Karen Malone · Son Truong
Tonia Gray *Editors*

Reimagining Sustainability in Precarious Times

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Foreword

The current impacts of environmental crisis such as climate change are devastating outcomes of broader conditions of global precarity. Indeed, a range of interdisciplinary research suggests the ways precarity has become an everyday existential state in many parts of the globe under new norms of neoliberal capitalism (Neilson & Rossiter, 2008). Focusing on labour conditions such as the flexibilisation of labour markets, job insecurity, and economic uncertainty, scholarship on precarity emphasises its dominance as ontological experience that has spread to an increasing range of labour classes, sectors, and national contexts (Jørgensen, 2015). These conditions are also an extension of longer trajectories of colonial capitalism, including histories of slavery and settler colonisation (Coulthard, 2014; Wolfe, 2001). As forms of biopower in which capital relies on 'immaterial labour' and genocide, enforced social, economic, and environmental precarity has been ongoing over centuries in many regions of the globe (Morgensen, 2011; Sunder Ranjan, 2006).

More-than-human actors are also implicated in current conditions of precarity – in the interrelationships which enable forms of neoliberal capitalism, including the ideological cleaving of humans from nature that allows conceiving of land as property and biological life as biovalue (McCarthy & Prudham, 2004; Smith, 1984), as well as in associated outcomes of changing climates, pollution, and species extinction. The twinned articulations of 'a need to push beyond limits' and a need to reimpose them in the form of 'scarcity' are mutually constitutive in creating conditions of precarity (Cooper, 2008). As a result, environmental precarity becomes economic opportunity in a myriad of ways, from capitalising on food insecurity via crop development and exportation, to green energy technologies, to other consumer responses such as 'eco' laundry detergents, reusable shopping bags, edible landscapes, and other aspects of what Kath Weston (2012) terms 'political ecologies of the precarious' (p. 429).

Engagement with maintaining conditions that are in fact obstacles to fulfilling the need for real change can be understood as part of the affective conditions of precarity (Berlant, 2011). An optimistic attachment to the status quo enables us to tinker, making small adjustments that are confirming in their sense of action, and yet leave undisrupted the problematic relations. For scholars concerned with researching

precarious times, this then involves ‘thinking about the ordinary as an impasse shaped by crisis in which people find themselves developing skills for adjusting to newly proliferating pressures to scramble for modes of living on…In the impasse induced by crisis, being treads water; mainly, it does not drown’ (Berlant, 2011, p. 8, 10).

However, interdisciplinary scholarship on precarity also tracks and debates whether precarity can be politically constituting or a catalyst for a new politics of everyday life (Lorey, 2010). As Jørgensen (2015) writes, this is going beyond what precarity is, to asking what precarity *does*. Arguably, some scholarly ‘doings’ of climate precarities have included the naming of the current geological period of human impact on the climate as the ‘Anthropocene’, as well as shifts in theoretical engagement with the ontological and material aspects of life: As homes are flooded, droughts persist, and nations are faced with responding to climate refugees, theorists are responding by articulating human relations with the world differently, as evident in various trajectories of post-human and materialist thought including those represented in the current volume. Or as Colebrook (2010, p. 15, as cited in Sommerville, Chap. 2, this volume) writes, ‘[c]limate change is not only a change of the climate but a change in the very way in which we think’ requiring us ‘to develop new concepts of the human, new figures of life, and new understandings of what counts as thinking.’

It seems we are caught somewhere between treading water via forms of cruel optimism and denial about current conditions of climate precarity (Berlant, 2011), to being part of the potentially radical ‘doings’ that such precarity can elicit. Indeed, this valuable edited collection grapples with how we go beyond treading water in the precarities of the Anthropocene and instead mobilise towards post-humanist politics which enact life more fully and ethically (Braidotti, 2013; Malone, Chap. 11, this volume).

A shared characteristic articulated in many materialist and post-humanist theorisations is a move away from critique and towards a focus on indeterminacy and possibility (see Coole and Frost, 2010; Snaza & Weaver, 2015). This implies an understanding of agency as ‘no longer the expression of sovereignty and of an autonomous, knowing self but a seeking of encounters with vibrant matter that force continual invention’ (Duhn, 2014, p. 8, cited in Chap. 4, this volume). This stance entails experimentation with the foci and methods of research, enabling expanding understandings of ‘childhoods’, ‘curriculum’, ‘pedagogy’, ‘policy’, ‘place’, and more, across the chapters of this book. Distancing from a subject-object relationship to research, the focus is on exploring how research understandings and pedagogical meaning are instead generated among subjects (Clarke, Chap. 21, this volume).

A worry in the often ‘zoomed in’ focus of some genres of new materialist research is that micro description is favoured over also including a macro analysis of broader conditions or that the emphasis on theory and opening research methods can override broader contexts of the ethics and implications of doing research in the first place (Tuck & McKenzie, 2015). It is thus an inspiration to see chapters in this volume take post-humanist and new materialist lenses to critical questions of climate change, child poverty, LGBT inclusivity, speciesism, racism, the power

relations of place, and other important intersectional issues. Snaza et al. (2014) suggest that post-humanist work in fact 'pushes intersectionality' through its critique of humanism's violence (p. 41). The current volume helps lay that groundwork in educational scholarship, with a focus on the sociomaterial relationships of life and politics in the context of sustainability and education.

A central aspect of how this is engaged is the book being situated in particular places and in relation to the indigenous peoples of those places. The volume begins by indicating its origins in the traditional country of the Darug, Gundungurra, and D'harawal peoples; and the book's preface by D'harawal elder Aunty Fran Bodkin sets the tone for the work as a 'gathering place…of diverse people, places, and stories' (Preface, this volume). There are commonalities and yet incommensurabilities among indigenous and decolonising theories and materialist and post-humanist theoretical trajectories (Tuck & McKenzie, 2015). There is thus the ongoing and bumpy work of non-indigenous scholars (in some cases with indigenous colleagues) engaging indigenous knowledge and perspectives without collapse or appropriation of indigeneity into settler futurities and knowledge (Tuck & Gaztambide-Fernández, 2013; Snaza et al., 2014).

This is a book that breaks new ground in education, as one of the first volumes to engage a range of empirical and conceptual papers that draw on materialist and post-human theories to explore human-nature relations in education and educational research. As Karen Malone and Son Truong write in the introduction, the book is also intended as a call to action in the field of sustainability education, suggesting new ways of doing education and educational research that help address the precariousness of the current state of life on this planet under climate change. Here is to hoping the field and beyond respond to this call.

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Preface

Reimagining Sustainability in Precarious Times originated in the traditional country of the Darug, Gundungurra, and D'harawal peoples of Greater Western Sydney. Aunty Fran is a D'harawal elder and in her chapter performs the traditional welcome and introduction to D'harawal country. In her chapter the story of the great ceremonial site of Yandel'ora, the Land of Peace, in D'harawal country offers a metaphor for the gathering of the diverse places and people in this book.

D'harawal Stories of Cycles and Seasons: Land, Water, and Fire

Aunty Fran Bodkin, D'harawal Elder

Dadyi'barlang'o'neeya yuoli birrong gumadagul ngurang.
We acknowledge the guardians of the Spirit of This Land,
Darimi naway buldyan bidigal duga'o'ngung
And give our respect to the elders, past and present
Ngiyinee bulima nandirita
May you always see the beauty of the Earth
Ngiyinee dingan duroowan bata.
May you always taste the sweetest fruit
Ngiyinee gadaloong ganbee miwoona
May you always feel the warmth of the flame.
Ngiyinee nguwaga gambata gana
May you always smell the perfume of the flowers
Ngiyinee ngara djarnaba gurong.goorong.
May you always hear the laughter of the children.
Didjariguroo o'ngya.
We thank you.

Introduction

The prime resource is knowledge, knowledge that has been gathered throughout the millennia, compiled, and stored within the memory of all those who ensure availability of all other resources and the sustainability of the supply of those resources. And, as for all things, there is a law called the Law of Truth, within which is hidden the Truth of Being and the Truth of Law. Together this Law of Truth and its elements ensured the availability and the sustainability of all resources throughout the tens, perhaps hundreds, of thousands of years of our occupation of This Land.

In the dreaming it was realised that in order to live, we needed to ensure the availability of those resources we needed to sustain ourselves. Over generations we observed and experienced those conditions on This Land, recording in story and song what we had learned, how the times of day were important for certain duties, how the changes in the weather were rhythmic, recurring year after year, and how other, longer cycles either lengthened or shortened the pulse of the rhythms. We learned that the availability and sustainability of those resources upon which our life depended could be extended if we respected the Land rather than used it.

Observation and Experience: The Science of the D'harawal Peoples

The relationship between the annual seasons and the larger climate cycles was recognised and used by the D'harawal people throughout the millennia that they occupied This Land. This relationship was a complex one when compared with today's simplistic regard of all cultures in Australia, that, firstly, there are only four seasons in an annual cycle and the annual cycle is the only cycle controlling our natural resources.

Although the catchment of the five rivers of the D'harawal is the subject of this chapter, every major river catchment in Australia has its own set of annual seasons; some may indeed have four; however, others may have six or even eight, but others may have just two. Thus, the Aboriginal people of Australia recognised that we could not use the same resource management systems over the entire country and that each major river catchment had its own set of annual seasons that were in turn influenced by an 11–12-year cycle.

The Annual Weather Cycle

There are six seasons in the annual D'harawal calendar. Each of which has a set of indicators, one animal or bird and one plant. It was forbidden to hunt and kill the creature that signifies a particular season. No season begins on the same day each

year, nor does it continue for the same length of time each year, simply because it is affected by the larger cycles within which it may occur.

The first annual season is the Time of Ngoonungi, or Flying Fox, and begins when they gather in great numbers just on sunset over the Boora Birra (Sow and Pigs Reef). This activity coincides with the bright splashes of red of the waratah appearing throughout the bushland.

The second annual season is the Time of Parradowee, or the Great Eel Spirit, and begins when the Great Eel calls his children to him and the mature eels scramble down the rivers in huge numbers making their way out to sea never to be seen again. This activity coincides with the blooming of the *Acacia binervia*, which announces the presence of many fish in the bays and estuaries.

The third annual season is the Time of Burran or Kangaroo, when the mating activity of the kangaroos and their cousins is most frantic. The flowering of the *Acacia implexa* at this time informs the D'harawals that this is the hottest time of the year and fires are not to be lit in bushland.

The fourth annual season is the Time of the Quoll, or Native Cat, when this little creature's spine-tingling cries for a mate can be heard throughout the woodlands at night. It is also the time of the ripening of the fruit of the lilly-pilly and is a warning that cold weather is on its way.

The fifth annual season is that of Burrugin, or Echidna, and begins when the spiny anteater female runs frantically through the woodland, closely followed, usually nose to tail, by a train of up to ten males, each trying to jostle the other out of the line. It is also the time when the *Eucalyptus tereticornis* begins its long period of blooming and is a reminder to prepare the implements for gathering and for the ceremonies to be held during the Time of Ngoonungi.

The sixth annual season is that of Wiritjiribin, the Lyrebird, when the male lyrebird begins to build his dancing mound and his calls ring out through the woodlands as he experiments to find out which combination of his many calls more readily attracts the female. It is also the time that the flowers of the *Acacia floribunda* appear, which signifies that the fish are running in the rivers.

The Mudong (11–12 Year) Climate Cycle

The Mudong Cycle has eight distinctive seasons, which has a profound effect upon all the seasons of the annual cycle. The occurrence of the Southern Aurora in the sky during the time of the season of Ngoonungi (generally around late September or early October) signifies the reference point in time of the beginning of the Mudong Cycle. Unfortunately, in the Sydney region, it is getting more and more difficult to view these lights when they occur because of the environmental and light pollution of the atmosphere. However, at times they can still be seen from the plateaux of the Nattai and the Wollondilly Rivers.

The first season of the Mudong is that of Djuli, a time of heat and drought and of sudden, violent storms, and is signified by the massive flowering of the *Acacia*

decurrens, a forewarning of the coming season of wildfires. The season of Djuli can last up to 20 moons.

The second season of the Mudong, Dyirringong, is a relatively short one, lasting less than a year. It is when the weather starts to cool, with storms becoming less violent, but more frequent, and there is a marked increase in wildlife. The grasses remain green for a longer time than usual. This season can last between eight and 12 moons.

The third season of the Mudong is that of Dagurayagu, a time of cold, wet weather, when the rivers flood and young children and old people will become ill. An indicator is the lessening of fish in the rivers and estuaries, but an increase in the numbers of shellfish along the beaches. The season of Dagurayagu can last between 17 and 20 moons.

The fourth season of the Mudong is the Goray'walan, a time of warm, wet weather; it is a time when there is a marked increase in the numbers of fish in the rivers and a marked increase in the numbers of ducklings. This season lasted at the most only 15 moons.

The fifth season of the Mudong is the Kanguama, a time of uncomfortably hot, wet weather, when the frequency of rain is reduced, but the intensity of the storms increases. This season is marked by the increase in insect-borne diseases of man, bird, and animal and by the occurrence of weakness in plants. It rarely lasts any longer than 12 moons.

The sixth season of the Mudong is called Dulamai and is cooler and drier, and with the cooler weather, there are a decrease in the occurrence of rain and a reduction in the numbers of insect species, and the health of the people, animals, and plants improves. During this season the golden orb spider does not spin its beautifully intricate webs, so necessary for the treatment of injuries. This season rarely lasts more than 12 moons.

The seventh season of the Mudong is Illagunuman, a cold, dry season with infrequent storms and occasional hailstones. The cold winds during this time seem to be even more chilling; frost lies on the ground longer during the day and occurs more frequently than in any other of the seasons. The Illagunuman lasts about 15 moons.

The eighth season of the Mudong is that of Garuk, when the weather gets warmer and still drier. The appearing of vast numbers of cicadas during the annual Time of Ngoonungi, and of Christmas beetles during the Time of the Kangaroo, is an indicator of very hot and very dry times coming. The Garuk usually lasts between 12 and 15 months.

The Garuwanga or Dreaming Cycle

The Garuwanga Cycle is the longest cycle of all, lasting from 12,000 to 20,000 years. It has four seasons, and our position in this cycle is judged only by the sea levels.

The Time of Fire, or Darimi Ganbi, is the hottest season and has a devastating effect on the Lands of the D'harawal, with droughts, fires, and violent storms. It was

also a time when the sanctuaries were most important and any travel through these areas was absolutely forbidden. No matter how hungry the people were, violating the laws of these sanctuaries was punished severely, with whole generations of families bearing the punishment, rather than the perpetrator. During the Time of Darimi Ganbi, many species would become extinct or flee to other more suitable climates. The signifier of the coming end of this season is when the sea willy-willies come onto land and take away anything that stands in their way. At the present moment, we are coming to the end of this cycle.

The Cooling Renewal or Darimi Mariyungwaian is a time of plenty when species that have disappeared during the Time of Darimi Ganbi are replaced either by either new species or with the return of former species who have followed their preferred climatic regimes and the boundaries of the sanctuaries are adjusted to include the requirements of the new and surviving species. It is a time when the sea levels begin to fall and the Land of the D'harawal moves eastwards.

Time of Cold or Darimi Tugarah is marked by, at least, the appearance of frost on the ground every day, although some stories speak of the time when ice covered the earth for many generations. It is also a time of great drought and when the five rivers of the D'harawal join together into one large river 2 days walk eastwards from the Teralba (South Head). It is a time of war when the people fight with each other over scarce resources.

The Time of Warming Renewal is when the weather gradually grows warmer and wetter. Plants and animals flourish, and as the sea levels rise, the D'harawals move westwards towards the foothills of the mountains, their places of sanctuaries, and the sacred place of the Beginning.

The Gathering Place

In the early 1800s, a settler in the vicinity of the area now known as Mount Annan stood on top of a hill on his land grant and looked across the plains. In disbelief he stared at the campfires below and hastily made his way to Sydney Town where he reported seeing the 'campfires of 100,000 blacks' on the area between Mount Annan and Glenfield Farm. This was the last reported sighting of the big meetings that used to be held at Mount Annan.

In the Old Days when the three sisters (the three planets) danced in a straight line in the western sky, it was time for the senior knowledge holders and their acolytes to make their long trek to the place called the Land of Peace Between Peoples (Yandel'ora) where meetings were held and laws were made which were common to all those peoples living in the eastern part of Australia. These were meetings in which disputes were settled, marriages were arranged, and exchanges of stories were made, occurring once every generation and always during the season of the Ngoounungi, or Flying Fox (early spring), when there was plenty of available food. They were meetings where weapons were not allowed, where inter-peoples' disputes were settled, and where children were exchanged.

In 1988, when many of the Aboriginal peoples from all over Australia came to visit Sydney for the Long March, we had the chance to talk to the descendants of those who attended those meetings and discovered that the Tjapagai came down from what is now the Cairns area and that they had seasons similar to ours and stories of sea level falls and rises, when the Great Barrier Reef was completely out of water, and that the Marooch from the Southern Queensland area also attended the meetings; the Pitjinjara said that they had stories of their great grandmothers walking past the three sisters to come across from South Australia.

Many of the major songlines that cross the continent of Australia intersect at Yandel'ora, the place of the great gathering. The public version of the story that is central to Yandel'ora tells how Galinga the frog caused fighting between all of the animals as they came to the waterhole to drink – kangaroo, native turkey, kookaburra, wombat, eagle, and golden finch. Their fighting so angered the spirit woman that she banished their ability to speak a common language. She said 'if you want to speak to each other you'll have to come to the lyrebird who will be the only one who will be able to speak all languages'. This is the children's version of the story and relates to the lyrebird's perfect mimicry of all the sounds around them, including the voices of all other animals. Thereafter, the lyrebird people called the gathering, and the big mobs of people were fed by trapping the migrating eels as they moved between the ponds. Today, Mount Annan is consecrated within Mount Annan Botanic Gardens in D'harawal country in south-western Sydney. It is a place for the gathering of native food and medicinal plants with the largest seed bank in the southern hemisphere and a place that remains a gathering place for people to learn its stories.

With this chapter I welcome you to the gathering place of this book and the diverse people, places, and stories that come together in its pages.

Frances Bodkin
D'harawal Woman of the Bidigal Clan

Acknowledgements

In June of 2014, the Centre for Educational Research (CER) at Western Sydney University hosted a symposium entitled *Precarious Times: New Imaginings for Sustainability*. This gathering on the university's Hawkesbury Campus, just south of the Hawkesbury River and east of the Blue Mountains in New South Wales, Australia, brought together a diverse group of scholars to explore the intertwined world of the Anthropocene. Thus, *Reimagining Sustainability in Precarious Times* originated in the traditional country of the Darug, Gundungurra and D'harawal peoples of Greater Western Sydney. Authors at the symposium were asked to consider the following provocations: what we as humans do to nature – *nature out there;* what it does to us – *power of nature*; and how it is within us – *an entangled 'humannature'*.

As our vision for the book began to materialise, our aim was to share a collection of papers on theoretical approaches that highlight the interdependencies of human and more-than-human worlds. Our intention was not to exclusively focus on post-humanist theoretical approaches, but to acknowledge that the concept of the Anthropocene is influencing the yearning to ruminate on the possibilities of decentring the human in our research. Being innovative in bringing our past theoretical work into the challenges and tensions of the posthuman was one way to satisfy those urges, but many other possibilities existed. We hoped authors would be explorative in their ideas by nurturing spaces where conversations between authors could lead to new ways of thinking. The symposium was preceded by a series of methodological and theoretical workshops held with two visiting scholars, Affrica Taylor and Iris Duhn, in 2013 and early 2014, which were important incitements that encouraged staff and doctoral students at the Centre for Educational Research (CER) to extend their theoretical repertoires. The symposium was held over 2 days with over 80 participants, including academic staff, doctoral students, and associates. In addition to many presenters at the symposium being invited to submit a chapter to the book, a number of well established authors in the field were identified and invited in order to build an innovative collection of papers.

While a number of people have supported this project throughout its gestation and realisation over the past 2 years, the editors would like to acknowledge CER

Director, Margaret Somerville and her supporting administrative staff Tracy Buckridge, Lin Brown-Singh, and Jawed Gebrael for their valuable insights, sustenance, and imagination throughout the project. Funds and support for the visiting scholars, the symposium, and in the final editing of the manuscript all came from CER. The editors would also like to thank the significant role reviewers played in providing robust and provocative feedback to extend authors' ideas. An unexpected outcome of the reviewing process was the extension of our intellectual community and the opportunity to share our evolving ideas with those who were also playfully extending their own thinking. Three of these reviewers became additional contributors during this process, which is an acknowledgment of the rhizomatic impact of the structure and fluidity of our collective thinking. Finally, the editors would like to thank all the authors who contributed their time to the project and the many demands that were a part of creating a shared, newly imagined space; a space described by one author as "an environment in which it is safe to be yourself, share ideas, curiously 'not know' and to stay open to collective learning".

