succeeded. We came together around the strong agreement the world needed. We met the moment. (Obama, 2015)

In the above quote taken from Obama's (2015) speech on the Paris Climate Agreement, we note the assured sense of triumph, achievement, and consensus around an 'enduring agreement' that will benefit not only the individual nations involved, but the entire world. A decade ago, Kevin Rudd (a former Prime Minister of Australia) similarly described climate change as "the great moral challenge of our generation" (2007). The impetus for such political statements has been the irrefutable ratification of anthropogenic climate change and its associated impacts on Earth by distinguished scientists worldwide (Intergovernmental Panel on Climate Change, 2001, 2007, 2014).   Notwithstanding, the political landscape shifted in 2016 with the election of Donald Trump as President of the United States of America. Trump

is an overt climate change denier, and the current political climate has become saturated with Twitter comments such as:

> **Donald J. Trump** @realDonaldTrump 29 Dec 2017 (Trump, 2017)
> In the East, it could be the COLDEST New Year's Eve on record. Perhaps we could use a little bit of that good old Global Warming that our Country, but not other countries, was going to pay TRILLIONS OF DOLLARS to protect against. Bundle up!
> **137,498 replies   66,668 retweets   208,740 likes**

> **Donald J. Trump** @realDonaldTrump 6 Nov 2012 (Trump, 2010)
> The concept of global warming was created by and for the Chinese in order make U.S. manufacturing non-competitive.
> **13,000 replies 105,014 retweets   67,673 likes**

These radically disparate climate change messages have the potential to be confusing and derailing when they are projected onto the public sphere, causing climate change to take on an abstract quality as an amorphous, ideologically-driven 'issue' rather than a material 'reality'. With the rise of neo-conservative populism and reactionary forms of nationalism in the United States, Australia, and Europe, citizens who feel dispossessed by the moral superiority of neo-liberal politicians (such as Obama and Rudd) have been willing to vote and act against their own self-interests, and in the case of climate change, against the interests of the entire world. Indeed, these populist knee-jerk reactions against the identity politics and elitist moral discourses of the Democratic party in the United States have led to the seemingly inconceivable reality of Trump's election, and subsequently, his withdrawal of the United States from the Paris Climate agreement in 2017. Only two years after Obama's triumphant proclamation of the Agreement as a moral victory that 'the world needed' we see the political climate moving in an entirely opposite direction, as disenfranchised populations grasp desperately for any vestige of agency, belonging, and understanding in a 'post-truth' world.

By turning climate change into a moral issue, the mass politicisation of climate change has also served to overshadow and even negate the realities of those who are (and will be) most affected by environmental catastrophes. While the implication may be that *anyone* can have

a moral position on climate change in a 'post-truth' political climate, the reality is that only a very small group of privileged individuals actually gain public media attention for their views on the issue. Unfortunately, all of these political and so-called 'moral' contortions of climate change have been occurring *at the same time* as the number of climate change refugees (human and more than human) and climate change disaster events have drastically increased. This means that children and young people, one third of the world's population, are grossly overlooked in the moral politicising of climate change. Children and young people's ideas, beliefs, understandings, and experiences of climate change simply do not matter or count in a post-truth world in which anybody can have an opinion about anything, but only the opinions of the wealthy and powerful actually matter.

The reality is that the impact of the climate change turmoil being forced upon the world's children and young people is immeasurable. While research is inconclusive about children's climate change fears, an Australian study of 10-14 year olds found that 50% of children were deeply concerned about climate change, while 25% of children were concerned that the world would end in their lifetimes (Tucci, Mitchell & Goddard, 2007). Cutter-Mackenzie, Payne and Reid (2011) note that children and young people appear to oscillate between a fear of ecology and an ecology of fear. It is thus widely acknowledged (Kagawa & Selby, 2009; Walker, 2017) that novel forms of climate change education are necessary for and by children and young people worldwide, who are already being forced to come to grips with the ambiguous realities of climate change. Climate change education, however, remains an emergent and under-theorised field that has only recently been considered independently from established fields such as environmental education, science education and education for sustainable development (Blum, Nazir, Breiting, Goh, & Pedretti, 2013; Læssøe, Schnac, Breiting, & Rolls, 2009). In this Chapter and as our body of research in climate change education is evidencing (Cutter-Mackenzie & Rousell, 2017, forthcoming; Rousell & Cutter-Mackenzie, 2015; Rousell, Cutter-Mackenzie, & Foster, 2017), climate change education presents a meaningful platform not only for youth voices, but also for a genuine galvanisation of children and young people's political agency in the public domain. We now turn to a discussion of children as researchers/theorists in climate change education, before discussing specific theoretical and methodological developments within the context of our research in this area.

Children as Researchers/Theorists

In our systematic review of climate change education research, we found that a very minor contingent of the literature has been orientated towards child-framed approaches to climate change education (Rousell & Cutter-Mackenzie, 2018). Only a small selection of papers could be found which drew on the unique perspectives and experiences of children and young people to inform new frameworks and methods for teaching and learning about climate change (see, for instance, Tanner, 2010; Lawler & Patel, 2012). While the idea of children as researchers or theorists is not necessarily a new concept, the methodological and theoretical potentials of the concept have yet to be thoroughly explored. The concept of 'children as researchers' has its roots in participatory research methodologies and the new sociology of childhood movement promoting the active involvement of children and young people in research (Barratt Hacking, Cutter-Mackenzie, & Barrratt, 2013). The concept also coincides with the Convention on the Rights of the Child (UNICEF, 1989) which provoked a renewed consideration of children's rights, with 196 countries currently committed to the convention with the exception of the United States of America. However, it was not until the early 2000s that the extensive development of child-framed research methodologies began to emerge (Bell, 2008; Christensen & James, 2000; Kellett, 2005, 2010; Morrow, 2008; Skelton, 2008). A resounding tenet of child-framed research methodologies has been the positioning of the child as an agential subject, rather than a passive object of research. Kellett (2005, p. 2) has argued that children and young people should be "acknowledged as experts on their own lives and if adults genuinely want to understand children and childhood, better ways to seek out child perspective and unlock child voice must be sought". Such calls have seen the development of pupil/student voice, photovoice and videovoice as methods that foreground children's subjective positioning and agencies within the context of social research (Cook-Sather, 2006, 2007; Fielding, 2004).

While there has been a focus on child-framed research methodologies in educational and social research broadly, it has only been in the last decade that researchers working across childhood studies and nature (including environmental education) have actively worked with children as active researchers. For example, in the first international research handbook on environmental education there were surprisingly few child-focussed chapters, and none that focused substantially on the arts and creativity. The chapter 'Children as Active Researchers:

The Potential of Environmental Education Research Involving Children' authored by two of the Editors of this handbook (2011) was one of the few exceptions. Barratt Hacking, Cutter-Mackenzie and Barratt (2013) utilised Hart's (1997) ladder of participation (see Arnstein, 1969) as a way of illustrating varying forms of participation in child-framed research (see Figure 1) in environmental education.
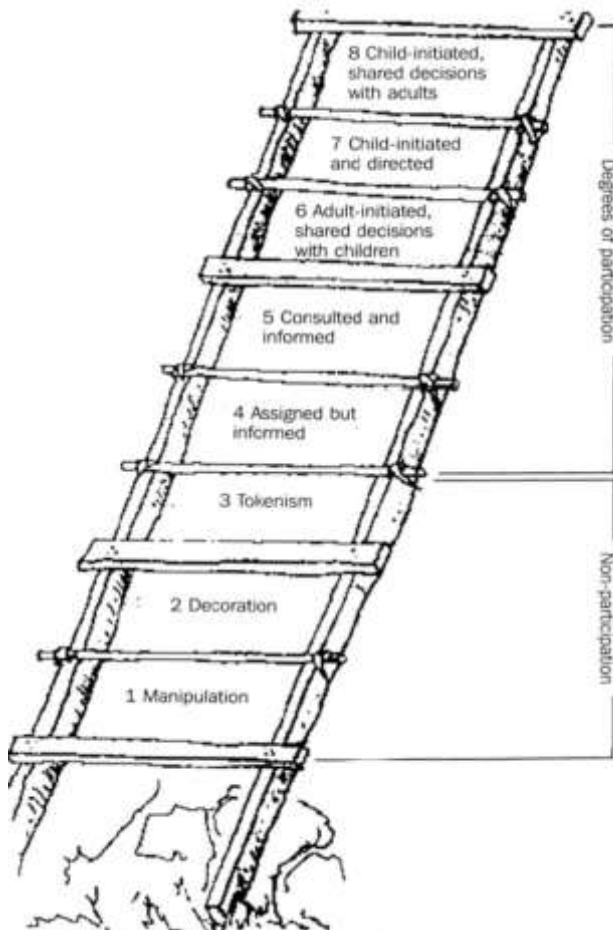

Figure 1: Hart's (1997) Ladder of Participation (<mark>used with permission</mark>?)

While we acknowledge the cultural limitations of the ladder of participation (2018, Under Review), at the time this model was useful in distinguishing between various degrees of children's non-participation (levels 1 to 3) and participation (levels 4 to 8). From levels 1 to 3, non-participation can be defined as manipulation (e.g, pretending research is done by children), decoration (e.g., children used to help strengthen a research agenda) and tokenism (e.g., children are given no or little choice in research). At the higher rungs of the ladder children's participation gradually increases, with level 8 representing child-initiated

participation and shared decision-making with adult researchers.   Building on Hart's Ladder of participation, Barratt Hacking, Cutter-Mackenzie and Barratt (2013, p.) outlined a methodology of 'children as active researchers' that detailed further degrees of child participation in participatory research (see Figure 2).   Their focus on fostering children's capacities to initiate and develop their own research practices is a key movement forward in this regard.