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Part I
Responding to the Anthropocene

Chapter 1
Sustainability, Education, and Anthropocentric Precarity

Karen Malone and Son Truong

Precarity in the Anthropocene

This book on re-imagining sustainability in precarious times is published at a significant time. Precarity flourishes as the uncertainty and unpredictability of the current state of the planet continues to rise. It is the most pressing issue of this generation. Over 50 years ago, Rachel Carson warned us about the dangerous chemicals that were causing harm to all living beings. Asleep at the wheel, while corporations metastasised into behemoths with personhood, we ignored that clarion call. Decades later, with corporate profits often the key focus of government, the wellbeing of the planet still seems to be of little concern to most. Perhaps numb to the implications, climate change, viewed by many scientists as the world's greatest threat to both human and the more-than-human beings, continues to reek havoc on the planet. The likelihood that we will witness the first inhabitants of a provincial capital city to abandon their home due to climate change is already a reality. Inhabitants of Taro Island, a small coral atoll in the Solomon Islands, not far from Australia, residing in our shared pacific ocean have already been evacuated on a number of occasions due to rising sea levels. The island's market and port, built only 15 years ago, now lie deep within the ocean. Satellite data suggests sea levels in the South-West Pacific are rising up to five times faster than the global average: 7.7 millimetres a year in the south, and up to 16.8 millimetres a year in the ocean to the north. Compounding factors like a speed-up in the melt of Greenland's glaciers and the effectively irreversible collapse of the West Antarctic glacier could drive it considerably higher. The Intergovernmental Panel on Climate Change (IPCC) reports on climate change have over many years identified that scientists predict a global temperature rise of 2–3 °C will result in about 20–30 % of the Earth's species being

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at risk of extinction (Parry et al., 2007) and that it is extremely likely that human influence has been the dominant cause of the rising temperatures (IPCC, 2013). Climate change is just one global threat; mass extinction of top predators appears to be leading inexorably to ecosystem simplifications, which are often accompanied by a rush of extinctions. Population increases and rapid urbanisation is leading to large scale poverty, pollution, resource depletion, and the loss of natural lands accelerating species loss. On a planetary time scale of life first appearing some 4.5 billion years ago, these impacts have happened over a very short time. Many would say that it is our 'human arrogance' that has led us to this fate. In the words of Stephen Jay Gould:

> [T]he worst and most harmful of all our conventional mistakes about the history of our planet [is] the arrogant notion that evolution has a predictable direction leading toward human life (Gould n.d. as cited in Foreman, 2015, p. 3).

Not until the last 100 years with our exploding population and systemic pollution of Earth with radioactive fallout, antibiotics, artificial biocides, and greenhouse gases, have we finally gotten to a time where humans are having an impact everywhere on the planet (Foreman, 2015). It could be viewed that the window for global action is rapidly closing and a sense of urgency abounds.

There has been much discussion around the need to rename this geological age we are now living in, as the era of the Anthropocene (Crutzen, 2002). The Anthropocene is premised on the idea that *Homo sapiens* have modified the Earth to such an extent that no ecosystem has been untouched. While researchers and educators come to recognise the impact of this new epoch, there has also been a call to reconsider ways of thinking, knowing, and acting in and with the human and more-than-human world:

> The Anthropocene unmakes the idea of the unlimited, autonomous human and calls for a radical reworking of a great deal of what we thought we knew about ourselves (Bird Rose et al., 2012, p. 3).

The chapters in this book are the individual authors own call and response to the Anthropocene. They were invited to take up and adopt their own perspectives in terms how they are engaging with the concepts of the Anthropocene whether as a geological era or as a metaphor for expanding their own theorising. According to Braidotti (2013), the productive aspect of our predicament is the opening up of perspectives for the affirmative transformation of structures of subjectivities and the production of theory and knowledge about our relations with the more-than-human world. The call of the Anthropocene solicits us to address the impending environmental crisis and the enormous challenges it proposes for the global planetary community. But we do take heed of the risks of affirming yet another grandiose place for humans in our research stories and adopt the perspective argued by Instone and Taylor (2015: 139) : "If viewed as a potentially transformative naming event with complex affordances, rather than as a scientific validation to scramble for yet another heroic techno fix, debates over the Anthropocene can open a space for constructive circumspection and thoughtful response". Initiating what can be done, all action points to a re-thinking of our relations between humans, and between humans

and the Earth. Crucial questions emerge from here about how we engage with the more-than-human world and how, simultaneously, the more-than-human world engages with us.

Sustainability in the Anthropocene

The focus of this book is to explore new imaginings for sustainability through the import of contemporary theoretical approaches and considering innovative ways of engaging with ideas that are now influencing the field of sustainability and education. Authors were not given specific instructions of what theories were to be taken up in this call which meant a variety theoretical perspectives and definitions of key terms like sustainability and the Anthropocene have been adopted. While the terminology might shift between countries, fields, and genres (education for sustainable development, education for sustainability, and sustainability education) it is certain we are all speaking about the same imperative – the desire to find new ways of theorising and educating about being with, and in relation to, the planet. These new theoretical approaches highlight the interdependencies of the human and more-than-human worlds. The field of sustainability has over time focused on economical, ecological, and technological models of human and planetary development that tend to overlook the very intimate ways we came to live and exist on the planet with a host of others. Unfortunately, these anthropocentric perspectives of 'human exemptionalism' and 'human exceptionalism' have led us to this very point where the planet is facing climate change, mass extinctions, and a host of other unsustainable beliefs and practices dominated by political and social discourses of how to 'manage' the environmental crisis. A posthumanist perspective, one that is adopted by many in this collection of chapters, according to Smith (2013) "takes seriously the need to stop the "anthropological machine", the constant "production" of absolute dividing lines between humans and the rest of the natural world" (p. 28). Anti-exceptionalism and anti-exemptionalism therefore demand that ethical and political domains no longer be limited to humans, but includes all manner of beings, and ecology is not limited to scientific description, but includes values and ethics (Smith, 2013).

The authors in this book seek to explore a variety of perspectives outside of the mainstream – that is, while scientific and technological approaches are needed as we forge ahead to try and accommodate the issues currently facing humanity and the planet, we suggest that reconsidering how a relationship with the planet that doesn't focus on the human, but on the relationship between the human and the more-than-human may provide a new imagining – a new space for changing how human and nature are being considered. These emergent theoretical approaches will highlight the interdependencies of human and more-than-human worlds. Messy relations of interspecies interaction challenge us to re-position or decentre the human subject and consider the entangled world of the cultural and the natural. Through our intellectual sharing we seek to explore the role of nature within us to

unpack the binaries between human/nature and human/culture – an entangled 'humannature' – and consider new ways for engaging with and through an embodied sense of nature. Drawing on the work of Val Plumwood (2003) this implicitly posits that we collectively "resituate the human within the environment, and resituate nonhumans within cultural and ethical domains" (Bird Rose et al., 2012, p. 3). This text seeks to consider how humans frame the notion of spending time in nature and how through education and learning in sustainable futures we can inform others about the benefits of spending time in and with the more-than-human world. The authors seek not to just write about theoretical ideas, but to illustrate through their research practices the ways they have been considering these ideas differently. To respond, re-configure, re-read and re-present in order "to re-cast human stories within the context of larger synergetic time frames and processes" (Bird Rose et al., 2012, p. 3) they are provoking and grappling with their own past and current ways of thinking and being in their research.

To initiate this process authors were asked to address one or more of the following questions in their chapters: How can we engage with the more-than–human world in new ways in order to do our sustainability and education work differently? What new theoretical approaches might help us to imagine alternative ways of relating to and encountering the more-than-human world? Are there examples of sustainability projects locally, regionally or globally where new imaginings for sustainability are emerging and what can we learn from them? What role will education and learning through new imaginings in sustainability potentially play in these precarious times? Since its inception authors have moved beyond these confines.

Precarity and Sustainability Education

Precarity and education is one of the common threads throughout the book. Authors discuss the role of education, and more specifically, education for sustainability, across school, university, and community settings. Peter McLaren in his 1995 book on the critique of contemporary culture and educational practice opens with these words:

> I will not mince my words. We live at a precarious moment in history. Relations of subjection, suffering, dispossession and contempt for human dignity and the sanctity of life are at the center of social existence. Emotional dislocation, moral sickness and individual helplessness remain ubiquitous features of our time (McLaren, 1995, p. 1).

This sense of hopelessness he was reporting on over 20 years ago was, according to McLaren (1995), the result of late modernity's "dehydrated imagination that has lost its capacity to dream otherwise" (p. 2). While in his focus there was an absence of the more-than-human, his sense of urgency for education and educators to be present in debates about the precarity of the modern world seem to be a forewarning of dangerous times ahead and one we take heed to in this publication.

Within the current Australian context, sustainability education has been conceptualised as the process of developing our human capacity to address sustainability problems: "…the knowledge, skills, values and world views necessary for people to act in ways that contribute to more sustainable patterns of living. It enables individuals and communities to reflect on ways of interpreting and engaging with the world" (Australian Curriculum, Assessment and Reporting Authority [ACARA], n.d., p. 1) with little space for considering alternative ways of relating to the planet. Despite sustainability being identified as a cross-curriculum priority of in the Australian Curriculum, there still remains uncertainty surrounding whether it will be supported and how it can be integrated into any educational system. This is a critical issue particularly in higher education in general, as Nejati and Nejati (2013) have found that "many university stakeholders and academics are unaware of sustainability principles" (p. 101). Correspondingly, the Australian Education for Sustainability Alliance (AESA, 2014) reported that few education academics or pre-service teachers are presently able to effectively integrate sustainability into their practices. The urgency of the impending environmental crisis necessitates a re-thinking of how we engage with education and sustainability. Taking again from McLaren (1995), it seems we need to break through our ongoing dehydrated imagination and loss of capacity to dream creatively about new possibilities. We need to foster pedagogical practices that are suffused with a sense of newness that can break through that numbness. Numbness breeds dispirited paralysis – there is nothing to do and no energy to do it with. Such numbness makes life even more precarious as we become paralysed by the enormity of our shared situation; we have old tools that are no longer relevant to the task at hand.

This book is therefore also a call to action in the field of sustainability education. Seeking opportunities to integrate sustainability into the curriculum, by crossing traditional disciplinary boundaries, and engaging with alternative discourses that consider other ways of knowing the human and more-than-human world, and by exploring creative pedagogical approaches. This re-imagined approach may require wild pedagogies; that is, the development of, and experimentation with, curriculum and pedagogy that is messy, disorderly, undisciplined, or unconventional. For example, Snaza (2013) proposes the concept of "bewildering education". Drawing on Lather's (2007) notion of education as "getting lost," Britzman's (2011) notion of "'wild' education," and Hawthorne's (2002) concept of "wild politics", Snaza (2013) proposes "…that what we need today is an education that does not know where it is headed. This is not its failure, but its virtue" (p. 49). For Snaza, this open-ended pedagogy may also require us to break down the disciplinary boundaries that are prominent in higher education, as well as increasingly in primary and secondary schools. A question that we must engage with therefore, is whether or not sustainability education can be embedded across the curriculum within diverse contexts, and in ways that are less prescriptive?

Education is firmly situated as a cornerstone of the modern environmental movement. While there is likely to be a level of divergence between the use of the terms environmental education, sustainability education, education for sustainable development, or education for sustainability, there is possibly broader consensus that the

fundamental aspiration is a healthy, thriving planet that acknowledges the entangled relationship between the human and more-than-human world. The environmental movement has evolved from the work of influential writers, activists, scientists, and educators from diverse disciplines and philosophical orientations (see Carter & Simmons, 2010) over many years. It has also been driven forward by intergovernmental cooperation led by the United Nations (UN) tracing back to the 1972 Conference on the Human Environment (United Nations Environment Programme, 1972) and numerous subsequent landmark events, which led to the UN Decade of Education for Sustainable Development (2005–2014) and its evaluation and completion at the 2015 UN Sustainable Development Summit. The recent completion of this UN Decade, as well as the progress that was achieved from 2000 to 2015 towards the UN Millennium Development Goals has resulted in a new post-2015 sustainable development agenda. These 17 new Sustainable Development Goals (SDGs) for 2015–2030 support a development agenda centred on global action for people and planet. The approval and launch of this global campaign in September 2015 provided a timely opportunity to not only reflect on the past and present role of education in addressing the global challenge of sustainability, but to re-imagine innovative or even wild pedagogies that may create new understandings of sustainability education in the twenty-first Century. The United Nations Educational, Scientific and Cultural Organisation (UNESCO) policy document on the SDGs supports the role of education as being central to achieving these goals. It states: "Education enables individuals … to live and aspire to healthy, meaningful, creative and resilient lives. It strengthens their voices in community, national and global affairs" (UNESCO, 2014, p. 15). And further to this: "sustainable development for all countries is only truly possible through comprehensive cross-sector efforts that begin with education" (p. ii). The question though is not whether sustainability education has a role to play in a sustainable future for the planet — it is can we re-imagine new ways of 'doing' education and not repeat the same old practices? And will such old capitalist models of UN SDGs for example, be able to take on the radical new thinking needed? Are there new practices of education and educational research that can be 'performed' that can address these precarious times? Can we construct a new shared imagination?

Supporting change and a shift towards sustainability in educational research requires a willingness to interrogate our practices and theoretical orientations. Through this scholarly playfulness, the authors in this volume delve into theorising, or in some cases re-theorising their work, using lenses that consider the relationships between the human and more-than-human world in different ways. This provides a new space for critical dialogue about our relationship with the planet and the stuff of the planet to emerge and illuminates entry points for reconceptualising teaching and learning in these precarious times.

Several authors engage with posthumanist perspectives in relation to pedagogical practices. According to Snaza (2013), "posthumanists argue that the 'human' is not a stable, ontologically identifiable being" (p, 45). Therefore, posthumanists, such as Derrida, Haraway, and others challenge us to analyse how we conceptualise ourselves, and how we differentiate ourselves from nonhumans through oversimpli-

fied conceptions. Rather than an ontological truth, for posthumanists, human is a political concept. Therefore:

> …the dichotomies between mind and body, animal and human, organism and machine, public and private, nature and culture, primitive and civilized are all in question ideologically (Haraway, 1991, p. 163).

While it has become pervasive in other fields, posthumanism has not received a high level of consideration in educational fields (Pedersen, 2010; Snaza &Weaver, 2015). Pedersen (2010) suggests there are several possibilities for this 'silence', particularly in relation to human-animal relationships due to western pedagogy being focused in a 'humanist tradition' that informs a disconnect and distinction between human-nonhuman entities, with a priority in the socialisation of children as future consumers.

If we accept these arguments, then we can start to engage with theories and ethics that seek to interrogate and reconstruct our current educational practices. In doing so, we also recognise that we may create tensions and contradictions, and we may raise new questions and ideas, rather than offer unequivocal solutions. Although the authors in this book may vary in the ways in which they engage with theoretical concepts including the way they define the Anthropocene and sustainability, the theoretical orientation of the book is towards a reconceptualisation of human/more-than-human relations. A variety of theories have been adopted by authors including posthumanist theory, ecofeminism, cosmospolitics, indigenous knowledges, new materialism, animism in order to call into question the centrality of 'the human' and the anthropocentrism of dominant western educational discourses; thereby compelling us to re-imagine sustainability in education for diverse contexts.

Throughout the book authors have questioned and moved away from historical models of formal environmental education (EE) research. EE has often been very anthropocentric in is view of the environmental crisis, this book is a space to trouble these normalized ways of viewing EE or ESD as the single answer to changing of human behavior and their impact on the planet. While not wanting to be viewed as having field amnesia the authors have not engaged in an historical account of the extant EE literature, in fact there has been a deliberate attempt by many authors to focus on sustainability in 'education' in its broadest sense rather than limited to sustainability education or environmental education in 'school' settings. The strength of this approach to the book has allowed the editors to invite contributions from a diverse group authors in order that it could potentially lead to deliberate disruptions. How the book comes together as a cohesive yet eclectic collection of ideas is mapped in the following book overview.

Mapping the Ideas

Section One: Responding to the Anthropocene

The first section in the book provides some theoretical ideas for exploring the possibilities of what precarious times represent and the possibilities of how theoretical and philosophical re-thinking can be helpful for creating discussions about what we have come to take for granted in the field of sustainability. The first chapter by Malone and Truong is a simple mapping of some of the key concepts and approaches taken up by authors in the book. Rather than define terms like precarity, posthumanism, sustainability, it is acknowledged that there is fluidity in what comes to be known as the assemblages of concepts and approaches taken up by authors. Some concepts reappear, are revisited, and recast while others are unique, specific, and unusual. The second chapter from Margaret Somerville builds on this beginning place by fleshing out a number of philosophical, theoretical and methodological approaches to consider when educational research is responding to the Anthropocene. She "identifies new posthuman philosophical approaches in Anthropocene scholarship and postqualitative research that seek new ways to address the profound nature/culture binary and decentre the human being". She does this work by exploring three posthumanist moves: intra-action, common worlds; and thinking through country. This chapter is followed by an essay by Paul James where he brings to our attention the challenges of finding an alternative paradigm for life that addresses the urgency of planetary issues through a comparison of posthumanism, with a well versed political/economic model of sustainability: the Triple Bottom Line. By addressing some of the 'problems' inherent in each of these approaches, one that decentres the human the other that centres and privileges the economic, he then argues for a reconstituted model that incorporates the social with the natural; an approach where "social life is inextricably embedded in the natural, but the natural does not depend upon the social". The final chapter in this introductory section, Chap. 4, is by Iris Duhn who works with the concept of cosmospolitics "as a device that creates hesitation by questioning assumed shared understandings without offering alternatives and solutions, the chapter assembles diverse elements in an attempt to create a cartography of urban place-making". She argues that cosmospolitics can offer a re-imagining for multispecies encounters that are open-ended and shake up that which has been taken for granted in our conceptual approaches to understanding place.

Section Two: Re-configuring and Re-worlding

To re-configure or re-world is to rearrange something differently, to take what was believed to be there and find new ways of bringing it together. "Nature" writes Affrica Taylor in the first chapter of this section "is a seductive idea". Tracing the

'benign' romanticisation of nature in nature based pedagogies of the early years in this chapter she sets about to "reconfigure our fraught relationship with 'nature', and to design common world pedagogies that respond to the real, messy, and non-innocent cosmopolitical worlds in which we actually live". Through the troubling of her own research study where she is present with children and kangaroos exploring kangaroo-child relations, she exposes the messiness of grappling with real world relations and presents the possibilities of a common worlds conceptualisation as a pedagogical process for this work. In the next chapter, Sarah Crinall brings to the book a shift in the pace of academic fervour as she guides us through her watery *bodyplacetime* blogs as a form of artistic practice. In this chapter she re-tells the stories of the blog making while paying attention to dirty, messy possibilities of 'humannatured' becomings. This is a place of pleasure and playfulness that is soothing and nourishing as she is re-worlding her research, artmaking, and mothering with her daughter in the mangroves of Westernport bay. The next chapter is followed Carol Birrell, who writes "I want to ask myself as a member of the human species: Who am I as a human? How do I live and locate myself as an earth dweller within a myriad of relationships embedded within the living and non-living worlds?" She offers her practice of touching the earth, an earth-based arts practice that she has been developing for over 20 years, which she articulates as a 'poetics of place'. How do children respond to the Anthropocene? This is one of the questions Marek Tesar asks as he presents through his chapter the complexity of being child and constructed in childhood in connection to material matter. Drawing with and through the theories of Foucault, Deleuze and Guattari, Latour and the new materialist turn evident in the writing of Bennett and Barad, Tesar provides a deeply compelling argument focused on the urgency to be more attentive to the thinking of matter, things and subjects in the re-configuring of material bodies of childhood. In a further deepening of pedagogical practices for re-worlding children's relations with the natural world, Kumara Ward explores performativity, arts practices, and place identity to conjure up possibilities. She argues, "Promoting engagement through the arts and postmodern emergence provide an anchor to place and an entry point to experiencing common worlds". In this chapter she discusses the practice of children doing ecological performativity as a platform for common worlding. The next chapter then shifts us to a new plane of thinking as author Neera Handa exposes some of the challenges in Higher Education environments, in particular western knowledge systems, to addressing the urgency of the dilemmas facing global society. She argues for pedagogies that acknowledge a reconceptualisation of sustainability education where students can access their non-western theoretic-linguistic tools as a form of transnational knowledge exchange.