Figure 2: *Child Framed Participatory Research* (Barratt Hacking et al., 2013)

Children as Active Researchers	*Young people-initiated, shared decisions with adults*	This happens when projects or programs are initiated by young people and decision-making is shared between young people and adults. These projects empower young people while at the same time enabling them to access and learn from the life experience and expertise of adults.
	Young people-initiated and directed	This step is when young people initiate and direct a project or program. Adults are involved only in a supportive role.
	Adult-initiated, shared decisions with young people	Occurs when projects or programs are initiated by adults but the decision-making is shared with the young people.
	Consulted and informed	Happens when young people give advice on projects or programs designed and run by adults. The young people are informed about how their input will be used and the outcomes of the decisions made by adults.
Children as Assigned Researchers	*Assigned but informed*	This is where young people are assigned a specific role and informed about how and why they are being involved.

Despite these advances, the vast majority of research described as 'child-framed' research continues to be adult-initiated and determined predominantly by adult agendas and intellectual framings. With the drudgery of ethics approval processes and impoverished funding conditions, undertaking research that is authentically child-initiated is inherently risky

and incredibly complicated. However, as we discuss later in this chapter, authentically child-initiative research can be made possible through the development of a 'co-research playspace' that supports the development of children's own research interests and creative methods of inquiry.

Irrespective of the development of the concept of children as researchers, the concept of children as theoristis or children as philosophers has been much slower to develop in depth and rigour. While Soto (2005, p. 2) claims that children make the 'best theorists', she/he presents or represents little evidence which demonstrates this claim. Rather there is a reliance on narrative inquiry and children's drawings as a means of interpreting theory (from an adult's perspective). That is not to say though that children cannot theorise – such a notion would be absurd. Rather the potential for children to become theorists has only barely been explored, with the assumption that adults are intellectually superior to children being the limiting factor. This is where play and creativity have the potential to open theoretical doors or windows into childhood, revealing alternative spaces in which children's theoretical acumen is acknowledged. Einstein is often misquoted as saying that "Play is the highest form of research". It was Scarfe (1962) who actually wrote that "The highest form of research is essentially play". What Einstein did say is that "combinatory or associative play seems to be the essential feature in productive thought" (Cited in Scarfe, 1962, p. 120). In the following section, we briefly track the development of children's play as a research focus before exploring Winnicott's theory of environmental play as an oscillation between children's interior and exterior worlds.

Playing, Reality, and Object-Relations

Play theory and research is predominantly situated in early childhood education and developmental psychology. Play as a concept or theory has not readily crossed or transcended disciplinary boundaries in other areas of direct relevance, such as child-framed research methodologies and sociologies of childhood. Notwithstanding, Fredrich Froebel (1782-1852) is often portrayed as a seminal theorist in play and is widely known for coining the concept of the 'kindergarten' (translation - children's garden). Froebel's ideas still firmly endure in early childhood education and, like other theorists of experiential education (Dewey, 1938, 1956; Vygotsky, 1986, 1997, 2004), Froebel placed deep importance on self-elected activities where

adult seldom, yet delicately, intervene in children's play (Wood & Attfield, 2005). Froebel (1967, p. 83) writes that:

> Play is the highest form of level of child development. It is the spontaneous expression of thought and feeling – an express which his [sic] life requires. This is the meaning of the word play. It is the purest creation of the child's mind as it is also a pattern and copy of the natural life hidden in man [sic] and in all things.

Wood and Attfield (2005) position Froebel, Rousseau and Dewey as seminal theorists in shifting views of early childhood education with play seen as critical to children's learning and development. However, these theorists often position the child at the centre of learning with the environment as a backdrop, prop, setting or even a 'third teacher' (Dodd-Nufrio, 2011). In backgrounding the environment as the passive context for children's social, physical, and mental development, they have not adequately considered the child and nature as interpenetrating and mutually entangled worlds, or what the editors of this handbook frame as childhoodnature.

To develop a more relational understanding of play that mutually implicates children with the environments they co-inhabit with others, we turn to Winnicott's concepts of transitional space and transitional objects as developed in his book *Playing and Reality* (1989). Winnicott initially based his theories on observations of infants as they separated from their mothers and began to experiment with the affordances and constraints of their physical environments. Transitional space, as Winnicott describes it, is a spatio-temporal process that puts inner realties and outer realities into relation through playful inquiry and creative experimentation (Ellsworth, 2005, p. 60). The element of play is central to the concept of transitional space, as it is only through play that the passages and movements between inner and outer worlds can be extended, explored and sustained.

> Winnicott saw [transitional space] as a relation of an unknowable (to itself as well as to others) mind/brain and body 'interior' to an unknowable and radically other 'exterior', and this transit across the space of difference between inside and outside is transitional because encounters with the 'not me' that one find there

and the actions that we take in response to such encounters change both the inside of the self and the outside of the social environment. He saw the convergence of inner and outer events and qualities that inaugurates transitional space as a *transitional phenomenon* because it happens in time, not only in space. (Ellsworth, 2005, p. 60)

Winnicott (1989) also thought of transitional space as *potential space*, akin to what Deleuze and Guattari (1994) describe as the virtual plane of immanence on which new conceptual territories are formed, navigated and sustained. The virtual is, in this sense, a dimension of emergence, creation and potential that is "like a field of energies that have not yet been expended, or a reservoir of potentialities that have not yet been tapped" (Shaviro, 2009, p. 35). Massumi (2002) similarly describes transitional space as the relational *field of emergence* through which an event takes place in the actualisation of its virtual potentialities. This brings the notion of transitional space into close proximity with the Spinozan concept of affect as the capacity or potential to affect and be affected, such that "the body coincides with its transitions and its transitioning with its potential" (p. 15).