Section Three: Re-reading and Grappling

The authors in Section Three describe their contributions through the notion of re-reading and grappling in the sense that they may be re-reading their research through particular lenses and engaging with new theoretical approaches, or potentially grappling with emergent ideas that may shape future directions in their explorations of sustainability in precarious times. In the first chapter of this section, Karen Malone draws from data collected while conducting research with Bolivian children on their everyday environments to provide a critical discussion of retrospective engagement with posthumanism and relational materialism. Malone's posthuman narrative of child-dog-bodies interspecies relations represents a critique of human exceptionalism and problematises a culture/nature binary. Her re-reading of the data decentres the human, in other words shifts away from the children's voices, to bring attention to the material entanglements of these environments. Correspondingly, in Chap. 12, Denise Mitten explores the entanglement of all beings and systems as an ecology of relationships. Grounded in an ecofeminist theoretical framework, she brings attention to the inter and intra-connectedness of the human and more-than-human world within the cosmos. Through tracing outdoor education and sustainability education, she reinforces the need to maintain and build healthy relationships with the more-than-human world through more caring, reciprocal, humble, and appreciative engagement. The call for more caring relationships in relation to the social sustainability of the planet is echoed in the next chapter by Tania Ferfolja and Jacqueline Ullman who engage with critical posthumanism to examine the silencing of lesbian, gay, bisexual, and transgender (LGBT) communities in school education. Their self-professed experimentation with posthumanism and new materialism sheds necessary light on the invisibility and marginalisation of gender and sexuality-diverse subjects in schools as demonstrated through policy and curriculum documentation, and teacher apprehension in relation to LGBT-related content. Tonia Gray, who also investigates the criticality of healthy relationships between the human and more-than-human world, discusses human-nature relations, and more specifically, the potential relationships between humans and plants, through the concepts of biophilia and animism. In this re-reading of a case study examining the benefits of biophilic design in workplace environments, she argues that these types of human-nonhuman relationships established through everyday greening could support steps towards workers recognising interdependence with the natural world. In the final chapter of Section Three, Angela Foley considers the place of Australia's First Peoples in developing an urban intercultural sustainability agenda. Through tracing the history of contemporary sustainability discourses and mapping an urban intercultural sustainability discourse, she explores the question of what sustainability means in the Australian urban contact zone, and argues for a decolonised approach to sustainability that acknowledges Country in a re-imagined Australian sustainability discourse.

Section Four: Re-presenting and Re-presencing

Section Four is comprised of chapters where the authors are re-reading their research and re-presencing themselves and their work. This may involve examining and analysing data in new ways using different theoretical themes, or writing their voices and emergent perspectives into their work through self-reflexive practices. A common thread throughout the chapters in this section is the broad focus on education across diverse settings. Some authors in this section have delved into posthumanist and relational material perspectives across different curriculum areas, such as in the first two chapters. In the first chapter of this section, Son Truong examines the integration of sustainability as a contemporary health issue within the Australian Curriculum. He reconsiders the dominant discourses informing particular pedagogies and curriculum within the area of Health and Physical Education to call for increased attentiveness to the *enchanted* experiences of children and their feelings of connection to the more-than-human world as an important dimension of their wellbeing. In a similar vein, Susanne Gannon follows on next with a study that explores the interdisciplinarity of sustainability education through the development of a secondary school English and Science project. She shares some of the resulting interactions between animals and students that created pedagogical encounters where the separation between subjects and objects became blurred. These encounters provoke re-imaginings of a common world that spur new ecological understandings amongst teachers and students, which is a theme addressed also in Chap. 18, where David Wright discusses the challenges of facilitating the learning of ecological understanding in schools. In a transnational study involving alternative/non-systemic schools, he explores teachers' narratives of ecological understanding, which create opportunities for educators to reflect on the ways in which students think about ecological issues and how teachers may shape opportunities for new ways of thinking to emerge. Thus, the final three chapters of this section focus on the development of future teachers and the integration of teacher education and sustainability education. Terri-Anne Philpott first argues for increased diversity in the field of outdoor education, and in particular, proposes the need to nurture and retain female outdoor educators in a profession dominated by males. Informed by feminist theoretical orientations, she calls for a rebalanced approach to achieving sustainability outcomes in the Australian Curriculum through promoting resilience amongst pre-service teachers and facilitating a wider range of outdoor and sustainability-oriented experiences. With a gaze towards the future, in the next chapter Les Vozzo and Phil Smith argue that schooling must reconsider the environmental and social justice contexts in which they operate, in order to respond to the challenges of integrating education and sustainability. They map current trends that have led to the precariousness of our current situation and make the case for more engaged citizenship for a sustainable future through reinvigorated education initiatives. Lastly, David Clarke then focuses on re-imagining the possibilities for creative approaches to sustainability education in undergraduate outdoor adventure education. Through the narrative of leading students on a rock climbing trip, Clarke

engages with emerging post-human/post-nature discourses to reconsider the relationship between climber and rock; consequently, challenging the nature/culture dualism present in environmental education. His discussion traces the influence of the material turn in environmental education, and proposes a pedagogy of reciprocal participation with a world that is already participating. In his conclusion he writes: "In a process-relational world of becoming there are no beginnings or ends, and certainly no conclusions. There are, however, plenty of middles, and this is where we find ourselves now". This is where this books lies, somewhere in the middle.

Living Well with the Planet

Throughout the different sections of the book authors share examples and case studies of research, while also playing with theoretical and pedagogical ideas about sustainability and education. This theorising is always moving towards a deeper understanding of the humanist/posthumanist ethic, the nature/culture divide, through and with a number of theoretical approaches including new materialism, cosmopolitics, place theory, 'common worlding', eco-feminism, animism and biophilia, deep ecology, and critical theory. This engagement with theoretical ways of thinking about sustainability in precarious times provides a new space for dialogue about our 'complex' relationships with the planet and allows 'the stuff' of the planet to emerge. It also illuminates entry points for reconceptualising teaching and learning in and around the role of sustainability as a call of the Anthropocene. While the authors may vary in their specific philosophical positions, they all question conceptualisations of the human and more-than-human world and the challenges it presents. These points of convergence and divergence serve to stimulate new discussion and progress ideas about sustainability, and education.

While the new United Nations Sustainable Development Goals (SDGs) are now being discussed and projects are being invented, questions continue to be raised globally about the impending impacts of climate change; concurrently, on a small island in the Pacific Ocean the final plans are being made for the permanent evacuation of all its inhabitants. This presents an important time to pause and consider the role researchers and educators in sustainability will have in the coming years. While our understandings of human-nature relations continue to evolve, and the proposition of considering new relationships with the more-than-human world are not entirely new, the current rise of innovative theoretical work across disciplines and its potential to reinvigorate the field of sustainability and education is opportune and critical. By disentangling contemporary theoretical approaches as applied in new ways across this collection of chapters we are seeking to re-imagine the possibilities of sustainability research and education in these precarious times and contribute to these ongoing discussions. This book isn't about answers, but about responding to, re-configuring, grappling, and re-presenting possibilities for living well and differently with the planet.

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Chapter 2
The Anthropocene's Call to Educational Research

Margaret Somerville

Introduction

This chapter is set within two parallel social processes in contemporary western societies: the continuing penetration of advanced capitalism and the growing response to the devastating impact of climate change framed within the Anthropocene. It considers the analysis of advanced capitalism proposed by philosopher Rosi Braidotti (2014) and the gathering momentum of academic scholarship framed within the concept of the Anthropocene. Described as "a new phase in the history of both humankind and of the Earth, when natural forces and human forces became intertwined, so that the fate of one determines the fate of the other" (Zalasiewicz, Steffen, & Crutzen, 2010, p. 2231), the Anthropocene is proposed as a new geological age. Strongly advocated by Nobel prize winning atmospheric chemist Paul Crutzen (2002), this proposal is currently under consideration by the Geological Society of London to determine whether the new age will be formally accepted into the Geological Time Scale.

While debates continue about when the Anthropocene epoch began, the most significant aspect of the concept of the Anthropocene is in the way it has galvanised scholarly activity. Individual academic papers are not able to demonstrate its force but a preliminary review of conferences with 'Anthropocene' in the title revealed at least five international conferences in 2014 in Europe, the United Kingdom, United States, and Australia. These conferences shared a common concern with "the fundamental viability of how humans have organised the relationship between society and nature" in relation to the impact of human induced climate change (Earth System Governance, 2014, p. 5).

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New posthuman philosophical approaches generated within the scholarly activity of the Anthropocene offer a radical re-thinking of the relationship between the human subject and the world in the face of human induced climate change and the attendant massive species loss and environmental destruction. Embedded within these issues, the unequal distribution of wealth and resources, the growth in global poverty, and escalating global conflicts, dispossession, and war are parallel social problems related in complex ways to the exploitation of the planet (Taylor, 2014). These new approaches mark an epistemic shift in western thought and offer new ontologies, epistemologies, and methodologies for research. This chapter addresses the question of how educational research, in particular, might respond to the call of the Anthropocene.

What Does the Anthropocene Do?

The provocations of the Anthropocene can be understood as ontological, epistemological, and methodological. Philosopher Clare Colebrook (2010) identifies the ontological challenge of addressing climate change: "[c]limate change is not only a change of the climate but a change in the very way in which we think" requiring us "to develop new concepts of the human, new figures of life, and new understandings of what counts as thinking" (p. 15). Other scholars, motivated by similar concerns, focus on the ontological implications of species extinction in the environmental humanities (e.g. Rose, 2011; van Dooren, 2014). The epistemological challenges of the Anthropocene lie in the necessity to not only deconstruct the nature/culture binary but to move beyond the binary constructions that underpin the belief that the human species can be understood as separate from nature or the environment. This has generated interdisciplinary conversations to more sustainably connect nature and culture, economy and ecology, and the natural and human sciences, in order to address the profound impact of global warming (e.g. Gibson, Rose, & Fincher, 2015). Methodologically the Anthropocene has functioned as a tool for innovation and imagination to generate emergent constellations of life and knowledge because "we cannot solve problems using the same kind of thinking that created them" (Nordic Environmental Social Science, 2013).

The Context of Advanced Capitalism

In opposition to the radical re-thinking of Anthropocene scholarship, the forces of advanced capitalism continue to penetrate western societies and the developing world. This important oppositional context is rarely addressed in relation to Anthropocene research although it necessarily forms the background to all of the corrective moves. In a recorded interview for the Open University, Rosi Braidotti (2014) describes advanced capitalism as a 'continuous process ontology' that codes

and recodes the rules that construct our socioeconomic sphere. Through these processes previous emancipatory positions (such as feminism or environmental activism) are co-opted to the politics of consumption because difference is capitalised upon and highly valued in terms of creating new markets (the green market, the liberated female market). In other words, possible subject positions such as those of gender, race, and class are subsumed into the market economy and disconnected from their emancipatory potential to make a difference in the world. In this way advanced capitalism has assimilated and transformed the very subject that contained the possibility of transformation. Even more concerning, advanced capitalism has crossed all kinds of borders, absorbing "animals, seeds, plants, and the earth as a whole" into the politics of the market. "Seeds, cells and genetic codes, all of our basic earth others, everything that lives, has become controlled, commercialised and commodified" (Braidotti 2014).

In considering the possibilities for change, Braidotti (2014) says that the "transformative gesture is seldom the spectacular and is never an individual solitary gesture, it is a collective activity", that is, it requires collective activity in a similar way to the global movement of Anthropocene scholarship. She offers a prototype for a model of action adapted from classical forms of 'the politics of location'. A politics of location involves an acknowledgement that we can only begin from the place from which we speak in recognition of our particular position in the scheme of things. She believes that we need a more detailed and accurate account of the subjectivities we are constructing within advanced capitalism and then to work together to transform these through 'conversations'. These conversations would involve rethinking of our relationship to both living and dying in which we understand living needs to encompass all of our earth others and everything on which they are dependent for their continued wellbeing. A re-conceptualisation of dying is inevitable when we begin to contemplate the systematic depletion of all life forms on Earth. The details of Braidotti's (2014) proposals align with the most recent Anthropocene scholarship about entanglement, common worlds, and the revaluing of Indigenous knowledges.

The Rise of Posthuman Philosophical Approaches

The new theoretical approaches that have emerged within Anthropocene scholarship are marked by a shift in consciousness characteristic of a new paradigm. They focus on the inseparability of the human from the matter of the planet, seeking to decentre the human being. Though diverse, these approaches share a focus on rethinking the human subject as co-constituted within the more-than-human world. They are interdisciplinary, collective, and philosophically radical in the sense of developing new onto-epistemological positions. Philosophers Karen Barad (2007), Donna Haraway (2008), and Immiboagurramilbun (2013) have contributed to the development of this scholarship offering key concepts that I will elaborate on in this chapter. The concept of 'intra-action' reconceives the human subject as produced within the agency of the world (Barad 2007); the concept of the 'common worlds'

recognises the multi-species nature of our existence (Haraway, 2008); and the concept of 'thinking through Country' brings together Indigenous and western nature/culture approaches (Immiboagurramilbun, 2013; Somerville, 2013).

Postqualitative Methodologies in Educational Research

Postqualitative research methodologies are closely aligned with the posthuman paradigm because "rethinking humanist ontology is key in what comes after humanist qualitative methodology" (Lather & St Pierre, 2013, p. 629). In their editorial to a Special Edition of the International Journal of Qualitative Studies in Education Patti Lather and Elizabeth St Pierre propose that in recognising an ontological position of 'entanglement' all categories of humanist qualitative research are no longer impossible. The underpinning belief of humanist qualitative research, that language, the human, and the material world are separate entities, becomes untenable (Lather & St Pierre, 2013, pp. 629–630). In a similar position to Clare Colebrook's (2010) edict that the new epoch of the Anthropocene requires a re-thinking of what it means to be human, they challenge researchers with the paradox that in all previous paradigms of qualitative research the human is not only at the centre but is assumed as an already prior category in all qualitative inquiry.

Postqualitative inquiry begins with the assumption that there is no a priori category of the human. Any beginning point for research within this framework must necessarily assume the always-already-becoming of entanglement of the human subject with the becoming world (Lather & St Pierre, 2013, p. 630). In identifying new directions in current postqualitative research, they propose that much of the leading edge arises from three domains of inquiry: Australian Aboriginal cultural practices; the new (to education) area of animal studies; and new materialism (Lather & St Pierre, 2013, p. 629). In the following sections I take up these ideas through exploring the concepts of intra-action, common worlds and thinking through Country as they have been enacted in my own research practice taking up Lather's (2013) injunction to "start where we are" (p. 640).

Entanglement and the Method of 'Intra-action'

The concept of intra-action is borrowed from philosopher of physics, Karen Barad (2007), as developed in her book *Meeting the Universe Halfway*. Barad's central theme in the book is entanglement:

> To be entangled is not simply to be intertwined with another as in the joining of two separate entities, but to lack an independent self-contained existence (Barad, 2007, p. x).

Carefully plotting this concept from its origins in quantum physics, Barad (2007) offers a new way of understanding how the individual subject emerges only through the mutual entanglements of different bodies of matter, each with their own force or

agency. She calls this 'agential realism' in which "the primary ontological unit is not independent objects with independently determinate boundaries and properties but rather phenomena that signify the ontological inseparability of agentially intra-acting components" (Barad, 2007, p. 23). There is no prior existence for the individual subject because subjects emerge only through their intra-relating. She proposes that time and space, like matter and meaning, only come into existence through their being iteratively reconfigured within each intra-action.

In response to the way this concept was applied by Karin Hultman and Hillevi Lenz-Taguchi (2010), I decided to experiment with a small empirical study that incorporated the concept of intra-action in its design. I engaged two young children, 3 year old Charmaine and her 4 year old sister Lulu, to collaborate with me in this experiment. In a comparative analysis of two photographs of young children's play using humanist and posthumanist approaches the researchers compared a typical human-centred analysis with a new materialist analysis of one photo of a girl playing with sand and another of a child on a climbing frame in an early years learning setting (Hultman & Lenz-Taguchi, 2010). Given the static and representational nature of this data analysis I wondered what might be possible if the research design proceeded from the concept of intra-action and what practices of documentation might evolve. Over a 12 month period I recorded the intra-actions of Charmaine and Lulu within the places of their choice, which included the backyard, local walks, and the nearby river (Somerville & Green, 2015). The following is an account of one of these events of place:

> The next event takes place at a different spot a bit further along the river. A little more clean, a bit more wild, with a wide dirt/sand beach beside a large expanse of shallow water. A ridge of river stones stretches across to a little island. Water bubbles over stones. We take snacks in a biscuit tin and a picnic rug. Both girls take shoes off and walk to river stone crossing, slippery with a light layer of silt. Charmaine feels her way with feet on rounded surface of slippery stones; Lulu doesn't like slippery, unstable feel of stones, stays on sandy beach. Charmaine comes back. They look around, try different things, ask for snacks, have little tiffs, need attention. I remove myself from the action, to enable whatever will happen to emerge.
>
> After a little while Charmaine sits down, fully clothed, in shallow water at the very edge of the river with the tin emptied of its snacks. She scoops handfuls of wet sandy mud, drizzling it through her fingers alternately onto a half-submerged log and a flat rock. She continues to scoop sandy mud with fingers and biscuit tin from the river, drizzling it through her fingers to make a drizzle castle, then washes it away with water from the tin and then makes it again. She does this on the flat stone and then on the log and then back again for twenty to thirty minutes of complete absorption. For all this time she is completely silent.

I recorded a small segment of this activity, once it was fully established, with a three minute video on my iPhone. Each time I review this video and show it to others we are amazed by the stillness and silence of this normally noisy, overactive, rambunctious child. Only her hands and arms move except for a slight turn of her head and upper body as she switches from log to flat stone as the platform for her sand drizzle castle. There are no human voices at all, only the sound of water bubbling over river stones, the chirruping of birds, and slight tinny clicks as tin meets pebbly sandy mud and water in Charmaine's play. Normally running around from place to place, Charmaine sits entirely contained, attention captivated by sandy mud and water

within the small arm, hand and finger movements of scooping, drizzling and washing. To be with this video is to be immersed in body, movement, and nonhuman sound.

Understood through the lens of intra-action, water, sand, tin, and girl are acting on each other simultaneously (Hultman & Lenz-Taguchi, 2010). If I view them as transforming each other, I see that the water mixed with the sand and scooped in Charmaine's hand each change the other. The muddy sand of the river bed becomes a drizzle castle, the tin becomes a scooper and container of water, the hands of the child become tools, open and close, body becomes creator as arms lift and drop, head turns, eyes focus. If I understand all of the bodies as causes I see how the physical qualities of sand, water, log platform, and body of girl bring each other into being, no one element is prior according to these ideas of ontological entanglement. I can see how new problems emerge as an effect of their mutual engagement: How does sand drizzle into castle, what amount of sand to scoop, how to hold fingers for best result, how does it wash away, what happens if I do it this way or that? In this way I can see that sand, water, tin, and girl simultaneously pose questions in the process of trying to make themselves intelligible as different kinds of matter involved in an active and ongoing relation. The water wets the sand to enable it to drizzle; tin carries water to wash drizzled sand away, arm, hand and fingers move in relation to sand, water, and tin as whole girl-being is formed in this relational moment of becoming which is also a moment of intense learning. The human is not removed in intra-action but is seen through the lens of entanglement where all are produced moment by moment in the relations between sand, water, tin, and child as part of this more-than-human world.

'Common Worlds' and Multi-species Ethnographies

A 'common worlds' understanding of place has been applied in a global early childhood studies collective (Taylor & Ketchebaw-Paccini, 2015). This approach has been developed as a response to the question of how humans can live well with each other and in balance with the planet's ecological systems, proposed as the most pressing and confronting political and ethical imperative of our times (Taylor, 2014). A common worlds approach is another way of addressing the intransigent nature/culture binary in western thought:

> Instead of rehearsing the nature/culture binary … the notion of common worlds encourages us to move towards an active understanding of and curiosity about the unfolding and entangled worlds we share with a host of human and more-than-human others (Taylor & Guigni, 2012, p. 111).

Common worlds theory involves a shift from a focus on human-human social relationships to consider heterogeneous relations between a whole host of living beings, non-living, and living forces. Rather than assuming that these relations are built upon communications between already formed subjects, a common worlds approach

understands these relationships as generative encounters with others, shared events that have mutually transformative effects. It is through these relations with others that we become, and continue to become who we are: "actual encounters are what make beings" (Haraway, 2008 as cited in Taylor & Guigni, 2012, p. 112). The Common Worlds Early Childhood Collective has generated a number of multispecies ethnographies, a focus shared across a major research strand of Anthropocene scholarship.

Becoming-Frog

I followed the entangled relations between children and frogs over many years in the Morwell River Wetlands project (e.g. Somerville, 2007; Somerville, 2011; Somerville & Green, 2015). The longstanding Morwell River Wetlands program offered alternative storylines and ways of learning that enabled children to learn about themselves and their place in the world differently. The Morwell River wetland is very much a common worlds phenomenon, a part-natural, part-artificial wetlands area constructed by the power company. Neither pure nature nor pure culture, it is located in the original overflow from the river, which was channeled into a pipe to make way for the coalmine. Constructed by the company's mining rehabilitation engineer, the wetland has pools and banks, swathes of trees, logs and dead timber for habitat, islands and causeways. These form the evolving landforms created for creatures to re-inhabit this place. The primary school has had a relationship with the wetland since its construction in the 1990s, and has monitored its evolution through the frogs, native trees, shrubs and grasses, and other creatures that have come to inhabit the place.