While these theorists offer a range of different understandings and approaches to the concept of virtual or potential space, they also converge with Winnicott's proposition that transitional space requires some manner of participatory activation for its latent potential to be actualised. In this sense, transitional spaces and phenomena are always potential because "nothing makes them inherently or inevitably transitional" (Ellsworth, 2005, p. 60). While an artist's or a teacher's design may hold within it the possibilities for transitional spaces to emerge, it is only through imaginative, immersive and playful engagement on the part of the participant that these spaces actually come into being. The pedagogical implication of this, as Ellsworth (2005, p. 32) notes, is that transitional spaces can be designed *for*, but not predetermined or forced into existence:

> [An environment] holds the potential to become transitional space when it provides opportunities for us to both act in the world and be acted upon by it- while at the same time offering us the flexible stability we need to risk allowing ourselves to be changed by this interaction.

The qualities and elements that are conducive to unlocking the potential of transitional space are described by Winnicott (1989) in terms of a *good-enough holding environment,* which combines the immersive sensation of being held as a child with the impetus to venture beyond this security and into the unknown. A quality learning environment or playspace is, in this sense, a space that effectively holds and fosters the possibility conditions for transitional experiences to occur, often by surprise and improvisational play. There can be no template or blueprint for what a 'good enough holding environment' or 'co-research playspace' should look like. Instead, Winnicott suggests "laying out desired qualities for the design of an environment that will not be complete or realised until and unless its users enter it and find their own uses for it" (Ellsworth, 2005, p. 61). The co-research playspace is thus constructed as a flexible architecture of engagement composed of various materials, ideas, media, technologies, tools, designs and principles which children can then assemble into new and unforeseen configurations.

These flexible elements in the design of learning environments for transitional space are described by Winnicott (1989, p. 18) as *transitional objects*. Winnicott initially developed the concept to describe the ways that infants use comfort objects such as stuffed animals, blankets or pacifiers as surrogates for the mother's presence, thus enabling their transitions into new states of becoming through environmental experimentation independent from the mother. The transitional object is also closely connected with Winnicott's concept of play, as he writes that the "immensely exciting … thing about playing is always the precariousness of the interplay of personal psychic reality and the experience of control of actual objects" (p. 55). The transitional object, in this sense, offers the affective and physical continuity, stability and security needed to enter into an experimental, open-ended engagement with the unknown (p. 18). As Ellsworth (2005, p. 60) further explains, "we use transitional objects to imaginatively put ourselves in a transformative relation with the outside". Winnicott's (1989) work on transitional objects is particularly helpful in considering the oscillation between children's inner and outer worlds or realities:

> With his theory of the transitional object, Winnicott jolted all ponders on human
> nature into a realization of the never-ending oscillation between the *inner* and *outer*

worlds. By implication, a state of dependency emerges as continuous in human life, and the environment therefore as continuously important (Rodman, 2005, cited in Winnicott, 1989, p.xii).

Winnicott's predecessors such as Freud and Klein had overlooked the continuous relation between humans-nature, body-environment, and subject-object as interpenetrating and mutually conditioning realities. Contemporary theory in early childhood education and childhood studies has only recently considered children's object-relations, while social cultural theory (Brooker, Blaise, & Edwards, 2014) and cultural-historical theory (Colliver & Fleer, 2016; Fleer, 2010) continue to dominate minority Western thought on child development and learning. Winnicott's (1989) work is thus considered seminal in theorising object-relations, although Winnicott resisted disciplinary territories and boundaries. One of Winnicott's clearest explanations of object-relations appears in the tailpiece of *Playing and Reality*:

> I am proposing that there is a stage in the development of human beings that comes before objectivity and perceptibility. At the theoretical beginning a baby can be said to live in a subjective or conceptual world. The change from the primary state to one in which objective perception is possible is not only a matter of inherent or inherited growth process; it needs in addition an environmental minimum. It belongs to the whole vast theme of the individual travelling from dependence towards independence (p.204).

For Winnicott, all humans begin their lives immersed in a subjective and conceptual world, with object-relating always occurring in oscillation with subjective experience as children move towards increased independence and capacitation. This means that the subjective experience of the individual child is not divorced from the objectivity of a shared external environment, but rather, develops through dynamic interactions between interpenetrating milieus of sensibility, objectivity, and subjective experience. Winnicott's relational and dynamic notion of the playspace as a developmental system suggests that all learning is predicated on transitions *through* the environment as a meshwork of relations that is the very condition for life itself. The playspace becomes a milieu that exists both inside and outside of

the body as a relational field of emergence, a space of co-composition that is always already inhabited by multiple others.