In this project children participated in the ongoing formation of the Morwell River wetlands as part of their learning. They came with their families to the monthly frog census monitoring at dusk to identify and record the different frog calls. This place-based sustainability program was integrated across all grades and all subject areas. In the early grades the children studied the needs and life cycles of frogs, rearing tadpoles in the classroom and learning in a mini wetlands constructed in the school grounds. The middle grades were involved in monitoring the wetlands through the frogs and other animals that came to live there, integrating literacy and numeracy, history and geography, civics and health with their visits to the wetlands. Children in the upper grades conducted scientific analyses of the wetlands' wellbeing by monitoring water quality and identifying the micro and macro organisms significant in its development as a living system. I was transfixed on a visit to one class when I viewed the children becoming-frog in a frog dance they had choreographed entirely to frog calls.

I had visited the crowded portable classroom earlier in the day and watched the children navigate desks, chairs, boxes, hanging artworks, and other objects that make up this decidedly working class school classroom. My attention was especially drawn to Mary, a child with Down syndrome, moving awkwardly in this

crowded space accompanied by an integration aide. When I returned after school, the teacher and the integration aide, still working in the well-worn classroom, invited me to watch a short DVD of the rehearsal for the Christmas concert. There on the interactive screen, larger than life-size, the children came to life as frogs, dancing their frog dance to music made entirely of frog calls. The classroom, cleared of debris, became the space of the wetlands. Children becoming-frog moved frog limbs, fingers splayed, jumping, leap frog, becoming-frog to frog music. Mary, in particular, loved the performance, moving freely in this frog dance collective, unaccompanied by her integration aide. In one brief sequence towards the end she smiles pure pleasure into the camera, body liberated in frog dance.

On another occasion when our teacher education students designed activities in the wetlands for Grade 3/4 children I observed the 'exquisite care and attention' of one of the children who discovered a frog hidden under a log:

> Kneeling on the ground, Gemma gently lifts up the log to show us a small stripy brown frog half buried in moist brown soil amidst a flurry of ants. Monica asks her 'why doesn't the frog hop away?' Gemma leans further towards its stripy brown body, 'I think the frog knows we are here because it's moving its legs and digging itself in a little bit more', she responds with fingers and hands making frog digging movements. 'It isn't scared of us because it knows it's the same colour as the ground and we won't be able to see it'. Pauses a moment then continues, 'the frog's not worried by the ants because if the ants were biting it the frog would jump away. If the frog was eating the ants they wouldn't be under the log living there with the frog'.

In this moment Gemma enters the world of frog. She moves her hands and fingers like the frog digging into the moist soil, she thinks in frog-knowing that we cannot see it; she feels as a frog-not-worrying about the ants flurrying all around it. She enters frog-ant world through wondering how they are living there together in that hidden moist place under the log. Gemma becomes-other to herself through her immersion in the world of frog. In the common worlds of the Morwell River wetlands, (trans)formed by the power company, Gemma learns that the world she shares with power company, electricity lines, wetlands, and her school, is also central to other life forms such as that of the frog. By shifting our attention with Emma to the earth under the artificial log that provides habitat for the frog we can experience the frog-ness of Emma's moment-by-moment becoming. A common worlds approach enables us to imagine a world that is imperfect, always in formation, which we can be immersed in small local actions.

Thinking Through Country

The methodology of thinking through Country was developed collaboratively between U'Alayi researcher Chrissiejoy Marshall and myself for a research project about water in the drylands of Australia. As such it is Indigenous-led but represents a move beyond a specific Indigenous-non-Indigenous binary as a knowledge framework. It is contemporary rather than a representation of a traditional or pure

Indigenous past (Immiboagurramilbun, 2013; Somerville, 2013). For Chrissiejoy, in order to make any knowledge claims at all, she has to think through Country, the specific Country of the Narran Lake where she grew up on a property landlocked by white settler holdings.

Starting in the centre top of the painting this jigsaw piece is viewed as a mud map of the Noongahburrah country. The black lines are the rivers within, and marking the boundaries of this country, and the black orb in the centre represents the Narran Lake, where I was raised, which has always been the most significant and sacred site for Noongahburrah, Murriburrah, Ngunnaburrah, and all the other peoples of the nation that spoke the U'Alayi language as well as several other nations of Aboriginal people within bordering countries (Immiboagurramilbun in Somerville, 2013, p. 45).

In U'Alayi knowledge Mulgury is a core ontological concept through which one takes on the being of another creature and all of the life worlds that surround that creature. Chrissiejoy describes the meaning of this concept through a painting she calls "Me, myself and I".

At the beginning all was Mulgury. Only creative power and intent. Through the intent and power of our Creator, Mulgury reproduces into form to carve the beings and shapes of the world where the water meets the sky and earth sings the world to life. The pattern of life is Mulgury and Mulgury is traced in the Niddrie [the framework of the ancient laws within Niddeerie] of Mudri [person]. Every tracing, every rock, tree, plant, landform, the water, fish, reptile, bird, animal, and Mudri is in the sacred relationship, through Niddeerie. The pattern, shape and form of Mulgury is life, and all is a continuing tracing of Mulgury (Ticalarnabrewillaring 1961 translated by Immiboagurramilbun in Somerville, 2013, p. 49).

Four black swans are represented as the first image in the painting. The first two swans are for her mother, and the second two represent the collective of water people, the Noongahburrah, her grandfather's people. The swans are Mulgury, signalling their collective meaning as mythical creatures of the Niddeerie, as well as representing an individual's connection to a particular creature and its place. Immiboagurramilbun's mother is swan, Noongahburrah people are collectively swan. Swan belongs to the time and place of the creation of the land and people of Terewah, the home of the black swan, in the past, the present, and the future. Those who carry that identity are both swan and place. Country, swan, and person are together an ontological reality.

Chrissiejoy explains that if your Mulgury was the Kangaroo, you would learn that you are related to the trees, the insects, the birds, the grass, the wind, the rain, and all the things that occur and surround a kangaroo's life. You would spend years observing and learning about the life of your Mulgury – what it needs to survive and how it assists in the survival of other species. Most importantly, you would learn how all those things connect to yourself – how they all become your brothers and sisters, part of your family and about the responsibility that goes with that. In a similar way to posthuman thought, the knowledge framework of thinking through Country does not erase the human but embeds human subjectivity inseparably from the more-than-human world of which they are a part.

This methodology of 'thinking through Country' was enacted in a project that followed the waterways of the Murray-Darling Basin, gathering artists and cultural knowledge holders from Gamoroi, Paakantji, and Yorta Yorta language groups. In this project we asked: How can places teach us about water? How can we incorporate their pedagogical possibilities into educational systems in order to ensure the protection of people and their places? The project continued for 8 years producing a series of exhibitions of artworks and stories for the artist knowledge holder to represent their knowledge in visual form. In the final year I wrote a book, which represented my own creative outcome as a writer from the many years of research. In the final chapter I wrote about the 'mutual entanglement' of all of the collaborators of this project in Country. It was Chrissiejoy's bringing us together and telling the story of the lake as sleeping that was pivotal in the long slow process of learning to sing the waterways back to life. We came together in each other's country at East Mullane near the Narran Lake; at Swan Hill on the Murray River; and in Wilcannia on the Darling River. In each of these places we talked about our work together as a group and shared being in those places. There was much trauma to be dealt with and integrate into our continuing work together.

We were six people from different countries and crossing the boundaries of those countries into the territory of the other is the hardest thing to do. When I remember this time I think of the solace of the place of East Mullane. The lengthening shadows on the red earth with no grass, the desert trees, the luminous night sky, Badger's dark hands floured white with kneading johnny cakes, the flapping of flyscreens in the deserted homestead that sits so lightly on the land. I think too of Badger's story of the Paakantji people in Wilcannia locating water when the town ran out during the long years of drought, "Where the Ngatyi is, water will be". It was Chrissiejoy's bringing us together and telling the story of the lake as sleeping that began the long slow process of learning to sing the waterways back to life (Somerville, 2013, p. 172).

Thinking through Country involved all of the participants in an undoing and remaking of self in respect of each other and our immersion in each of the different Countries of our research. This process was a fraught and challenging remaking of self through the coming together of our different positions in relation to each other and traumatic colonial histories. Through this deep interrogation of self, Place became Country for me, a move that was recognised in the foreword of the book led by Chrissiejoy in describing me as sister. Country however, remains as a possibility for all, "a gift without entitlement, it is a gift that is always coming, every moment is a gift, the food we eat, the water we drink and every breath of life, it is all a gift" (Rose, 2014).

Conclusion

In considering three specific examples of the application of core concepts that radically disrupt the nature/culture binary I have moved between the global framing of the Anthropocene and Advanced Capitalism and very local actions that start where

we are. The research that I have described, and the onto-epistemological moves I have made are contextualised as a miniscule part of the vast collective gathering of scholarship around the concept of the Anthropocene. These theoretical and empirical moves follow similar desirelines to Braidotti's (2014) recommended strategies for transformation. They are seldom spectacular, they reinvigorate a politics of the local and they involve a reconceptualisation of desire from the lack of endless consumption to the plenitude of frogs, the pleasure of sand, water and a tin, and the gift of Country to offer a new imagining for precarious times.

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Chapter 3
Alternative Paradigms for Sustainability: Decentring the Human Without Becoming Posthuman

Paul James

Introduction

In the emerging realisation of the precariousness of the human condition an increasing urgency surrounds discussions of sustainability. Much of this urgency centres on attempts to find alternative paradigms for life on this planet. The dominant developmental paradigm currently assumes the centrality of modern, human-centred, market-driven, economic growth as the basis of human flourishing, marginally offset by ameliorative efforts to take the environment into account. Responses swirl through public discourse and practice. This chapter addresses two such alternative paradigms. The first is posthumanism, coming out of a critical postmodernism mixed with a new materialities discourse. The second is the Triple Bottom Line approach, much more conventional—hardly a paradigm break at all. Both these alternatives, it is argued, are flawed. They both leave the dominant paradigm largely intact—the first because it caricatures what it is criticising and then *allows* a posthuman future of disassembled, fragmented, and technologised bodies/minds to become part of its contradictory alternative; the second because, in its utter pragmatism, it fails to actually challenge what should be the object of its critique: human-centred development based on the single bottom-line of profit. The essay introduces a further alternative, the Circles of Social Life approach, as one of a number of potentially viable ways of thinking through basic tensions.

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Of Children's Games and Serious Concerns

An ecological child's game emerged in the age of intensifying globalisation, at least for those who travelled between hemispheres. Which direction would the water swirl as it formed a vortex at the plughole? Children and their parents—or perhaps mostly parents without their children—would arrive at a foreign hotel and immediately test the waters. They were looking for the Coriolis force, linking their plughole to the rotation of the Earth. Science, myth, and wrong-headed common sense became mixed up together. Many of us in the West grew up with this false intrigue. Murray Bail's (1980) novel *Homesickness* describes a museum on the equator in Ecuador displaying a bathtub on rails, used to show how if the bath is moved back and forth across the equator the water vortex changes direction. The phenomenon was featured in Michael Palin's *Pole to Pole* television series (James, Mills, & Vallance, 1992). The reality, however, is that water does not go down plugholes in different directions according to which hemisphere one takes a bath. This myth of the vortex and the plughole provides an analogy for talking about something very serious.

These are precarious times. There is no doubt that we need to rethink the current paradigms of sustainability. The world is in crisis, and in response some academic critics and theorists are turning to dramatic counter-positions. The present essay explores two seemingly unconnected contestations of mainstream understandings: the first is the posthumanist critique of the centring of the human, and the second is the Triple Bottom Line critique of the centring of economic profit. To extend the plughole metaphor, each of these contestations takes a complex phenomenon—the Coriolis effect, the human/nature relation, the domain of the economic—and, first, turns it into an all-embracing condition; second, translates it into a game that overlooks problems of spiralling illogicality; and, third, allows the main game of modernising and exploiting the planet to race on without being substantially challenged. In response to these three gamings, the essay concludes by suggesting an alternative approach.

There are some wonderful critical discussions of the vexed historical lineages of humanism (e.g. Kay Anderson, 2007). In parallel there are some excellent discussions of the materialities of things such as waste (Hawkins, 2006) and water (Weir, 2009); and there are nuanced discussions of vibrant matter (Bennett, 2010). Accordingly, this essay does feel the need to criticise the weaknesses of classical humanism. The essay is rather directed to the critique of its alternatives in order to find a viable way of recognising that the condition of the Anthropocene is embedded in the nature of how we live and think now, not primarily in the presuppositions of a few posthumanist philosophers or some putative problem with dualism.

The Problem with Posthumanism

Problem One. The Term 'Posthuman' Gives the Impression that It Advocates a Time After—or Post—the Human

In the context of the Anthropocene, decentring the priority of human needs over the limits of planet is a priority. It is important to shift our theoretical perspective so that we can write from the perspective of both human others and nonhuman others. And there are good reasons to criticise understandings of the relation between humans and nonhumans as one of dominion, mastery, resource management, or even modern humanitarian care.[1] Proponents of the posthuman approach seek to respond to these major issues, but a core conceptual problem with that approach, despite its apparent radicalism, is that its critique either ends up reproducing the condition of which it is critical or alternatively it slips into a vortex of disclaimers that lead to internal contradictions.

Alongside conceptual contradiction, the key political problem is that, in effect, the position allows the human as a *category of being* to flow down the plughole of history. This is ontologically critical. Unlike the naming of 'postmodernism' where the 'post' does not infer the end of what it previously meant to be human (just the passing of the dominance of the modern) the posthumanists are playing a serious game where *the human*, in all its ontological variability, disappears in the name of saving something unspecified about us as merely a motley co-location of individuals and communities. If the 'post' means 'after', what happens for example to the many customary peoples across human history, beginning long before the humanists, who do not dominate nature, and treat matter as vital and life-forces as multiple? For customary and tribal communities, matter moves between being inanimate and sacred depending upon the season or place. For them, life-forces include their dead human ancestors who have a continuing presence among the living (Grenfell, 2012). These communities are not humanists. They have lived before, during and after the classical humanists of the Enlightenment. Some of the posthumanists respond that this conceptual problem can be bypassed. And thus posthumanism, despite the usual meaning of the prefix 'post', is redefined to mean after, before, and during. Hence, we arrive at Problem Two.

Problem Two: Posthumanism Is Conceptually Confusing

In response to Problem One, Cary Wolfe (2010) says that his sense of posthumanism is comfortable with a multi-temporal redefinition:

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[1] It should be acknowledged that many modern humanists have been also arguing along the same lines.

> [P]osthumanism is thus analogous to Jean-Francois Lyotard's rendering of the postmodern: it comes both before and after humanism; before in the sense that it names the embodiment and the embeddedness of the human being in not just its biological but also its technological world … all of which comes before that historically specific thing called the 'human' that Foucault's archaeology excavates … But it comes after in the sense that posthumanism names a historical moment in which the decentring of the human by its imbrication in technical, medical, informatic, and economic networks is impossible to ignore, a historical development that points towards the necessity of a new theoretical paradigm (but also thrusts them on us), a new mode of thought after the cultural repressions and fantasies … of humanism (2010, pp. xv–xvi).

Lyotard did not actually argue what Cary Wolfe attributes to him, but leaving that aside, Wolfe links this confusing passage to another point made on the same page that moves in a contrary direction: "posthumanism … isn't posthuman at all" (2010, p. xv), he says. Read this point in relation to the above quote—"posthumanism names a historical moment"—and see if it helps you understand what he is saying. The issues are real and the quandaries are complex (a critique of the version of humanism that advocates hubris is necessary), but to have *posthumanism*, the approach, naming two distinct conditions as posthuman, one before and one after humanism, and then claim that it is not implicated in either, but is evoked by the latter, is a spiralling vortex of confusion. My attempt here is to drive home the political and conceptual consequences of the position, not to focus on the philosophical or literary issues.[2] It is certainly not enough, as some 'critical posthumanists' respond, to simply label all those posthumanists they do not like as transhumanists.

Problem Three: The Posthumanist Critique of Dualism Is Thin and Misdirected

Posthumanism, for all its variability, has at its core an abiding revulsion of Cartesian dualism. Dualist thinking is taken to be the essence of the modern and the humanist—namely, that we divide the world into a series of oppositions: us/them, human/unhuman, being/matter, mind/body, active/passive. The trouble with this argument is that as a blanket statement it is both conceptually and empirically wrong. Certainly there are strands of modernism and humanism that do just that—fetishise dualisms—but there are also strands of modernism and humanism that are very different. This relates to the first gaming listed above—turning what it is criticising into an all-embracing condition rather than just a tendency.

Conceptually, if those posthumanists who associate Descartes with dualism had read him carefully they would not find the proclaimed simple dualisms of mind versus body. Rather Descartes begins a thought experiment that turns upon relational claims about the *embodied mind* (Descartes, 1637/1998). There is a

[2] Anthony Miccoli (2010) has already provided a strong critique of posthumanism that develops that line of response.

considerable revisionist literature that fundamentally challenges this posthumanist caricature (Baker & Morris, 2005; de Rosa, 2010). To be sure, Descartes requires concepts that make distinctions—such as 'mind' and 'body' but he is not a simple divider of mind and body or human and animal. The posthumanist Alyce Miller (2015), for example, wrongly writes that "it is well known that Descartes did not believe that animals actually felt pain" (2015, p. 107). What he actually says is that animals feel pain just as humans feel pain, but they do not 'suffer' in the meta-sense because there is no rational *cogito* to do the *suffering*. Whether or not that is empirically true is not the issue here. The issue is that posthumanists tend to criticise the classical humanists based on a series of tropes taken out of context. 'Man is the measure of all things' and Leonardo's Vitruvian man are their favourite examples.

Problem Four: Some Posthumanists Anthropomorphise the Very World that They Treat as Beyond the Human

The concept of nonhuman 'actants' is quite useful (even if it problematically continues defines the world in terms of the human), and some of the new materialism is innovative and thoughtful.[3] However, for some posthumanists, matter is "intelligent and self-organising" (Braidotti, 2013, p. 35). Think for a moment about the anthropomorphism involved in such a claim. It involves a crude expansion of human qualities that even most humanists would understand as being a problem. One of the ironies here is that Descartes was, in one reading, a traditional-modern vitalist. Descartes uses the vibrant materiality of the pineal gland as the centre of the embodied mind. In a double irony, one posthumanist even uses a phrase that sounds vaguely Cartesian: "people become posthuman because they think that they are posthuman" (Hayles, 1999, p. 6), and all of this while contradictorily suggesting that the mind is only a "sideshow" to the body (pp. 2–3). This is just an unhelpful reversal. It is not good theory.

Problem Five: Having Damned Dualism, the Posthumanists Themselves Use Unacknowledged Dualisms

The irony is that posthumanists themselves continue to use the same distinctions of mind and body, human and animal as those they criticise, while, in some cases, simultaneously saying that we cannot use terms such as the 'body' anymore. 'The body', for one posthumanist now in inverted commas, becomes "a virtuality … a virtual, multidimensional space produced and stabilised by the recursive enactions

[3] Here I am thinking of Jane Bennett (2010). Her work is often taken out of context. Quite distinct from most posthumanists, she is clear that she is talking about encounters between ontologically diverse actants, some human, some not (p. xiv).

Table 3.1 The dualisms of the critics of dualism[a]

Human	Posthuman
Modern	Amodern
Dualist	Non-dualist
Singular	Multiple
Monist	Vital
Purpose	Play
Root/depth	Rhyzome/surface
Determinacy	Indeterminacy

[a]This table recalls Ihab Hassan's famous modernism/postmodernism table (1985). It should be noted that earlier in the same essay as the table, Hassan says that modernism and postmodernism "are not separated by an Iron Curtain or Chinese Wall; for history is a palimpsest" (p. 121)

and structural couplings of autopoietic beings" (Wolfe, 2010, p. xxiii). Try saying that to your children when you are suggesting that they should wash while taking a bath. I am not here criticising the use of complex technical language or conceptual elaborations of a common-sense term, but in this case the author is suggesting that the term 'body' needs practically to be treated as a virtuality. That is deeply problematic. What do some posthumanists say of those children in the bath who do not want to wash themselves? To paraphrase: Please attend to the bottom half of your recursive enactions and structural couplings? Or to paraphrase Katherine Hayles: their play agent wants to stay in the bath, while their resistance agent refuses to respond to parental desires; and all the while a water agent is washing them clean just by them being there (1999, p. 6).[4] This is neither good nor paradigm-shifting theory. It is just an awkward way of saying that in any situation there are multiple determinations, and there are intended and unintended consequences—something that critical theorists, including humanist critical theorists, have been saying for a long time.

Most of the posthumanists repeat the now classical process of setting up an implicit dualistic schema to criticise those terrible dualists. In other words, the posthumanist critique of the humanists for being dualists sets up false duality between the posthumanists and the humanists (see Table 3.1).