This is where Winnicott's (1989) concept of the 'creative impulse' in conjunction with play affords the children the 'freedom' to creatively explore and learn through the environments they co-inhabit with others. We would like to consider and problematise the concept of the 'creative impulse' (p.92) in the context of children's 'co-research playspaces' in/as nature. Winnicott argued that learning takes place through creative modes of engagement and experimentation that put internal and external worlds into transformative relation. As Ellsworth (2005, p. 30) further explains, such transformations only become possible when children "dare to move into relation with the outside world of things, other people, environments, and events". This relational understanding of the learning process means that transitional spaces open up when children feel confident enough to creatively experiment with their environments independently from pre-existing authority figures and social structures. It is our contention that Winnicott's concepts can inform child-framed research by supporting the development of 'co-research playspaces' which foster the development of children's potentials as researchers, artists, writers and theorists. We now turn to the project Climate Change + Me where we placed the aforementioned theoretical comments into practice.

Climate Change + Me

The Climate Change + Me project was funded by the NSW (New South Wales, Australia) Environmental Trust, which is an independent statutory body established by the NSW government to fund a broad range of organisations to undertake projects that enhance the environment of NSW. Working towards the NSW 2021 goals, the CC+Me project aimed to strengthen local environments and communities by increasing opportunities for children and young people to be proactive in climate change education research. The core audience of the Climate Change + Me program were children and young people aged 9-14 in Northern regional NSW. This audience was selected because children are often targeted but rarely consulted as legitimate contributors to educational research and curriculum development (Kellett, 2005). The project was thus unique by providing an open platform for children and young people to engage directly in the climate change debate and indeed their associated

education. The project specifically engaged children as co-researchers through a creative, socially-engaged, and action-driven process of co-production. This process resulted in the development of an online social media platform and network; the Past Now Future community exhibitions in public spaces; an interdisciplinary Climate Change Curriculum; and the Climate Change Challenge, a community event which brought together local schools, climate scientists, environmental artists and writers, and members of the wider community to address the challenges of climate change (see Figure 3).
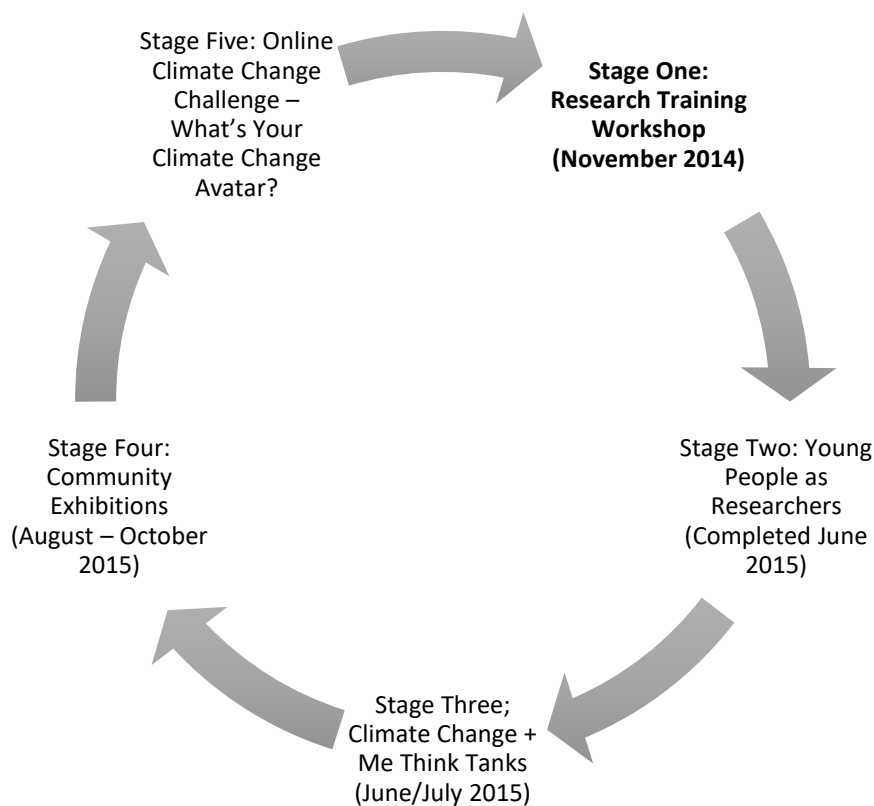
Stage Five: Online Climate Change Challenge – What's Your Climate Change Avatar?