In practice, many modernists and certain strands of human-centred critique range across that divide in different ways. "No problem", say some of the posthumanists.

[4]Hayles is an interesting figure in the posthumanist tradition because she is a critic of the cybernetic posthuman condition, while succumbing to the posthuman inevitability herself, saying she wants the kind of posthumanism which enhances embodiment: "my dream is a version of the posthuman that embraces the possibilities of information technologies without being seduced by fantasies of unlimited power and disembodied immortality, that recognises and celebrates finitude as a condition of human being, and that understands human life is embedded in a material world of great complexity, one on which we depend for our continued survival" (1999, p. 5). I agree with all of that, except for the claim that what she is describing is a *post*human condition.

"Those apparent humanist critics are actually posthumanists too". And so Nietzsche, Thoreau, Darwin, Bergson, Fanon, Gilroy, and Shiva all become posthumanists, even though none of them have ever used the concept. Even Martha Nussbaum, an avowed humanist, becomes for Rosi Braidotti (2013, pp. 38–39) a reactive or negative posthumanist, and then, in what I think is simply a crass act of bad faith, Nussbaum is criticised for being a bad posthumanist, something she never claims for herself in the first place.

The difference between the Cartesians and the posthumanists is not that one uses dualisms and the other does not. It is the way in which they manage ontological questions. The so-called humanist, Descartes, for example, has vortex theory of weight and matter with the sun at the centre of a spiral of planets. But he does this without going down the plughole. For all of his mechanism, he is consistent in bringing science and human life together. By comparison, key posthumanists swirl around the science plughole, sometimes drawing upon modern science, sometimes celebrating the hybrid productions of science, sometimes expressing concern that techno-science is disembodying us, and sometimes relativising science through a postmodern turn. Take your pick; there must be something in that collection of posthumanist dispositions that is politically appealing.

Problem Six: The Politics of Posthumanism Is Ungrounded

And so we get to the practical projective question of what posthumanists actually espouse. Here it gets even more confusing. Different posthumanists go in very different directions, and some want to circle the vortex both ways at the same time. In the words of one writer, posthumanism—like humanism—promises a return to the Garden of Eden:

> A posthuman future is in some ways the logical completion and fulfillment of the modern, humanist project—as its utopian promise. It is more than a bit ironic that humanistic utopias have been slightly revised versions of Western culture's myth of origins, the Garden of Eden, where humans supposedly lived as animals in the natural world, nonalienated from other animals and their 'species being' … That is, the return to the garden that is the promise of posthumanism, like all utopias, provides us with only a general direction for an evolutionary development of culture. It is a pragmatic teleology that provides a promise and a vision that must then be translated into pragmatic agendas and movements for change (Carlson, 2015, p. xv).

This invocation of the humanist utopias as the basis of a posthuman politics is simply twisted. Here, the future politics of *post*humanism circles back to a prior condition, akin to the modernist utopia of the post-Garden of Eden before the Fall, only much, much better. Incidentally by recognising the embedded form of humanist utopias, this passage contradicts all claims, including those later in the same volume, which suggest that all humanists sets up dualist divisions between humans and animals.

A few pages later, the editors of the volume make the task even more difficult. In their Introduction they give up on the task of political projection, even before the book gets going. "Given our saturation in humanism", they say, "it is not even remotely possible at the present moment to conceptually or practically lay out a theory of posthumanist education or outline the contours of a posthumanist pedagogy" (Snaza & Weaver, 2015, p. 4). Common to all the posthumanist texts I've read, all that we are left with is a series of unspecified evocations (see for example, Snaza et al., 2014, Lloro-Bidart, Teresa, 2015): humanism is bad; posthumanism is the only way forward by going backward and forward, and taking the good stuff and not the bad.

All of this means that the posthumanists leave behind modernist approaches to environmental education (EE) and education for sustainable development (ESD) without being able to put much in its place, except a change of rhetoric and a rhetoric for change. As Phillip Payne astutely concludes in working his way through the absences and silences in environmental education:

> It is remarkable that the term 'conservation' has all but disappeared from the discourses of EE and ESD, mindful of the (Western) history of the field where EE was preceded by 'conservation education' and, before that, 'nature study' (2016, p. 174).

In other words, the posthumanists present their work as a spiral of conflicting and even contradictory contentions that only loosely fit together: (1) posthumanism will bring about an amazing new post-dualist world; (2) we are already posthuman; and (3) humanism remains *the* problem because it remains dominant. And all without providing an alternative grounding of the human condition, including its embeddeness in and dependence upon nature.

In short, most of the politics of the posthumanists remains empty aspirational. For example, the recent anthology *Posthumanism and Educational Research* begins with a typical posthumanist refrain:

> We live in an age in which democratic progressive cultural politics is very much about deconstructing the binary oppositions that have governed the construction of power relations of inequality and 'otherness' in the modern era (Carlson, 2015, p. ix).

Here, the author projects the aspirational politics of the posthumanist approach onto the world. For him the world is already posthuman, or nearly so. Unfortunately, he does not describe the world that I know where considerable empirical evidence suggests increasing inequalities and uneven but intensifying ethnocentrisms in relation to the Other. At the same time, without even recognizing a problem with the term, he uses the modernist notion of being 'progressive', as if this temporal loading will take us somewhere good.

Empirically, the posthumanists thus do not fare much better than they do conceptually. The posthumanist approach is wrong, for example, to the extent that it makes the claim that one of the key problems with the modern humanist period has been that it gives no agency to objects and systems. To the contrary, the humanist modern world (treating this characterisation of the world as humanist as uneven and contradictory) is very mixed in this regard. Many examples could be used to quickly qualify the posthumanist overstatement, but there is one allows us to segue into

our second contestation example, the Triple Bottom Line. This example is the stock market.

Contrary to the posthumanist claim that humanists do not understand the agency of things, the market is often described by humanist critics and cyborg proponents alike as working without or beyond human agency. Typically, *the* market anticipates events, responds to fluttering butterfly wings, and determines outcomes. As expressed in one unremarkable description on one stock-exchange website: "The particular market phase determines the type of action that may be taken for an order on ASX Trade, which in turn affects how trading is conducted" (Australian Stock Exchange, 2015). This determining, acting, and thinking market—of shares, bulls, trading pits, and bears—is projected in popular culture and politics through a media fascination that tracks transactions as animated matter. The most powerful of these things is called 'Wall Street'. It is a physical thing, treated more as a hypostatised and vital entity than as a pattern of structured practices. Wall Street does this, and Wall Street says that. 'Wall Street' even gives animal names to categories of humans: "If the masses are bullish, *Wall Street says* anyone who is a contrarian is bearish" (Fisher & Dellinger, 2015, p. 4). While *the* market has been given an attributed energy since the nineteenth century, from the latter part of the twentieth century we have even been increasingly asked to listen to the market (Barabba & Zaltman, 1991).

The Trouble with the Triple Bottom Line

The intentional force given to the phrase 'Wall Street says' points to a second contestation. It concerns the question, how much emphasis should be given to the economy in making decisions about what is to be done locally and globally? In most mainstream analysis the economy is given primary emphasis, qualified somewhat by a series of trade-offs with the environment. Here 'the economy' is now nearly always preceded either by the definite article 'the' or a deictic qualifier such as 'our'. It has come to be treated as *the* centre of flourishing human-life on this planet. Too many commentators and critics have forgotten, or did not know in the first place, that until very recently economics was an embedded relation within a much more integrated understanding of the human condition. Economics was linked to the concept of 'ecology' through their common root in the Ancient Greek understanding of household or family relations—*eco* or *oikos*, the basic unit of the social relations for the Greeks.

The contemporary concept of 'the economy', with the 'the' now sitting proudly to the fore, first began to be used with regularity in the twentieth century. Writing in the eighteenth century, even Adam Smith, the father of modern economics, did not use this lexical form. Because economic commentators today rarely grapple with his original passions—and because economic history has largely been subsumed into business studies—they fail to recognise that books such as the *Wealth of Nations* (Smith, 1776) use very different concepts from '*the* economy'. When Smith does use the term 'economy', it is either as 'political economy', the science of the sys-

tems of commerce and agriculture as Karl Marx would have used it, or as 'good economy', meaning being economical, frugal, and careful in management. That is the last thing that the horsemen of the Global Financial Crisis want to hear. It is certainly not what Wall Street is telling them.

The Triple Bottom Line approach was developed as a well-intentioned attempt to decentre the economy. Phrases such as "It's the economy, stupid", from Bill Clinton's 1992 presidential campaign, attested to this centring. The alternative metaphor of the Triple Bottom Line, usually attributed to John Elkington (1997), added two more bottom lines to the profit-line: *the* environment line and *the* social line. There are, however, so many problems with this metaphor that it is hard to know where to begin. I have only space for two urgent points of critique.

Problem One: The Triple Bottom Line Approach Leaves Capitalism Basically Unchallenged

From the beginning, it was if the voracious domination of capitalism was taken as given and largely unchangeable. John Elkington's metaphoric TBL fork with three prongs is, in his terms, to be given to cannibals in a world where devouring the opposition is the natural order of things (1997, p. vii). In other words, all that the TBL approach was intended to do was marginally civilise capitalism—add some elements of table etiquette. Thus, for all of Elkington's (1997) radical concern for ecosystems thinking, the metaphor of 'cannibals with forks' exposes the basic problem almost immediately. And once exposed the critique comes quickly: marginally tempering voracious self-consumption cannot be a sustainable approach to economics, let alone to human flourishing as a whole.

A brief elaboration of the graphic representations of Triple Bottom Line (see Fig. 3.1, right) is sufficient to evoke the core of this critique. In the classical Venn-diagram version, the economy is certainly qualified against the social and the environment as externalities, but graphically most of the economy remains unconcerned with sustainability. Just as in reality, it remains business as usual. Sustainability is reduced to the small central intersection of the three domains.

Problem Two: The Triple Bottom Line Approach Re-centres the Economy

Later an alternative to the Venn diagram was presented as a means of resolving the reductive presentation of sustainability-in-intersection (Fig. 3.1, left). It showed three concentric circles with 'society' sitting inside 'environment', and the economy sitting inside 'society'. Environmentalists rallied to this version. It had the virtue of locating the economic within the environment, but they forgot about two

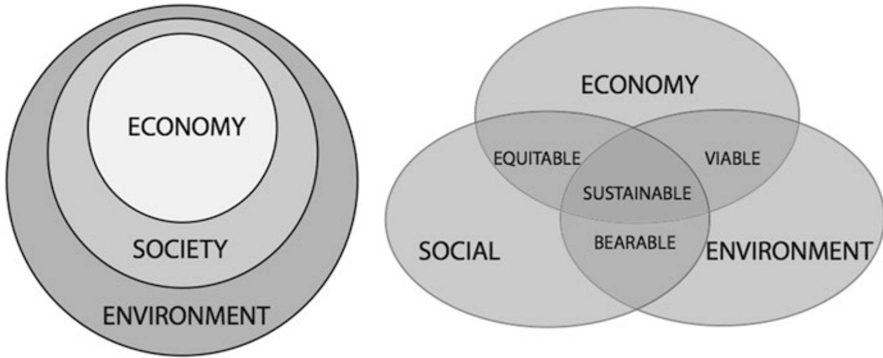

Fig. 3.1 Variations of the triple bottom line approach: the embedded circles and venn diagram versions

fundamental issues: firstly, by replacing the social with society the figure came to be organised through a methodological nationalism where society equals the nation-state; secondly, the economy was returned to the centre of all considerations about everything.

There have been valiant attempts to recuperate the Triple Bottom Line approach (Gross, 2015), but what remains at the core of all these variations is that they begin with the wrong focus—the economy—and then spend all their effort qualifying that focus while in practice the economic or more precisely corporate economics remain at the centre. The Tripe Bottom Line begins with corporations. It is a corporate-oriented approach. Recent airport blockbuster books such as *Six Capitals* (Gleeson-White, 2014) just repeat these problems and amplify them by turning everything into capital: finance capital, manufactured capital, intellectual capital, human capital, social and relationship capital, and natural capital. This is the schema towards which the posthumanists should be directing their critical energy—the 'natural capital' nexus—not a residual humanism.

In summary, the weak version of Triple Bottom Line approach gives 'the economic' an independent status that is ideologically assumed rather than analytically argued. The strong version elevates the economic to the master category. At the same time, the social—that is, the way in which humans live and relate to each other and the environment—is treated as secondary. Concurrently, the environment comes to be treated as an externality or background feature. It becomes the externality that humans can use as resource, and the human dimension of ecological relations comes to be defined only in terms of statistical costs and benefits. This singular-triple view of the world, for all that it might appear flawed when the obvious is pointed out, has almost comprehensive legitimacy. It is startling how often one reads the taken-for-granted triplet of 'economic, environmental, and social' sustainability in texts that are otherwise quite reflexive about their assumptions.

Circles of Social Life

Two challenges have been set up across the course of this essay. First, how do we get beyond the Great Divide between the social (the human and others) and the natural (what some call 'the nonhuman'), without collapsing the natural and the social into a singular amorphous tangle where the terms 'social' and 'natural' cease to have distinguishable meaning? Second, how do we displace the economic at the centre of all sustainability thinking, but without that decentring leaving economics as having a re-established or continuing autonomous primacy?

The suggestion here for handling these challenges is that we begin with the relation between the social and the natural—one of the major points of contention that the posthumanists pose—and instead of collapsing them into each other, recognise that we still need the concept of 'the natural' to name both all that is beyond the human, and what grounds the human. In the *Circles of Social Life* approach, social life is inextricably embedded in the natural, but the natural does not depend upon the social (James, Magee, Scerri, & Steger, 2015). What this means is that nature is basic to everything social, but not the other way round. While social practice and meaning can reconstitute elements of the natural, and social life has been increasing colonising 'our' natural world, there are natural worlds—micro and mega—that are currently beyond human social extension that we will possibly never affect and probably never have more than glimmers of understanding. Thus the Anthropocene still has its current limits—planet Earth.

The second step is to focus its point of critique on intensifying capitalism and the abstraction of social relations (rather than humanism). Capitalism is a form of economics that centres itself as basic to social life. Whereas the Triple Bottom Line approach practically prioritises economics—while rhetorically appearing to qualify it—the Circles approach puts economics in its place as one of the *social* domains grounded in the natural. That is, whereas 'business as usual' is predicated on treating nature as a residual zone to be saved, the Circles approach acknowledges that all social relations, including economics, are always already built upon a fragile but irreducible natural world. Whereas the usual approach treats the environment as a series of metrics, such as in carbon accounting, this alternative recognises that as humans we are part of nature. Human activity is treated as located both within nature and more explicitly as conducted through an ecological domain, concerned with basic questions of needs and limits, which in turn now finds itself 'scientifically' fading off at its edges into nature beyond the human. To be sure, over the last half century, human impact on the planet has been expanding into basic environmental systems that were once much bigger than us, but this does not involve 'the end of nature'.

Whereas the Triple Bottom Line approach, even in its latest variations of Integrated Reporting and One Reporting, treats financial accounting as *the* core discipline of economics, the Circles of Social Life approach treats each social domain as part of an integrated social whole. Each domain can be analytically lifted out for the purpose of assessing questions of sustainability and so on, but this is only

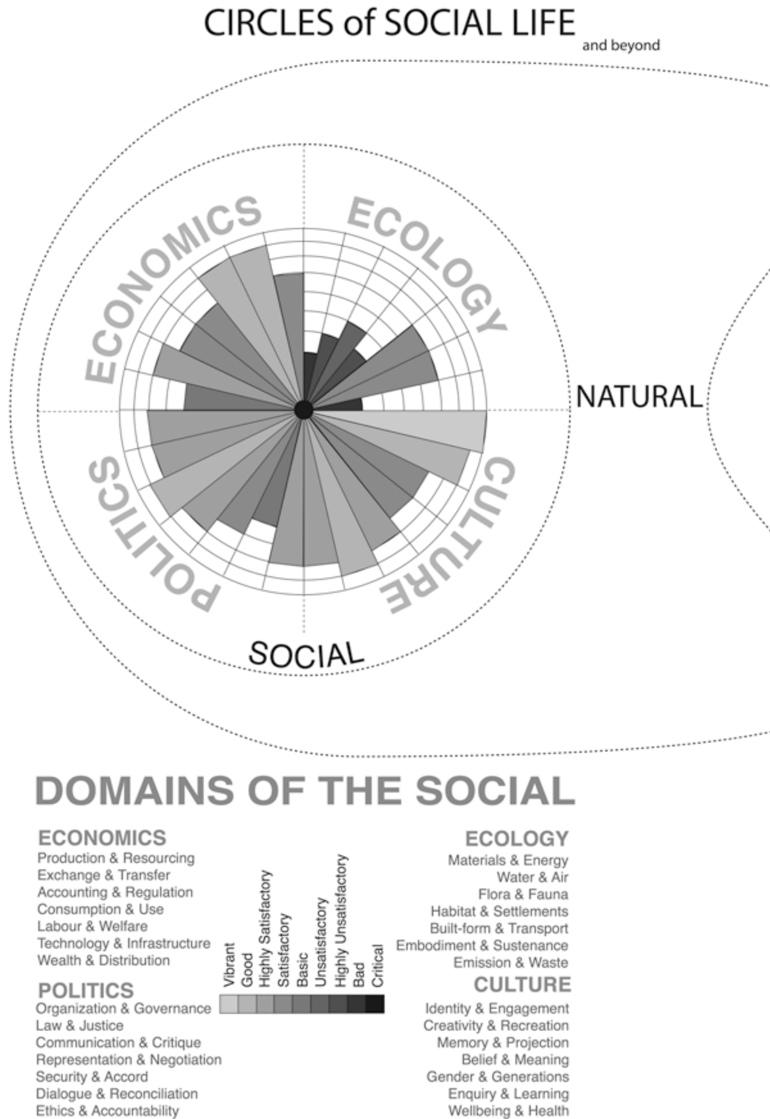

Fig. 3.2 Circles of social life: decentring the human while grounding the social

an analytic move (James et al., 2015; Magee et al., 2013). There is not the space here to elaborate on this alternative, but a picture can sometimes stand in for lots of words (see Fig. 3.2).

Thus the human has been decentred, while the social is given complex and variable meaning. The natural is treated as both grounding and extending infinitely beyond the social. And through the domain of the ecological—defined as a social

domain that emphasises the practices, discourses, and materialities that occur across the intersection between the social and the natural realms—the environment of things, processes, and assemblages comes right into the centre-point of what it means to be human. In this way, the centre-point of the circle, which in Euclidian terms has no size, large or small, becomes not a plughole but the point of intersection of all social things—even as *for analytical purposes* they can be separated out.

Conclusion

At the end of his elegant essay *The Ecology of Others* Philippe Descola (2013) concludes with the following statement that accords with what I have been trying to do. With the recognition of the Anthropocene and in the context of climate change, the erosion of biodiversity and the development of biotechnologies that blur the distinction between the human and the natural:

> [I]t has become indispensable in the West [and also elsewhere] to reflect upon the effects of the disintegration of our notion of the natural world by locating this problem in a more general framework; this framework would allow the examination of the different conceptions of the biological dimension of humans and of relations with the physical environment that have developed in various places in the course of history … This involves first choices about the siting of ontological boundaries … Second, it involves the systems of value which orient the practical relations with the Others, human and nonhuman … Finally it involves the devices of classification (Descola, 2013, pp. 86–87).

Whereas the posthumanist approach homogenises ontologies and the Triple Bottom Line approach flattens domains, the Circles approach, for all its weaknesses, begins the process of recognising both ontological difference and the interconnectedness of social-natural life. When it comes to basic ontological issues we seem to spiral from one exaggerated stance to another. Themes that seem to generate passionate spiralling are the idealism/materialism, economic imperative/ecological sustainability and humanism/posthumanism debates. The Circles method (as part of a larger engaged theory of constitutive abstraction) is intended to respond to the terms that underlie these kinds of debates and provide a simple but rigorous way of thinking and acting beyond the mainstream paradigm.[5] At least, as it circles the question of the human condition, this approach recognises the very different ways in which people on this planet relate to Others—human and nonhuman.

[5] The version presented here is fairly flat, emphasising one main level of analysis (doing). For a much fuller account that begins to layer the approach in terms of four epistemological levels—doing, acting, relating and being—see James et al. (2015). For an example of how this method has been used in pedagogy see the curriculum development of the Ross Institute, New York, http://www.circlesofsustainability.org/projects/developing-a-sustainability-curriculum/.