Stage One: Research Training Workshop (November 2014)

Stage Two: Young People as Researchers (Completed June 2015)

Stage Three; Climate Change + Me Think Tanks (June/July 2015)

Stage Four: Community Exhibitions (August – October 2015)

Figure 3: *5 Key Phases of Climate Change + Me (CC+Me) Project*

Each of these research phases was contextualised within the overarching child-framed arts-based methodology developed by Cutter-Mackenzie and Rousell (2018). The Climate Change + Me project allowed for previous frameworks of child-framed research to be extended into the areas of arts-based research (Barone, 2006; Barone & Eisner, 2012) and research-creation (Manning & Massumi, 2014). Crucially, this extension of the methodology was driven by the children and young people themselves who participated as co-researchers and co-artists in the study. While the children were initially trained in ethnographic interview techniques and

visual methods, we also supported them in extending their inquiries through creative practices of their own choosing. These extensions of the methodology through the children's poetry, fiction, drawing and dramatic works were then brought back into the workshops to stimulate collective responses from the wider research cohort, thus forming the basis for the final bodies of work assembled for the Past Now Future exhibitions. The analytic and curatorial work undertaken for the exhibitions then laid the groundwork and offered key resources for the development of the *Climate Change + Me Curriculum*, which has since been piloted and evaluated in ten schools across NSW. Through this emergent process of co-production, we deliberately allowed for the creative practices and theorisations of the children to dynamically impact on the methodology itself as it was unfolding in real time.

A unique contribution of this research to the development of child-framed methodologies has been the construction of what we have termed the 'co-research playspace' (Cutter-Mackenzie & Rousell, 2014), in which children and young people developed the skills, experience and support needed to produce legitimate research outputs to a rigorous standard of conceptualisation and aesthetic quality. This notion directly informed our workshop, website and exhibition designs as 'co-research play spaces' which afforded the flexible stability the children needed to take risks in the development of their own research practices. In this way, the children were supported in developing their own approaches to the project that often exceeded or broke with our own expectations, and these emergent, child-driven practices were then allowed to impact on the overall methodological trajectory of the project itself. This was particularly evident in the curatorial analysis of the research data, as undertaken in collaboration with children and young people in the preparation of the Past Now Future exhibition. The following section focuses on the co-production of three video artworks, and develops the concept of video as a 'transitional medium' that opened up a co-researcher playspace for children and young people to develop performative, creative, and political-aesthetic responses to climate change.

Video as Transitional Medium

The Past Now Future exhibition took place over a three-month period in 2015, and was presented at eight public libraries in communities across Northern NSW. The exhibition was

viewed by over 10,000 members of the public, and was also documented by local newspapers and on ABC National Radio through interviews with several of the young researchers. The exhibitions presented the culmination of 18 months of fieldwork by the 135 participating co-researchers. All aspects of the exhibitions were developed collaboratively with the children, including the curation, titling, artist statements, promotional materials, and installation design (Rousell & Cutter-Mackenzie, 2015). While we have discussed children's speculative fiction (Rousell, Cutter-Mackenzie, and Foster, 2017) and photographic practices (Rousell & Cutter-Mackenzie, this volume) from the project elsewhere, we focus here on children's co-production of digital video works using iPads. These films were collectively analyzed and curated to form an interactive artwork entitled 'Voices from the Anthropocene', a key component of the Past Now Future exhibition.

During the primary research stage of the project, children and young people used iPads as mobile recording devices to create their own responses to climate change in their schools, homes, and extended communities. A number of children chose to conduct interviews with their peers, parents, siblings, and teachers, many of which revealed a rich diversity of cultural responses and understandings of climate change in the children's local communities. Other co-researchers were inspired to use the iPads in more artistic and provocative ways, resulting in a wide variety of video works that included interviews with trees, improvisational forest romps, upside-down political discussions, an imaginary tea party, and a future world populated by digital avatars and virtual environments. We encouraged this playful 'misuse' of the iPads for creative purposes that often broke with the traditional conventions of qualitative research, and in some cases, abandoned common appeals to rationality, discourse, and sense-making. These odd video creations came to form a fascinating contrast with the more disciplined ethnographic interviews conducted by the children, generating a rich pattern of audio-visual textures and political-aesthetic sensibilities. We found that these videos often revealed what children might think, say, or do when no adults were present to supervise them or interfere with their ideas and activities. In this sense, the iPad acted as a transitional object that enabled children to venture into new territories of thinking and action, creating both a mirror (opacity) and a window (transparency) into children's worlds at the same time. The children's use of the iPads gave us a window into their co-research imaginaries

and playspaces, the results of which oscillated between what might be considered 'childish and playful', 'artistic', 'inquisitive', 'culturally revealing' and 'deeply profound'.

As we continue to think more about the ways that children were compelled to use the iPads as research devices, the concept of digital video as a 'transitional medium' also comes to the fore. The iPad is a device that mobilises the medium of video in a particular way, since the screen is large enough to create an immersive interface that co-implicates the body of the child with the surrounding environment. Children are able to see what is being filmed as they move and interact dynamically with the environment, thus allowing them to modulate the medium of video in ways that are performative, unpredictable and impulsive. The screen becomes both the recording surface and the surface of projection for collective engagement through environmental play, bringing the 'audience' of the film into direct contact with the process of co-production. In other words, the film is being 'produced' and 'viewed' at the same time, adding a sense of hyper-awareness as well as a public intimacy that is specific to the medium being employed. The medium of digital video, as operationalised through the iPad, thus becomes transitional in its capacity to put children's creative impulses and dynamic social milieus into transformative relation with a shared environmental outside, as well as an 'audience' that is immanent to the production of the film itself.

In many ways, the experimental videos produced by children in the CC + Me project are more closely aligned with video art than the conventions of naturalistic observation and ethnographic documentary cinema. Children's experimental and playful usages of video as a transformative medium also break with the traditional conventions of video methodologies in qualitative educational research. As de Freitas (2016) notes, such conventions are tied to the history of scientific film and the vagaries of visual documentation as truthful and accurate representations of empirical phenomena. Rather than documenting and analysing children in films as cultural representations or scientific evidence, we are interested in how *children actually produce films* by using video as a transitional medium that enables them to think and interact in novel ways. By focusing on children's co-productive engagement with video as a transitional medium, we acknowledge that *we still do not know what children can do*. What happens when we give kids iPads and ask them to go out and make films exploring the ways that climate change is affecting their lives? What happens when we bring those films back in, analyse them together, and ask kids to make different films in response to what other children

have produced? These are the kinds of open-ended questions and experimental approaches that we pursued in the development of digital video as a transitional medium for climate change education research.

In the following vignettes, we discuss a series of three examples of experimental video works produced by children in the Climate Change and Me project. Each example provides a brief window into children's environmental thinking, imagination, and play in response to the question of how climate change is affecting their lives, communities, and environments. The first focuses on children's sense of invisibility and a dehumanising lack of agency in relation to climate change; the second foregrounds the improvisational, animalistic, and often irrational nature of children's 'wild' environmental play; and the third addresses children's experimental use of digital video to generate a dystopian virtual world.

I. Becoming Invisible

Climate Change and Children...

Do they know?

Do they care?

How can we teach them?

How can we change ourselves?

This film emerged from a discussion between three girls in a year 5 class regarding their feelings of invisibility, disconnection, and lack of political agency in relation to climate change. While they felt that children's experiences and perceptions of climate change were not being valued or acknowledge by adults, they also noted a sense of complicity in children's contribution to climate change. They began to discuss children's lack of understanding and desire to know more about climate change, as well the need for children to actively change their own habitual practices and patterns of thought. As the girls were developing various ideas for creating a film that would embody and articulate these discussions, they found a collection of gold and silver masks in the storage room adjoining the classroom. They decided to use the masks to conceal their faces and identities in the film, emphasising the invisible and unknown qualities of children's voices. As they began to play with the possibilities of using the masks, they decided to create a series of written signs that could be used to articulate their questions about children's relationship to climate change. They devised a cascading series of questions, which began with the phrase 'Climate Change and Children...', and then proceeded with: 'Do they know? Do they care? How can we teach them? How can we change ourselves?' These open-ended questions ended up forming a discursive structure for a performative and environmentally-responsive series of actions which comprised the resulting film.

After inviting another student to serve as video operator, the three girls arranged themselves in a line facing the camera with a garden area behind them. As the film progresses, the girls take turns moving into the front position of the line as each piece of text is revealed sequentially. This movement begins sporadically but slowly takes on a peculiar and often uncomfortable rhythm, as the stops, starts, and misshapen notes of the school band's practice begins to infect the performative event taking shape. In the resulting film, the children appear faceless and dehumanised while their bodies and their questions move in and out of synch with a 'found' soundtrack. These disjunctive spaces between the sounds and images embedded in the film produces a surreal quality, as the girls' original idea for the film as a social intervention becomes warped by the sound field of everyday school events occurring beyond the frame of the camera.

II. Wild Play

In this second example, a group of three year-five girls take an iPad into a forested area of the school without any initial planning or preparation. The resulting film unfolds completely spontaneously, beginning with one girl running madly through the forest and crashing into another girl who ends up falling into the bushes, and then scrambling on hands and knees along the ground. This initial scene of outright silliness sets the tone for a series of playful and often ridiculous interactions between the girls and the surrounding environment. There is an intoxicating quality to this series of behaviours, as the silliness is pushed to increasing degrees of intensity over the course of two minutes. There is also a consistent sense of wildness and animalistic behaviour that infuses this film, as the girls continuously use their bodies to explore their relationships with climate change in strange and unexpected ways.

Following the opening sequence of playful encounter and excitation, the girls sit down on the ground and begin to develop a call-and-response chant, riffing off rhythmic variations of the phrase 'what do ya think about climate change?' This chant is accompanied by a series of improvised dance moves, with each girl again responding to the other in a call-and-response formation. At a certain point in these choreographic interactions, one girl places her hand into a hole between the roots of a nearby tree. When she pulls her hand out, both girls are amazed to find that she has withdrawn a shard of glass that was hidden in this little hole. This piece of glass then becomes the impetus for a series of unusual performative gestures, including demonstrations of the shard's ability to leave visible scratch marks on the skin of one girl's arm. This is followed by another crude demonstration of what would happen if somebody sat on the shard of glass, complete with hand gestures suggesting the penetration of one object into another. Throughout this sequence, the girls display a range of intense and dramatically charged facial expressions which are often addressed directly to the camera, as well as to each other. After some loose discussion of the shard's relevance to the hidden dangers of climate change and humanity's impact on the Earth's geologic strata, the film finishes with a spasmodic gesture in which one of the girls throws the shard directly towards the camera, narrowly missing the camera operator whose face suddenly appears in stark surprise. At this point, the girls collapse onto each other in compulsive fits of laughter and uncontrollable hilarity.