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Chapter 4
Cosmopolitics of Place: Towards Urban Multispecies Living in Precarious Times

Iris Duhn

Introduction

This chapter aims to spur new imaginations in education by exploring possibilities for urban more-than-human living in cities. By working with the concept of cosmopolitics (Latour, 2004a; Stengers, 2010) as a device that creates hesitation by questioning assumed shared understandings without offering alternatives and solutions, the chapter assembles diverse elements in an attempt to create a cartography of urban place-making. For education and sustainability the overarching question that cosmopolitics poses is about assemblage: how can we learn to make places for living well, and sustainably, together with humans, more-than-humans, and vibrant matter of all kinds (Bennett, 2004; Duhn, 2012; S. Hinchliffe, Kearnes, Degen, & Whatmore, 2005)? Cosmopolitics in education problematises what it means to live well together by challenging the utopian desire for harmonious cosmopolitanism as an ideal (Todd, 2010b). Cosmopolitics as a tool for building places for diverse living together works by slowing down perception, opening up spaces for that which cannot yet be perceived, and persisting with ongoing open-ended engagement with difference as an ethical endeavour. Cosmopolitics offers the possibility of re-imagining place as an open-ended ethical pedagogical multispecies encounter where shared worlds are made (Bear, 2011; van Dooren & Rose, 2012).

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Re-imagining Place

In precarious times, which are precarious because they unsettle and shake up that which has been taken for granted, the traditional concept of place as safe, secure, and unchanging taps into a strong desire for certainty. However, Earth as 'our' ultimate place is in a precarious state, clearly evident in the rate of extinction of species, which may well include humans in the not-so-far future. Producing knowledge about learning to live well together in, and across, places and spaces is increasingly becoming one of the core challenges for the social sciences, including education (Dimitriadis, Cole, & Costello, 2009; Gruenewald & Smith, 2008; Inglis, 2004). An emerging emphasis on the ethics and politics of sharing spaces with others, including other species, in a globalised world, with finite resources, requires a re-thinking of what place is, and who and what makes places (Duhn, 2012; Steve Hinchliffe & Whatmore, 2006; Tuck & McKenzie, 2014; van Dooren & Rose, 2012). These studies suggest to conceptualise place as a complex and messy network, loosely bound by (local) histories, politics and cultures as well as by (global) mobilities, flows, and uneasy alliances. Living well together in a place-as-assemblage that is no longer defined by geography alone foregrounds ethics and politics as guiding principles for place-making. Beginning to imagine place-making as open-ended diverse practices that involve a commitment to cosmopolitics may well generate new possibilities for living sustainably, especially in densely populated urban environments (Dovey, 2010).

To embark on this work, this chapter considers possibilities for place-making as a multispecies event in urban environments. It engages with cosmopolitics as a theoretical perspective to investigate possibilities for new imaginings and actions for living well together in spaces that are dominated by humans, such as cities, while paying particular attention to co-habitation with other species. Taking Berlin as a site for exploration, the chapter entangles education and the art project *Berlin Wildes Leben* to focus on place-making as cosmopolitical multispecies practices in the Anthropocene.

Why Multispecies? Why Cosmopolitics?

Scientists are not only referring to the Anthropocene as an entirely new phase in Earth's geological history (Steffen, Grinevald, Crutzen, & McNeill, 2011), there are also serious concerns that we are rapidly moving into the sixth mass extinction of species unless better ways of sharing the planet in sustainable ways for all are found. The scale of the challenges faced is staggering, as highlighted in the following quote from an article published in *Nature*, a prestigious science journal:

> [T]here are clear indications that losing species now in the 'critically endangered' category would propel the world to a state of mass extinction that has previously been seen only five times in about 540 million years.…The huge difference between where we are now, and where we could easily be within a few generations, reveals the urgency of relieving the pressures that are pushing today's species towards extinction (Barnosky et al., 2011, p. 11).

An anthropocentric/human-centred perspective highlights the urgency of relieving pressures on the environment for animals and plants to avoid a human-induced mass extinction of species. As Barnosky et al. (2011) argue we/humans have the capacity to take action to prevent a slide into such disaster. This ability to take action seems to exempt humans from inclusion in the list of endangered species. However, as highlighted in the latest International Panel on Climate Change report (IPCC, 2014), humanity is now facing issues that challenge its ability to survive as a species which means that a potential mass extinction may very well include humans. After all, humans are but one of those species on a multispecies planet. The difference between humans and other species on a multispecies planet is that humans are not only affected but also responsible for these changes.

The difficult task is to both decentre 'the human' to generate new spaces for multispecies engagements *and* to take responsibility for humanity's historical attachment to human exceptionalism. The belief that humans are the crown of creation and thus separate from other species has legitimated politics that over time created massive change on a planetary scale (Feinberg, Nason, & Sridharan, 2013). Such politics continue to support the concept of humans as subjects who create change, in contrast to the Earth and all nonhumans as objects that are victims of human-induced change. Bruno Latour argues that the Anthropocene creates a completely new territory for all who share life on this planet. Accordingly, traditional ways of meaning making and knowledge production that arise from subject/object separation are no longer useful. The crucial task, he argues, is to "*distribute* agency as far and in as *differentiated* a way as possible" (Latour, 2014, p. 16, emphasis in original). Multispecies perspectives do just that – they search for difference by unsettling and circumventing the traditional subject/object divide which continues to re-inscribe humans as the only species that transforms Earth. However, cosmopolitics is not about multispecies agency as such but about the possibilities for the creation of shared worlds that allow for sustainable living for all.

Cosmopolitics as a theoretical perspective focuses on the interconnections of human and more-than-human encounters, relations, politics, narratives, and practices within our largest imaginable boundary, the cosmos (Latour, 2004a; Stengers, 2010). It provides a tool for critical engagement with challenges that affect all inhabitants of this planet and ultimately opens possibilities of an imagination of Earth as agentic:

> The Earth is neither nature nor a machine. It is not that we should try to puff some spiritual dimension into its stern and solid stuff – as so many Romantic thinkers and nature philosophers had tried to do – but rather that we should abstain from de-animating the agencies that we encounter at each step (Latour, 2014, p. 14).

Latour emphasises that the challenge of acknowledging the agency of Earth which, from a scientific perspective is perceived as an object, floating in space, and following the laws of physics, is an enormous task. Cosmopolitics is about the coming together of all agents, animate and 'vibrant matter' (Bennett, 2010), in the ongoing making of a shared world. Isabelle Stengers (2010, p. 79) proposes 'cosmopolitics' as a perspective that allows for the unknown, for that which currently "does not have the ability to be considered" to nevertheless "mark the way we

present the present" (p. 79). Cosmopolitics is about the possibilities for imagining differences and thus for beginning to notice differences in the everyday making and transformation of our common world.

Differences Within the Human Species

Cosmopolitics as the search for differentiation and agency across species requires a closer look at the power relations that constitute species. Referring to species involves categorisation that disguises diversity within the domain. Referring to humans as one species is not necessarily useful because it creates a homogenous view of 'us' when in fact some of the current anthropogenic changes are felt much more acutely by some of those humans who contribute the least to increasing pressures on the environment. For instance those living in traditional communities or those living in nations with low carbon footprints are often those who suffer from the direct effects of climate change as one aspect of planetary transformation in the Anthropocene (Beck, 2008). Those who contribute the most to anthropogenic change by living in fossil fuelled economies, "whose lifestyles would require three or more planets if replicated globally" (Gibson-Graham, 2011, p. 2) remain relatively unaffected. As hurricane Katrina highlighted, even within highly developed nations such as the US, structural inequalities generated within rich nations, such as those produced by racism, create hugely different and unequal effects for communities within the same geographical area (Cuomo, 2011). It is also important to note that historically, women and nature counted for little in "the Empire of Man over mere things" (Plumwood, 2010, p. 38). This does not mean that women did not contribute to the current state of affairs. Women and nature share, however, a specific historical trajectory that intersects with other forms of domination, injustices and above all, identity politics that continue to define, ascribe, and de-value 'the feminine' (Cuomo, 2001; Irigaray, 2008).

For education, the task of shifting deeply engrained human-centric practices, challenging power relations that subjugate otherness, and generating perspectives towards imaginings and pedagogies that are multispecies focused is not only urgent, if education is about learning to live well together, it also has the potential to contribute to creative and hopeful change by enabling difference to co-exist and flourish in a dissonant world (Todd, 2010b). Considering materiality and meaning-making (Washick, Wingrove, Ferguson, & Bennett, 2015) as core aspects of the complex entanglements of being human in an ultimately unknowable, lively world which is inhabited by multitudes of beings is a vital contribution to education at a time when human-induced change threatens life on a planetary scale (Barad, 2003; Heise, 2008; Panelli, 2010). So how can be begin to imagine and action multispecies difference in urban contexts? Who is contributing to place-making in the city? What are the possibilities for multispecies distributed agency? The second part of this chapter begins to look at these questions, starting with a very brief overview of cities as (human) places.

The Humanised City

Western cities are not only considered to be human-dominated spaces, they are increasingly seen as ‘urban living’ enclaves which offer a sophisticated post-industrial culture based on service-industries and consumption to those who can afford it (Wolch, Byrne, & Newell, 2014). Somewhat in tension with the gentrification of inner cities exists the understanding that cities are an important site for cultural innovation “where artists and ethnic diversity are seen as catalysts for vibrant urban centres” (García, 2004, p. 313). However, once identified as a vibrant new hotspot, these urban centres are then in danger of succumbing to commodification where the very people who contributed to the liveliness of a space cannot afford to live there any longer. Cities, especially inner cities, then become strangely purified and sanitised gentrified places where the diversity that made them in the first instance gives way to homogeneity (Zukin, 2009).

The current disappearance of diversity from many urban centres, often due to a new alignment of urban redevelopment, economic power and desires (Dovey, 2010), echoes the changes in city living that reshaped cities from the mid-nineteenth century onwards. Public health concerns at that time focused on sanitation, on the development of a humanised ‘clean’ city and the eradication of animals from urban environments through reforms that linked animals to disease (Instone & Sweeney, 2014; Vuorisalo, Talvitie, Kauhala, Bläuer, & Lahtinen, 2014). Historically, humans and animals (as livestock) shared cities. For instance, keeping a pig or chickens in the backyard was not unusual and only became a problem when animal husbandry was identified as a hygiene issue in the ‘humanised’ clean city. By the second half of the twentieth century, western cities appeared to be pinnacles of human design with little consideration or space for multispecies co-habitation.

But even in the humanised city, animal others maintained a presence. In the case of animals with high visibility, these animal-others were increasingly identified as problematic. Pigeons, for instance, became symbolic as polluters of human spaces and eradication of these animal adapters to city life was an important aspect of the urban sanitation mission (Jerolmack, 2008). While pigeons have high visibility in cities, the presence of other animal city dwellers went unnoticed for long periods. The urbanisation of red foxes, which has been documented in Britain since the 1930s, is now a recognised phenomenon in Europe. With more sightings in cities, red foxes have become categorised as a twenty-first century ‘parasite problem’, with concerns that foxes spread diseases in dense urban environments (Deplazes, Hegglin, Gloor, & Romig, 2004). Like pigeons, foxes are considered as contaminated others in humanised cities. Finnish research argues that foxes may have been living in very close proximity to cities for at least since the nineteenth century, perhaps even since the Middle Ages (Vuorisalo et al., 2014). As Jerolmack (2008) points out, the fear that animals with high presence in urban environments are carriers of disease says a lot about human place-making by rendering nonhuman others as ‘out of place’ in urban environments.

Learning to Live with Others: Towards Multispecies Place-making

As we learn more about the animal others who share spaces with us, it becomes evident that the more we (humans) are able to let go of the assumption that humans are entitled to a special place in 'nature', and thus are the only creature that can create 'culture', the more open and unexpected the world becomes. Even thoroughly 'humanised' environments, cities, are brimming with more-than-human life. Hinchliffe and Whatmore's (2006) case study of animal life in Birmingham highlights that cities are multispecies places – from the peregrines nesting in telecommunication towers to otters and water voles finding their way into the city waterways, once the gaze shifts from a focus on human place-making, it becomes very obvious that nonhumans are also making the city their place. Cosmopolitics is the practice of taking more-than-human place-making seriously "to produce a politics for urban wilds" (Hinchliffe et al., 2005, p. 643). This requires a re-thinking of how to begin to engage with urban more-than-human others in ways that invite difference to emerge. One way of doing this is to be creatively open-minded, sympathetic, and informed, which circumvents the difficulty of referring to *either* science/reason to make a case (the politics of conservation), *or* to become passionate and emotional (the politics of animal rights advocates). Politics of representation do not work for urban wilds – more-than-humans are currently not able to be included in politics because human politics are entirely anthropocentric. So how do we learn to engage with more-than-human others to distribute agency in as many differentiated ways as possible?

Towards a Politics of Multispecies Presence

The chapter concludes with an example of cosmopolitics in the making in Berlin. So far, I have argued that cosmopolitics challenges anthropocentric practices that render animal-others as out of place in cities, because it de-centres humans and asks of us to pay attention to how we are interconnected with more-than-humans in our daily urban life. This means that cosmopolitics firstly aims to challenge a sense of human entitlement and human exceptionalism: who are we and who can we become in relation to the world around us if we take differentiated agency in multispecies encounters seriously? What unexpected perspectives emerge? What becomes possible when attention shifts from a humanised city towards shared multispecies urban living?

The issue around cosmopolitics this chapter explores – how to decentre humans in multispecies encounters that let the other speak for her, him or itself and thus generate spaces for differentiation and distributed agency, while also accounting for human responsibilities in having created potentially catastrophic planetary change – guides the search for cosmopolitics of place in the context of Berlin. This section

focuses on the entanglement of art, science, and education by working with the ideas of artists Susanna Hertrich and Michiko Nitta whose *Berlin Wildes Leben* (2011) exhibition invites cosmopolitical thinking about place-making in Berlin. The project *Wildes Leben* was one of the winners of the *Call for Future/ÜBER LEBENSKUNST (Art for survival)* initiative of the *Kulturstiftung des Bundes* und des *Haus der Kulturen der Welt*. The project ÜBER LEBENSKUNST explored new approaches and ideas suited to everyday life for a cultural transformation in response to the global ecological crisis. An international jury selected the 14 winners from more than 800 competition entries. Winning projects were funded for up to a year with up to €20,000.

According to Hertrich and Nitta (2011), the *Wildes Leben* series is aiming to generate utopian visions of future multispecies urban living. The project sits within the wider context of the *The Anthropocene Project* des Haus der Kulturen der Welt (2013–2014), which focused on cultural research that engages art and science to generate critical engagement with the Anthropocene.

Berlin Wildes Leben engages with multispecies presence as a matter of fact and as a matter of concern (Latour, 2004b) by aiming to interconnect scientific expertise with politics of place and an ethics of care for otherness and difference. The map of multispecies 'city life' in Fig. 4.1 provides a snapshot of Berlin's urban wilds and the politics of place-making. Hertrich and Nitta (2011) explain.

Berlin Is Home to the Most Diverse Species of Any European Capital

Approximately 20,000 diverse species inhabit Berlin, and the number of new animal species migrating to the city is on the increase. This is due to the specific history of the city which allows a considerable amount of un-developed sites and empty lots to still exist in contrast to other metropoles where urban planning has sanitised the cityscape. In addition to the historic specificity, Berlin's particular star-like settlement structure enables animals to migrate to the city centre.

The map is not a representation of species diversity. Instead it produces a cartography (Braidotti, 2002) of some of the power relations that are woven into the multispecies fabric of the city. For instance, the debate regarding hunting licences in Berlin is a complex political as well as social issue. When animals are powerful and thus potentially dangerous to humans, as wild boars are, the issue of how to live together takes on new dimensions. The cartography begins to explore dissonance of multispecies encounters in the city. The hunters loom large and, despite attempts to create visibility for animal co-habitation and multispecies cosmopolitics, as soon as animals demonstrate their presence and power in tangible ways the map turns anthropocentric. Ultimately it is the man with the gun who guards the city centre from animal invaders. This image plays with fears of human displacement by reinstating man as predator at the top of the species hierarchy while offering food for

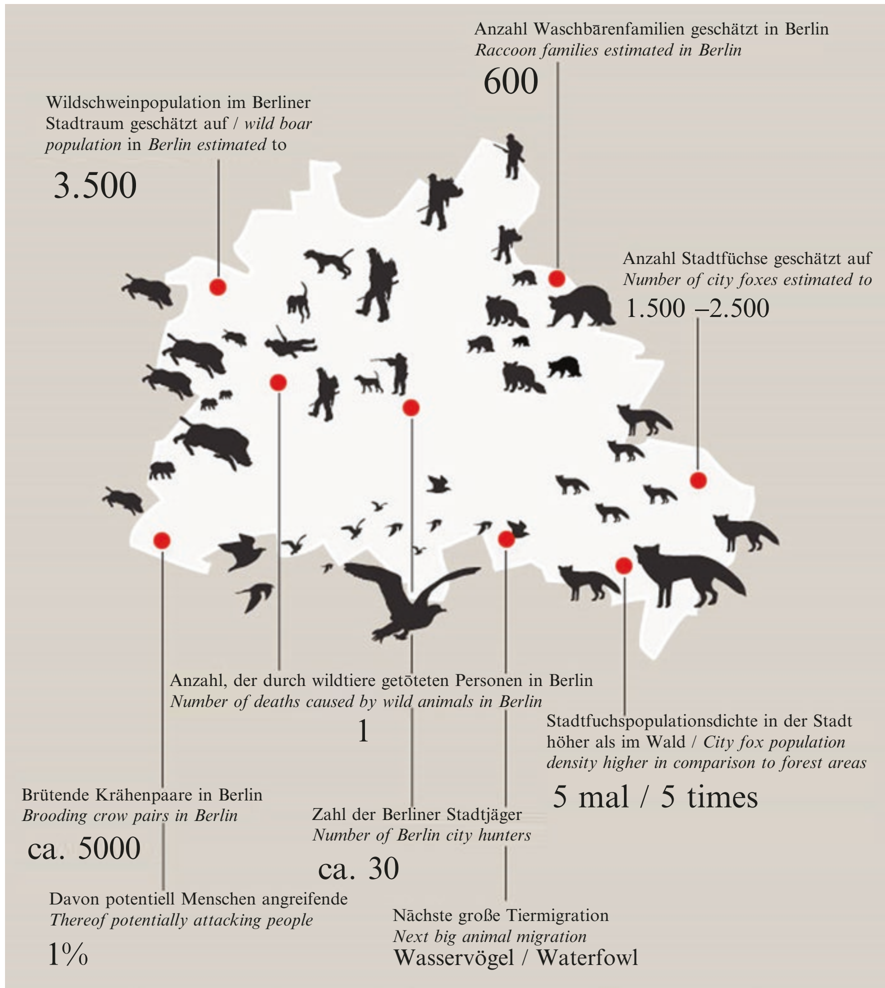

Fig. 4.1 Map of multispecies city life in Berlin (Reproduced with permission from Hertrich & Nitta, 2011, text in original)

thought in the form of succinct scientific-like commentaries in the lower part of the map. Perhaps the cartography is a utopian vision of antagonistic cosmopolitics in the making (Todd, 2010a)? Distributed agency in “as differentiated way(s) as possible”, as Latour (2014, p. 16) suggests, is not a soft option. We are not doing well when it comes to living with human diversity, which raises questions regarding humans’ ability to let go of the paradigm of exceptionalism and human entitlement (Pedersen, 2010). Globally, the at times cruel and inhumane treatment of refugees highlights that as long as there is a sense of entitlement which then enables decision-making about who else is worthy, or not, of having access to resources, it is unlikely that cosmopolitics will re-shape our common world.

A Cosmopolitical Invitation

As a final take on cosmopolitical futures in the city, one of the sculptures that has been created by Hertrich and Nitta (2011) opens another glimpse into action. The sculpture is titled 'Parasitic architecture for racoons' (Figs. 4.2 and 4.3).

The sculpture sympathises with the plight of racoons who are not natives to the city or even to Germany. The current community of 600 Berliner racoon families was established by racoon escapees from fur farms on the outskirts of the city. The sculpture offers a gesture of reconciliation for past wrongdoings by inviting racoon families to settle in large custom-made willow cocoons that protect racoons from potential predators, while also making their presence in the city visible. Hertrich and Nitta (2011) invite imaginations about a successful multispecies co-habitation of urban spaces. Why not be generous and allow parasitic co-living with racoons (or whoever else wants to move into the cocoon)? By combining expert scientific knowledge, urban planning expertise, and the traditional craft of willow weaving, the sculpture is an educational event as well as an aesthetic statement. It is cosmopolitical in the sense that it generates visibility of otherness by highlighting potential presence.

The emphasis is on human habitation and place-making which then serves as a base for a parasitic addition. This may be a 'soft' engagement with difference because it does not raise questions about whose place this really is – the title says it all.

Fig. 4.2 *Berlin Wildes Leben. Parasitäre Architektur für Waschbären Material:* basketwork, steelframe, pinewood pole, fluorescent paint (far shot). Dimensions*:* ca. 4.0 m H × ca. 1.80 m W × 1.50 m D (Reproduced with permission from Hertrich & Nitta, 2011)

Fig. 4.3 *Berlin Wildes Leben. Parasitäre Architektur für Waschbären Material:* basketwork, steelframe, pinewood pole, fluorescent paint (close-up). Dimensions*:* ca. 4.0 m H × ca. 1. 80 m W × 1.50 m D. (Reproduced with permission from Hertrich & Nitta, 2011)

But maybe this is one of the anthropocentric ways in which living with difference can become normalised and thus create openings for a first unsettling of the human-as-centre of the universe paradigm. Racoons invite sympathy for several reasons: these racoons have a tough history which speaks to the German sense of being accountable for suffering caused in the past; racoons are recent immigrants and Berlin itself is a multicultural city with a large Turkish-German population; racoons appear vulnerable and exotic, unlike rats or foxes which have been around for longer. This makes them a novelty and easy to 'like'.

The work of Hertrich and Nitta explores what happens when the focus widens to make space for animal others in the city. They engage creatively with urban wildlife to suggest how to live well together with difference and perhaps even with dissonance (Todd, 2010b). Working with scientists and experts to create sculptures that invite engagement, both from humans and ultimately from more-than-humans, this is a cosmopolitical 'gesture' towards multispecies living together in the shared city.

The cosmopolitical gesture of beginning to consider more-than-human others as intimately entangled with city living – which, looking at the multispecies map of Berlin is not as 'humanised' as we may have thought it was – may only just touch on what may be involved in de-centring humans. Imagining difference across species and within species opens possibilities for doing difference. Making our multispecies natures visible in unexpected ways is a powerful gesture. It invites engagement (Fig. 4.4).

This chapter has explored imagining education in precarious times as being about re-thinking urban places, including the politics of who makes places. Cities are the ultimate human-centric environment, yet changing perspectives towards who-else lives in cities opens possibilities for ongoing re-imagining urban environments as complex, entangled multispecies sites.

While it is significant to consider the precariousness of our times, I am also reminded of Foucault's (2010) warning that we do:

Fig. 4.4 Hertrich and Nitta, *Berlin Wildes Leben* (Photo credit: Michael Burton. Reproduced with permission from Hertrich & Nitta, 2011)

> …not allow ourselves the facile, rather theatrical declaration that this moment in which we exist is one of total perdition, in the abyss of darkness, or a triumphant daybreak, etc. It is a time like any other, or rather, a time which is never quite like any other (2010, p. 6).

This time invites us/humans to be generous and open and to let go of a sense of entitlement. Instead of being placed *on* the world, the perspective may shift towards new ways of becoming *with* the world (S. Hinchliffe et al., 2005). In a multispecies context of place-making, cosmopolitics replaces the emphasis from humans as the dominant species that creates and shapes places towards humans as one of many species involved in inhabitations (S. Hinchliffe et al., 2005). With an emphasis on politics as power relations that involved humans, more than humans and vibrant matter of all kind, cosmopolitics requires a close look at power as a force that shapes how places are made, who makes them and who is affected by place-making. This chapter has begun to look at possibilities for engagement with multispecies urban place-making as pedagogical cosmopolitical practice. Rather than offering alternatives and solutions, pedagogical cosmopolitics slows down perception, creates space for the yet to be perceived, and thus enables new imaginings to emerge. The cosmopolitical issue that *Berlin Wildes Leben* raises may be how to perceive racoons' perspectives of what it means to live well and sustainably with humans in Berlin. This question opens spaces for new imaginings of radical difference and perhaps it helps all of us to live better *with* the world.

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Part II
Re-configuring and Re-worlding

Chapter 5
Romancing or Re-configuring Nature in the Anthropocene? Towards Common Worlding Pedagogies

Affrica Taylor

Introduction

Nature is a very seductive idea. Within Romantic western cultural traditions, nature has been aestheticised, valorised, and sanctified. It has come to stand for everything pure, good and innocent that imperfect human society is not. This bifurcated concept of pure nature as an antidote to corrupting society carries a compelling force of moral authority (Daston & Vidal, 2004). In today's technologically-focused societies, in which children spend increasing amounts of time interacting in a virtual environment, Romantic notions of nature are being enlisted to support morally charged claims about children's alienation from the natural world, and to warn about the subsequent endangerment of childhood (Louv, 2008). Coupled with growing concerns about the endangerment of the natural environment itself, such apprehensions are driving a resurgence of interest in nature-based pedagogies.

These nature-based pedagogies not only promote 'returning children to nature' in order to 'save' them (Frost, n.d.), but are also offered as the means by which children will be enabled to become future environmental stewards, who will, in turn, be ready and able to 'save' nature (Chawla, 2006; Sobel, 2008). Against the backdrop of these nature and childhood endangerment and salvation tropes, I set out to problematise sentimentalised notions of nature as a pure, innocent, and separate domain to which children must be 'returned' in order to be 'saved', and to also trouble the assumptions that underpin the notion of environmental stewardship.

Ideas of nature are my central concern. Guided by the set of questions "what counts as nature, for whom and at what cost?" (Haraway, 2004, p. 90), I begin by interrogating the seemingly benign conceptualisations of Romantic nature that underpin nature-based pedagogies in the early years of education and also permeate

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some approaches to sustainability education. I examine why it is so seductive to romance nature and childhood, point to the unintended consequences of these romantic ideas and present a case for resisting this temptation. I argue that it is precisely because those of us who have been schooled in western knowledge traditions are beginning to recognise how we have contributed to these ecologically precarious times, that we urgently require a paradigm shift in our thinking about nature and our relationship to it. The alternative conceptualisation that I propose, one that reconfigures both nature and childhood within an imbroglio of common world relations, is prosaic rather than romantic, and messy and political rather than pure and innocent (Taylor, 2013, 2014; Taylor & Giugni, 2012; Pacini-Ketchabaw & Taylor, 2015). I conclude by offering some examples of common world pedagogies that are drawn from the Canberra chapter of a larger Canadian/Australian early childhood multispecies ethnography that I am involved in, along with other colleagues in the Common World Childhoods Research Collective (2015).

But before I begin, I want to underscore that although I set out to critique the unintended consequences of pursuing romanticised and bifurcated notions of nature it is not my intention to simply discount the relationship between nature, the environment, children, and education. Rather, my purpose is to shift understandings about this relationship through reclaiming what counts as nature back from the Romantics and politicising and re-configuring it as a lively and un-foreclosed set of heterogeneous common world relations, with new kinds of cosmopolitical and ethical affordances.

What Counts as Nature?

To understand what counts as nature in nature-based pedagogies, it is necessary to appreciate something about the historical trajectory of the nature/culture divide that structures modern western thought. Since the Enlightenment, or the Age of Reason, human capacity to reason and exercise intentional agency has been celebrated above all else. The valorisation of human rationality (or to be more precise, the rationality of 'man') has provided the epistemological basis for separating our species off from the rest of the natural world and has affirmed the need for us to exercise our exceptional intelligence and agency (through scientific study and technological interventions) in order to 'improve' on nature, or more recently, to 'fix' it. It is this instrumentalist version of the nature/culture divide that valorises the exceptionalism of human intelligence and agency and renders nature passive and inert, which still predominates in western thinking and which underpins mainstream scientific research practice and educational theories. School-based education, per se, can be seen as a key conduit for enculturation – for bringing the pre-rational child (aligned with nature) into the rational adult world (aligned with culture) by developing her/his cognitive capabilities.

However, this is not the only version of the nature/culture divide. Jean-Jacque Rousseau's mid eighteenth century pro-nature philosophies, which spawned the

Romantic Movement, represent a radical break with the mainstream Enlightenment tradition of valorising human intelligence and promoting an unswerving faith in 'civilised' man's capacity to improve on the natural world. In the opening line to his book, *Emile: A Treatise on Education*, Rousseau (1762/2003, p. 1) famously claimed: "Everything is good as it comes from the hands of the Author of Nature; but everything degenerates in the hands of man". This unequivocal statement exemplifies the alternate Romantic version of binary western thinking that places everything essential good, pure, true, and innocent on the side of nature (for instance children, animals, 'native' people, and pristine wilderness areas), and everything essentially bad, threatening, corrupting, or already despoiled on the side of human society or culture (for instance greed, immorality, political exploitation, technological perversions, and urban and industrial pollution).

Rousseau's educational treatise, with its valorisation of nature and its demonisation of rational adult society, refuted the logic and the wisdom of enculturating children during the early formative stages of life. He passionately argued that during infancy and early childhood, 'nature', rather than 'man', should be the child's primary teacher. His reversal of the valuing within the nature/culture divide and his ubiquitous romantic coupling of nature and young children has had enduring seductive appeal in nature and environmental movements, in literature and popular culture, in the pro-nature education movement, and in early childhood education.

A century after he wrote his educational treatise, Rousseau's Romantic conceptualisations of the natural child learning in nature, inspired the birth of early childhood education in Europe. They directly informed Freidrich Fröebel's design of the first kindergarten in Germany, which explicitly set out to teach pre-school aged children the essential truths and perfections of nature through handling natural forms and partaking in natural growth cycles and processes (Brosterman, 1997). A Rousseauean valorisation of nature and natural methods can also be traced within Montessori and Steiner strands of early years education. From this direct lineage, Rousseau's legacy is still clearly evident in the contemporary field of early childhood education (for instance in its insistence on the pedagogical significance of natural play), and is explicitly articulated in the Scandinavian all weather outdoor preschools and the German and UK forest and nature kindergartens (Mindstretchers, n.d.; Robertson, 2008).

In North America, the interest in nature-based pedagogies draws heavily on the nineteenth century Romantic New England Transcendentalist philosophies of John Muir, Ralph Waldo Emerson, and Henry David Thoreau. Reflecting upon the landscapes of their 'new world' location, these nature philosophers modified Rousseau's pastoral European notions of nature by arguing that essential truths can only be found in wild and instinctual nature. They are often referred to as the 'fathers' of the twentieth century North American environmental movement, and as having introduced the idea that wild nature, or wilderness, needs our protection. Such Romantic ideas about wild nature are encapsulated in Thoreau's (1862/2009) famous declaration: "In Wildness is the preservation of the world".

The contemporary US pro-nature education movement has grown out of the same Romantic Transcendentalist tradition as the wilderness environmental

movement. It also mobilises the notion of wild and instinctual nature but incorporates this with understandings of childhood. Leading US pro-nature educational scholars often cite E.O. Wilson's (1984) Transcendentalist-inspired 'ecophilia' hypothesis, which asserts that (human) infants are born with an instinctual drive to form affinities and loving relations with the natural world (Kahn & Kellert, 2002; Orr, 2004; Pyle, 2002; Sobel, 1996, 2008). They use this hypothesis to argue that children have a biologically hard-wired 'special relationship' with nature and that children's cognitive, emotional, spiritual, and moral development will suffer if they are denied the opportunity to actualise this special relationship through first hand nature experiences (Chawla, 2002). In a challenge to mainstream schooling, David Sobel (1996, 2008) suggests that children's natural inclinations to love nature will transform into fear if they only ever learn about nature in classrooms and through the media. His comments: "One transcendental experience in nature is worth a thousand nature facts" (2008, p. 13), and; "If we want our children to become environmental stewards, then one of the best things we can let them do is to play in natural settings" (2008, p. 11) sum up the beliefs and reasoning behind the push to take children out of the classroom and to let them learn directly from nature.

In quasi-religious tones that pay homage to the Transcendentalists, North American pro-nature pedagogy proponents repeatedly call on educators to renew their faith in nature and to return children to nature in order to 'save' them (Frost, n.d.). One of the most powerful umbrella groups driving this 'back-to-nature' movement is the US-based Children and Nature Network. Members of this network consistently warn, as did Rousseau and Thoreau, that when children become alienated from nature their healthy development is threatened. Such concerns are encapsulated in the crisis evoking and averting themes articulated by the founder of the Children and Nature Network, Richard Louv. In his best-selling book, *Last Child in the Woods: Saving our Children from Nature Deficit Disorder*, Louv (2008) nostalgically laments that "the American experience of nature … has gone from romantic attachment to electronic detachment" (p. 16) and as a consequence, childhood has been "de-natured" (p. 31). According to Louv, this de-naturing and hence disordering of childhood constitutes a crisis, which can only be averted by a "child-nature reunion" (2008, p. 36). In his terms, nature is not only a natural 'Ritalin' cure for this disorder, and an anti-dote to society, but also an all-round life-enhancing tonic.[1]

For Whom and at What Cost?

So why does it matter that Romantic notions of nature are driving the seemingly benign 'back-to-nature' movement and the pro-nature pedagogies push within education? What is wrong with the idea of nature as essentially good and restorative for

[1] For a more detailed discussion of Rousseau's legacy in early years education and of the US nature education movement, see Taylor 2013, pp. 3–16 and 47–53.

children? How could the promotion of nature-based pedagogies as the way of fostering children's innate love of nature and producing of the next generation of environmental stewards be anything but a positive move, particularly in these ecologically precarious times? The answers lie in thinking though 'for whom' these ways of thinking about nature count and 'at what cost'.

The 'for whom' question is easy to answer. The Romantic notion of nature as a separate (and morally superior) domain from society is unequivocally a modern western notion and a privileged and racialised (white) one at that (Outka, 2013). As often noted, Indigenous cultures do not enact such separations (Rose, 2000; Somerville, 2013; Verran, 2001), moreover, even white westerners eking a subsistence living in poor rural communities are unlikely to share the same Romantic notions of nature as those held by predominantly urban and highly educated environmentalists. The idea of nature as existing in a pure and separate domain is the product of a bifurcated system of 'advanced' western disciplinary knowledge, in which knowledge about natural history is produced in the natural/environmental sciences, and knowledge about human history is produced in the social sciences and humanities. For those of us well-schooled in western thinking that position ourselves in the pro-nature camp, who care about the natural environment and want children to share our commitment to it, perhaps the hardest thing to come to terms with is that this is not the only way to think about nature and our relationship to it.

The 'at what cost' question is even more challenging to address, for it is best intentions that drive Romantic notions of nature and the need to honour and protect it. Despite these good intentions, the paradox remains that the idea of protecting both children and nature from the excesses of modern society still trades heavily on the nature/culture divide. It still rehearses Rousseau's original treatise that nature personifies truth, goodness, and moral authority *because* of 'her' radical alterity to society (Daston & Vidal, 2004). Moreover, the salvation and rescue narratives that assume that nature in some pure form is waiting out there to serve us by saving children from the excesses of modern society, and that these same children will one day become the environmental stewards who will protect nature are not simply benign and hopeful narratives. They unwittingly position nature as existing to serve human interests, and repeat the kind of dichotomous 'heroes and villains' tropes that call us to identify with those heroic versions of human history that trade on notions of moral superiority and human exceptionalism. It might make us feel good and righteous to be on the 'right' side of human history, on the side of the good guys who will rescue and protect nature, but is it ultimately helpful, indeed relevant to be thinking in this way? What are the costs of hanging on to separated and purist notions of nature (and childhood for that matter) as we face up to the considerable ecological challenges and intergenerational justice issues of our time?

Increasing numbers of natural and social scientists are declaring that it is counter-productive to continue to separate nature off from human society and history. Leading the natural sciences in debates about the implications of climate change, rapid species extinctions, the acidification of oceans, changes to the carbon and nitrogen cycles, and other measurable and interrelated planetary changes, Earth system scientists are telling us that it is no longer feasible to think about nature as

existing in a separate realm from society and humanity (Crutzen, 2006; Steffen, Crutzen, & McNeill, 2007). At the eve of the declaration of the Anthropocene, the new epoch in which humans "have become a global geophysical force" (Steffen et al., 2007, p. 614) and fundamentally and permanently changed the planet's biosphere (Intergovernmental Panel on Climate Change, 2014), we are forced to contemplate the inextricable blurring of human and natural histories (Chakrabarty, 2009). By fundamentally altering the Earth's geo- and bio-systems through our over-use of fossil fuels, chemical fertilizers and a multitude of other damaging industrial/agricultural practices, those of us who live in the overdeveloped west (and insist upon the epistemological separation of nature and culture), have paradoxically created a world in which "natural and human forces" are so complexly intertwined that "the fate of one determines the fate of the other" (Zalasiewicz, Williams, Steffen, & Crutzen, 2010, p. 2231).

Taking the naming of the Anthropocene as a spur to action and an incentive to find new ways of thinking about nature and our relationship to it, scholars in the emerging transdisciplinary field of the environmental humanities are calling for researchers to resituate the human within the environment and to rethink the nonhuman within ethical domains (Rose et al., 2012). Science studies scholar, Isabelle Stengers (2012), calls upon researchers to risk letting of our preconceived ideas about the natural world, and to experiment with new collective ways of accounting for it. She concurs that we must interrupt the kinds of thinking and practice that sets us apart from nature, whether as its masters, its managers, or its guardians (Stengers, 2005). Confronting our human (and often heroic) western conceits to see ourselves as exercising exclusive (and exceptional) agency, she declares: "The time is over when we considered ourselves the only true actors of our history, freely discussing if the world is available for our use or should be protected" (Stengers, 2012).

It is taking a while for such conversations to reach the disciplinary field of education. However, given the realisation that the Anthropocene has now fundamentally changed life on Earth as we thought we knew it, it is no longer enough to draw upon old Romantic western thinking traditions. As we bequeath this profoundly ecologically damaged world to the next and future generations, there is a pressing need for educators to radically rethink our implication in the web of attitudes and actions that emanate from the epistemological nature/culture divide. In the human progress camp, this means linking the myopic western belief in our exceptional human capacity to objectively study the natural world, as if we were not already a part of it, with the delusional belief that we can act upon this same world to 'improve', modify, or exploit it with impunity. In the pro-nature pedagogy camp, it means resisting the urge to cast nature as a pure sanctuary to which we can send children in order to 'cure' them of social ills, and to cast ourselves (and them) as heroic environmental protectors and protagonists.

Both camps rely upon the framing binary logics of us-and-the-rest and reiterate the notion of heroic human agency that prevent us from recognising that we have always been indivisible players within the world's ecological systems, call them nature if you like. We have always been inseparable, so we don't have to return children to some imaginary purified space of nature in order to save them.

Much more helpful is the task of re-focussing on the past/present/future entanglement of human and more-than-human lives and fates (Haraway, 2013; Whatmore, 2013), risking thinking collectively with nonhuman others about the 'cosmopolitical' worlds we cohabit (Stengers, 2005, 2012), or as Bruno Latour might put it, taking up the task of reassembling the human and nonhuman collectives that make up our 'common worlds' (Latour, 2004, 2005, 2009).

Towards Common World Pedagogies

Over the last few years I have been undertaking collaborative multispecies ethnographic research with pre-school aged children, educators and resident plants and animals in the urban bushlands of Canberra, Australia. This multispecies ethnography is part of a larger Canadian/Australian Early Childhood Common Worlds project (Taylor & Pacini-Ketchabaw, 2015, 2016; Pacini-Ketchabaw et al., 2015; Taylor & Rooney, 2016).

In this research, we deliberately push beyond the prevailing humanist educational paradigm and its preoccupation with the development of the individual child in her/his socio-cultural context. We also push past the outdoor play-based learning approach that characterises most early years nature pedagogies, and which is often presented as adding holistic value to children's development (Cutter-Mackenzie, Edwards, Moore, & Boyd, 2014; Elliott, 2008). Instead of observing the ways that children play, explore and form relationships outside in nature, we focus on understanding the complex and layered ways in which children, educators, researchers, local plants and animals are all already co-implicated in their immediate common worlds, and we observe what unfolds when children, plants and animals meet in these common worlds. This requires us to resist the assumption that the nonhuman natural world is out there waiting for us to discover it and benefit from it. It requires us to recognise that that these worlds are not just about *our* actions, *our* learnings, and *our* needs. It requires us to pay attention to the complex and political ways in which our lives are already entangled with other species and to observe how these common worlds are made and re-made through our everyday interspecies encounters – not just by us (humans) but by all members of our common world collective. It requires us to pay attention to what Stengers (2005) refers to as the 'cosmopolitics' of our common worlds.

Far from being innocent natural worlds, these cosomopolitical common worlds are potent and damaged worlds. This brings our multispecies relations within them into the realm of ethics. The ethical questions we are pursuing in our research are not about how we might (heroically) save nature and children and protect them from the evils of society. They are about how we might foster new modes of (human and nonhuman) collective attention and thinking through our everyday multispecies interactions and relations. They are about how we might recognise our interdependencies and mutual agencies. And finally they are about how we might make a modest contribution, through this collective thinking and these everyday interactions

and relations, to at least some form of partial recuperation in which all species can flourish (Haraway, 2008, 2013).

It is no mean feat to foster these new modes of collective attention and thinking. We are aware that our efforts remain nascent, experimental, and limited by the impossibility of completely stepping outside of our human-centric traditions (Pacini-Ketchabaw et al., 2015). We try and follow Stengers (2005, p. 1002) suggestion to practice collective thinking in the presence of others, as a way of producing a 'common account' of our common worlds. As we have found in our common worlds' research, it takes time and patience to decentre the human for long enough to learn how to pay close attention to what else is going on, both beyond us and also often in tandem with us. Collective thinking requires slowing down, being present, and risking attachment with others in our common worlds (Zournazi & Stengers, 2003). Stengers (Zournazi & Stengers, 2003) acknowledges the riskiness of such practices. But she also emphasises the hope and possibilities engendered by risking re-attaching ourselves to the more-than-human world. Picking up on Stenger's embracing of risk, Haraway also talks about "risking redoing ways of living and dying with others" (2013), of recognising our mutual vulnerabilities, and of paying attention to our mortal entanglements with other species in our immediate common worlds, in these precarious times.