III. After Earth

Our third example is a film produced by two girls in year 7, who had previously produced a number of insightful and engaging films commenting on the effects of climate change on such mundane practices as doing homework, playing video games, and making dinner. With this film they developed an innovative idea that involved the creation of a dystopian future world comprised of digital avatars and virtual environments. To produce this film, the girls negotiated access to a nearby section of rainforest during lunchtime, an area that students were not normally allowed to visit. Working from a basic sketch of possible camera shots and action sequences, the girls proceeded to experiment iteratively with the affordances of the digital video format. The initial opening sequence of the film involved placing fingers over the camera lens of the iPad to produce an orange-red effect that gradually resolves into a scene: the motionless figure of a girl standing at the top of a staircase with a vacant expression, as shot from below. This figure becomes the protagonist of the film, a girl who realises that she exists as a digital avatar of her former self, and that she inhabits a virtual environment that is disintegrating around her. Her doll-like expressions bring the figure to life without dialogue, as she appears unable to speak amidst the horrific discovery of her digitally encapsulated existence. By shooting into the afternoon sun, the girls used refractive light and lens flares to add a surreal quality to their shots. They also developed a special technique of wobbling the iPad in order to suggest the idea of a virtual environment that is malfunctioning and eventually shutting down.

One of the fascinating aspects of this film is the girls' ability to produce the feeling of an artificial world and virtual existence without any spoken words, dialogue, or prompts. The story is told entirely by the physical movements and expressions of the female protoganist, who becomes not so much a character (in the conventional sense of a human subject) as a *body* that suddenly finds itself inhabiting an environment that is both toxic and strange. Her movements and facial expressions also suggest the birth or awakening of an artificial intelligence, perhaps a digital version of her original personality, whose initial interactions with the surrounding environment lead to a destabilisation of the system. Interestingly, we find the protagonist consistently peering directly into the camera's lens, as if searching the depths of the digital medium, and indeed its implicit audience, for some sense of who (and where) she might be. The film concludes with her stricken expression of desperation as she

falls to the ground and perishes, due to a virtual environment that is too unstable to support sentient life.

Conclusion: Children as para-academic researchers

The three films described in the vignettes above reveal the ways that children used video as a transitional medium for creative experimentation and environmental play. In considering these films in relation to the 'post-truth' political climate described in the Chapter's opening section, we can see how each film provides an alternative response to climate change through aesthetic engagement, rather than through moral discourse or personal opinion (or 'doxa'). The three alternative responses developed by these children also link more broadly to three alternative political-aesthetic projects. The first vignette entitled 'Becoming Invisible' takes shape as a critical and discursive questioning of children's visibility, agency, and voice in relation to climate change. This film was planned and performed as a critical intervention into the everyday social practices of schooling, an approach that connects with critical art movements associated with political activism and social and environmental justice. The second vignette breaks significantly with first, as 'Wild Play' involves a series of absurd, playful, and animalistic impulses that are entirely improvised and not intended to be serious responses to the issue of climate change. The second vignette thus connects more clearly to comedic and performance art projects which employ shocking and/or absurd methods which abandon rational discourse and social critique in the face of an unsolvable problem. The third vignette, 'After Earth', presents an entirely different alternative by engaging seriously with play as a multi-sensory thought experiment that doesn't rely on language. This vignette connects with the experimental use of art, film, digital media, and performance as modalities for creating alternative worlds that provoke viewers to sense, think and feel the world differently.

In all three of the examples explored in this chapter, children's digital film-making practices are shown to operate through an aesthetic politics of experimentation which is very different from the moralistic, populist and identity-driven politicisation of climate change in today's post-truth world. In closing, we would like to suggest that such aesthetic-political practices become possible within a co-research playspace that affords the flexible stability that children

need to take creative risks and break with adult expectations. Rather than training children to think and work like conventional 'academic' researchers, we would like to propose a co-research playspace that fosters children's development as 'para-academic researchers' who actively disrupt the conventions of academic research. With this proposition, we associate the term 'para-academic' with the work of artists, film-makers, performers, musicians, designers, and other critical and creative practitioners who generate collective thought experiments and develop alternative ways of thinking and making the world. In this sense, we see children becoming para-academic researchers when they refuse to comply with a normative research protocol and associated adult expectations, and instead invent their own modes of co-creation and critical inquiry. When children break with adult expectations, they show us something that we would never have been able to experience or understand otherwise. It is in those moments of noncompliance that children show us how to think and do things differently, reconfiguring our concepts and our practices in response to the critical crises and transformations of our times.

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