These are precisely the modes of cosmopolitical attention that we *try* and practice on our weekly walks with the children in Canberra. I emphasise *try* as after more than three years of regular walking and multispecies encounters, we still struggle, every time, to put our preconceived ideas of nature and childhood at risk, to think collectively with others, and to stay open to what else is going on.

The Cosmopolitics of Kangaroo–Child Relations

One of the most regular encounters we have had on our walks is with a big mob of resident Eastern Grey kangaroos that graze on the campus grasslands and shelter in the plantation forests. The kangaroos are ever-present, and ever-mindful of our presence too. Like us, the kangaroos are not just self-evidently there. They are not simply innocent animals naturally at home in nature. There are multi-layered and multispecies histories that pre-date and frame our encounters.

The Eastern Greys are urban fringe dwellers, trapped on the campus grounds, landlocked on all four boundaries by major roads. These trademark Canberra freeways are the same ones that make car commuting such an easy event for humans and yet such a lethal one for kangaroos. The ACT government estimates that there are over 2000 kangaroo and vehicle collisions every year in Canberra (ACT Territory and Municipal Services [TAMS], 2013), which is not enough to significantly reduce the ACT's huge kangaroo population – the highest per hectare in Australia – but enough to alert the vast majority of kangaroos to the dangers of crossing major highways (Westh, 2011).

Fig. 5.1 Children and kangaroos on campus (Author's photograph)

Canberra's kangaroos are also climate change refugees. Although Eastern Greys have lived on the grassland plains of this region for millennia, during the last 10 year drought – the hottest and driest on record – they moved into the city precincts from the surrounding over-cleared, over-grazed, and drought ravaged sheep country in search of sustenance. These adaptive kangaroos have never left. They have thrived in Canberra's well-maintained parklands and reserves, and have undergone a massive population explosion over the last un-seasonably *wet* 5 years. In fact, they have done so well as urban dwellers that their burgeoning numbers have come to be seen, by local ecologists, as a threat to the survival of some rare and vulnerable indigenous plants species (Westh, 2011). This, in turn, has prompted the ACT government to develop a Kangaroo Management Plan, the main strategy being a highly controversial annual kangaroo cull (ACT TAMS, 2010).

The charming appeal of seemingly-natural child and kangaroo encounters such as the one in the photo above (Fig. 5.1), is belied by these 'cosmopolitics', underpinned by the non-innocent grounds of possibility that have thrown kangaroos and children together on these anything-*but*-pure-nature campus grounds. Whether or not we are directly responsible for these entangled multispecies histories, these are the kinds of paradoxically 'unnatural' natural inheritances that that accompany us on these walks.

The children are aware of the culls, of the fact that the kangaroos are trapped on campus, and of the dangers that cars pose to kangaroos. They have seen the kangaroos start and bounce away at the sound of revving engines in the nearby campus car park. They know that the kangaroos are ever vigilant, and that their response to

Fig. 5.2 Thinking in the presence of kangaroos (Author's photograph)

potential risk, including *them* if they get too close, is to quickly turn and hop away. We've been practising thinking in the presence of these kangaroos. As kangaroos *themselves* are always so hyper-present and attentive, they make outstanding mentors. By thinking with them, and in their presence, the children learn a *lot* about *being* present and noticing who and what is there with them.

As they think in the presence of these kangaroos, the children often imagine what it would be like to have a kangaroo body – to have big ears that can swivel and pick up sounds from all different directions, to have large, furry bodies and furry pouches (Fig. 5.2). They think about what it would be like to be a joey living in one of those furry pouches. They imagine scratching their furry bodies with sharp claws and fighting, if necessary, by scratching others. Thinking about what it would be like to have a great long tail particularly intrigues them. They try and imagine what it would be like to balance on this massive tail when standing up, and to flick it for extra speed and momentum when hopping along. They imagine what it would be like to eat nothing but grass and to do so many poos directly onto the ground. Many of their imaginings are enacted – they hop, they stop and look around, they swivel their hands on top of their heads as imaginary ears, they scratch their imaginary furry chests with fingered claws, and they lie down on their sides, elbows propped, tails outstretched, to rest their imaginary kangaroo bodies. They also draw many kangaroo pictures, which feature joeys in pouches, kangaroo poos, and great big long tails (Fig. 5.3).

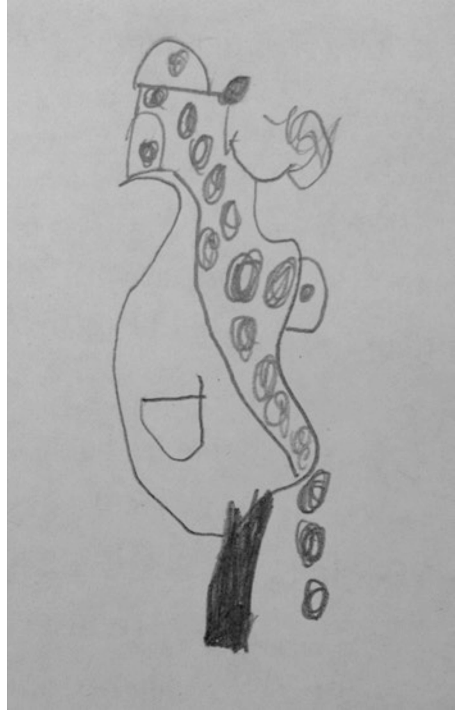

Fig. 5.3 Drawing kangaroos (Author's photograph)

Such intimate presencings and imaginings also evoke the risk of attachment and of risking redoing ways of living and dying with others. On one of our recent walks near the perimeter of the campus grounds, we found the body of a dead kangaroo that had presumably been hit by a car on the nearby road, and thrown back over the barbed-wire fence (Fig. 5.4). This was not the first time the children have come across a dead body on their walks. In fact over the last couple of months they had been curiously observing the slow decomposition of a long-dead galah. Even though the children have been witness to cycles of life and death, and had discussed the possibilities of kangaroos being run over on the roads, this was nevertheless a sobering encounter for them. Up until now, it had only been enlivening face-to-face encounters that stimulated their imaginings of what it would be like to inhabit a kangaroo's body. This was the first dead kangaroo body that they had encountered in their common worlds and it was a large one. They noticed that the head was twisted and thrown back. They could see the kangaroo's teeth. They also saw that the fur was coming away from the skin, falling in clumps on the grass. They stood and stared, as small gusts of wind rolled the fur along grass and blew the body stench towards them.

Fig. 5.4 Witnessing a dead kangaroo (Author's photograph)

Conclusion

This research is not about taking children out into nature on bush walks in order to save them and protect nature. It is about re-configuring our fraught relationship with nature by searching for new ways of thinking collectively about our common worlds. In this case, it is about thinking through the ways that we and the kangaroos coinhabit this place simply because of our entangled inheritances and trajectories. It is about coming to recognise that we are just one amongst many players that shape and re-make our common worlds, and that we share mutual vulnerabilities and life and death responsibilities for these worlds. It is about recognising that unlike Romantic notions of 'nature', common worlds are the non-innocent, cosmopolitical worlds in which we actually live that they require us to foster a new collective disposition and new collective form of ethics.

This research is not seeking to package a ready-made curriculum for doing all this. Rather it is following real-world relations that unfold on weekly campus walks, and staying open to seeing how the common world is already a part of the pedagogical process. There is some comfort in hanging onto the mantra of "staying with the trouble" – as Donna Haraway (2010) puts it. We know that it is only through dealing with the messiness of these worlds, by grappling with the ethical dilemmas of these often less-than-ideal encounters and entanglements in the common world spaces we inhabit, that we can figure out, together, how best to respond.

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Chapter 6
A Precarious Body

Carol Birrell

Ocean

I am throwing you into the ocean with me, an invitation to immerse yourself into this moment of time, in this place, where I am touching and being touched by a myriad of elements. My body is one moving, touching surface, full of desire, full of heightened receptivity. What happens in you in response to me, the human who is at the centre of this experience? For you, too, are human, and I am speaking to you through words and images, wooing you to come with me into the sea with a humble piece of red cloth, some old weathered wooden poles and a chilled body at dawn. Taste the salt on my skin, peer through my second skin of red cloth into that fragile light…

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It is not easy to wake my body up on this soft dawn morn.
I move slowly at first, push and coerce my body into aliveness.
But then I sense the invitation from the ancient ones,
I have moved scarcely before I know.

I step firmly on this earth in this body
Sensing being, sensing the space,
Called to respond…
I am moved and move.
One impetus flows into the next
In a timeless world of the mover and the moved.

Distinctions at first obvious
Now merge.
I feel the soft glow
Of morning light
On slightly chilled flesh.

At first, it is just me and them,
As I touch, caress,
And let my body decide
How it wants to respond.
But then the sea is upon us, The tide encroaching
I too become the poles,
Touch the sea,
Weave in and out,

Stretch my body around,
Between Above Below.
Become the sea,
Sink into my waveness,
My high-tideness.
There is no separation
We are life
Aliveness.

Conversation 1: The Practice of Being Human

I offer here my practice of *touching the earth*, an earth-based arts practice that I have been developing over 20 years, which is articulated as a 'poetics of place'. What goes on, what is the nature of the encounter, when I do movement in nature or create an environmental art installation, then continue to engage with that place over a longer period of time-weeks, months, years? An ongoing dialogue emerges that is expressed through a variety of art modalities such as poetry, art, photography, sound, song, sculpture, and writing. The textured nature of this dialogue has layers of deeper knowing and being. The stories that emerge are not just human stories. Nothing stays the same; all is forever evolving (Birrell, 2007).

'*Precarious*' (dictionary definition): adj. 1 not securely held or in position 2 dependent on chance; uncertain. From L *precarius* 'obtained by treaty' (Pearsall, 2002)

'Precarious' (Etymological Dictionary): pray, prayer, praying mantis; prie-Dieu; prithee; precarious, precation (obs), precative, precatory; To *pray*, a request, hence esp a prayer: prob akin to L *procus,* a wooer and *poscere,* to ask or demand (Partridge, 2000).

Are we now in a period of time that shouts the end of certainty? Life on Earth has already become unpredictable. Global warming, sea level changes, the intensity of extreme weather conditions, melting of the ice caps, mass extinction of nonhuman species, are all concrete changes on our Earth that humans have no solutions for. As a species, we do not know what to do. Do you remember Hiroshima, when we discovered that as a species we had the capacity to destroy all life on Earth? Do you remember the Fukushima earthquake, tsunami and radiation leak? Did you rollover and go back to sleep? Some of us are full of terror. Some of us cover our heads with sand. Some of us invent insane projects as if we had some clue. There are no simple answers, no leaders with a check list of 'must-do's' to avoid the crisis. Anthropogenic change on this planet is a fact of life with very realistic consequences for a profligate species out of control.

Welcome to the Era of the Anthropocene!

It seems that precarity demands being in a state of openness or unknowing, certainly one of uncertainty. But dig deeper into the etymological roots of this word to find the rhythm of the praying mantis, rocking back and forward, back and forward, as if time does not exist, reality is just in this moment of entreaty.

Just like the ocean, always moving in a state of flux, or sand, shaping, and reshaping itself with the tides, the currents, the wind, and the landscape of the sea is accustomed to the precarious nature of existence. Humans are not so. In these times of uncertainty and not knowing, without a solid ground of being, humans are called upon to enact new ways of being on this planet. The 'tried and true' ways that got us into this fix can no longer be turned to for solutions. Such a liminal state offers its own ambiguities and promises…and the potential to disrupt refusals of being different in our relationship with the planet and with each other.

In its working and re-working and in the shifts of meaning that continue to inform this dynamic body of work called *touching the earth*, I want to suggest that these precarious Anthropocene times of indelible human change inflicted on the Earth's ecosystems (Crutzen, 2002) may be viewed as places of imaginal possibility that create a gesture towards other ways of knowing and being with the earth.

It would be easy to convince you, through my own knowing, and the visual evidence here**,** that the protagonist in this drama is me, the human, a white woman on very ancient Aboriginal Australian country, taking central stage, as non-Indigenous humans have always done in their short time on this Earth. I am telling the story here, making the meaning through my own fleshy life. I characterised it from the start as phenomenology, but now I am not so sure…

Take *ocean*, wherein the movement is in response to the coastal surroundings – a story of a woman and the sea, the cloth and the poles. At first, she is moving with these elements, deepening into relationship through responding. The inter-subjective nature of the encounter creates a self and 'other'. The woman dances with the ocean, then she dances with the poles, with the red cloth being a type of interface that enjoins those worlds. She feels the wind on her body, slips into the high tide sea, and swirls around the poles. All of the images (Figs. 6.1, 6.2, 6.3, 6.4, 6.5 and 6.6) reflect that sense of human at the centre of the drama. This is the story I used to tell myself.

But look to the words, and another story rears its head. The so-called 'human meaning maker' is dragged into another sense of being, where she begins to dissolve into the poles, into sea, the wind, or the pink light. She moves as if she were a pole, in some way having become the pole:

I too become the pole…become the sea…sink into my waveness, my high-tideness

The clear separations drop away, become blurred and subsumed into a world of relationships and relatedness. So that all that matters is this new world where there is no differentiation between the "toucher" and the "touched" (Merleau-Ponty, 1999, p. 150). It is a world that rejects the separation of knowing (epistemology) and being (ontology). Karen Barad has coined a term for this essential state called "onto-epistemology" or "the practices of knowing in being" (Barad, 2007, p. 185). Simply, "there is no knowing without being and no being without knowing" (Rautio, 2013, p. 6).

Although you may see my human body as still central to these images, to the story itself, the embodied knowing that I hold creates an alternative narrative. Strangely, through my own direct experience in places, rather than strengthening the insinuation of the human into those places, which privileges the human, something happens which actually re-configures the human into being embedded within an ecological world of relationships and into a storied world of "multiple encounters" or multiple narratives (Hultman & Lenz-Taguchi, 2010, pp. 530, 532; Rautio, 2013). In this way, the human becomes decentred or defined as relational rather than individualised, along with other such bodies, human and nonhuman. There is a call from Relational Materialist thinking for such a stance (Barad, 2007; Bennett, 2010; Hultman & Lenz-Taguchi, 2010; Rautio, 2013). It has been suggested from

this emerging theory that the dire condition of the planet is a product of humans always concocting to centralise their own grand narrative. From such a perspective, I now see *touching the earth* as profoundly ecological and am drawn to reconsider its basic tenets.

There is one further rejection of my practice's original self-narrative. This concerns the long revered nature-culture dichotomy wherein matter has always been designated as inert or dead in favour of the 'agency' of 'vibrant matter' (Bennett, 2010; Mathews, 2005). The red cloth becomes almost animate as it drapes itself over bodies, in sea, between poles. It becomes part of the "relational field" (Olsson, 2009, p. 32). The poles are not dead wood sticks but companions of the tides, as are all bodies and forces present and interacting, seen and unseen. Latour calls these players "actants" who are all implicated in the performative action (Latour, 2005).

The crucial point is that the human is no longer central to its own dominant self-contrived narrative. Rather, humans are "constituted by all other animate and non-animate co-existing entities" (Rautio, 2013, p. 9). The many other stories evoked here besides the human one, such as that between the ocean and the poles before and after any human involvement; the red cloth and the sea; the red cloth and the poles; the red cloth in its own right; the sky and the sea, and so it goes on and on, are not only equally paramount in a complexity of narratives informing one another, but as well, all are implicated in a type of agency that constitutes all players into being. Deborah Bird Rose asks of humans in these times:

> How to find our way into new stories to guide us now that so much is changing? How to invigorate love and action in ways that are generous, knowledgeable and life affirming? (Rose, 2011, p. 2).

Is there a commitment to the questions of humanity in ethical relationship with the earth? Nietzsche speaks of being "true to the earth" (Desmond, 2003, p. 124). What can this mean in the Anthropocene?

When I know myself as an ecological being on a deep embodied level, defined by and through relationships, then I cannot but know my true place of belonging, as one species amongst many. In Barad's (2007) words, "knowing is a matter of part of the world making itself intelligible to another part of the world" (p. 185).

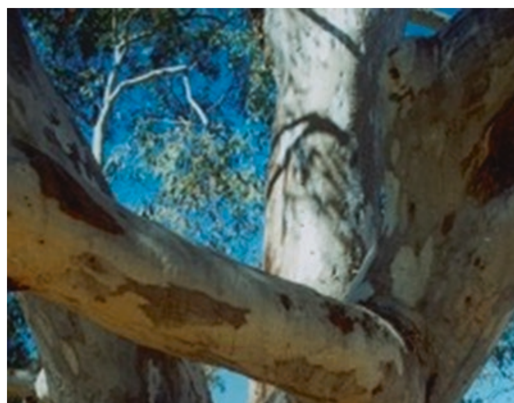
However, it is precarious for a human to decentre herself…

Desert

I am disturbed… I am disturbed…
Disturbed by who-knows-what, but disturbed at being here.
I feel alien, yet familiar. I am known here, yet stranger.
Seeking, asking permission to be here from the spirits of this land, makes little difference.
I am still disturbed.
I take myself to the dry old riverbed through snaky, shivery grasses to old grandmother tree.

Old grandmother gum
Beckons me.
From bed of ancient sands.
I peek at her
through sensuous leaves.

Her bulbous trunk, rounded and strong
Speaks of age, wisdom and solidity.
Branch snakes out…
                Root snakes out…
                            Life snakes out
Snake country
I play with her shadows
Give her depth on ground, as well as air.



I dig her roots as she too digs strongly for wet,
For ancient slipping friends
Of silver scale.

Sand bed resistant to such unearthing
Collapses back in on self
Refuses to bare those dark spaces.

Grit holds tight
Yet I keep digging.

Branch meets root
In shadows echoing self.
Too bare! Too bare!
Pain of exposed hurts.

Red fibre cloth touches fibrous root
…gentle meeting in place of moistness.
Cloth binds root
Snakes in, around
Poultice to the wounds of time

Twigs of bending piety
Close over gap
Brush lightly on trench burial pit
Tender
Fragile
Vaulted ceiling
that eases pain.

Branch weeps gently
Closes eyes in profound gesture of remembering.

Rib cage of twigs adds strength
Reflects mirror spine of mica fish

And vision of hope.

Conversation 2: What Really Matters?

The *desert* of Central Australia is an alien place for me. It is a place where I do not feel at home, stripped back to bare bones, yet I am drawn to being there. As a non-Indigenous person, anywhere in Australia, all of which is Aboriginal country, I am also alien. I have felt alien to the earth for most of my life. *Touching the earth* arose from a deep longing to feel close to the earth.

I take myself to an old gum tree on the banks of the old dry Todd River riverbed. But although I notice the ancient tree's external form, what really attracts me is light itself, forces surrounding the tree and the river, and the shadows the tree casts on the soft riverbed which I imagine to be overlaid onto a narrative of the roots of the tree. This is an unseen world, mostly. The unseen chooses to be unearthed. As human, I have no idea what is being unearthed, no idea of what the stories may be. I like the way Heidegger refers to the "unconcealedness of being" (Heidegger [date] as cited in Risser, 1999, p. 131).

In this work the only visible evidence of human presence, unlike the *ocean* images is the red cloth. You have to imagine my presence, see me digging up the roots, feeling the sand grains slipping though my fingers as I dig, noticing the movement from dry to wet sand, from aridity to moistness underneath. It is an old dry riverbed, one that rarely knows the rush of water, and therefore clings to any moisture for survival.

Do not cling to me for help. I know nothing.
Do not ask questions. I cannot explain.

Ask the read cloth, perhaps it knows. And if it refuses, do not be deterred.
Ask the roots of the old gum tree, that old grandmother spirit tree. She knows.
Bind yourself to this story.

I accept the provocation that this Australian continent is not empty, that it is full of stories, energy and power. These stories are knowledges and are connected as part

of places or 'country', the Aboriginal term denoting local places of meaning (Harrison, 2013). My stories, the newer stories of a white woman treading on this land, engage with those more ancient ones (Birrell, 2007). What is the imprint of the old stories? How do new stories emerge? How do the old and new stories meet?

From a Relational Materialist perspective, it concerns the 'assemblages' that are present (Barad, 2007; Bennett, 2004). The light, the shadows, the woman present, the Aboriginal stories from here, the old Aboriginal sprit ancestors of this place, the tree trunk, the branches, the roots, the cloth, the breeze, the gritty sand- they are all different moments of interactions or groupings called "assemblages", inter-relating and co-constituting each other in this place (Hultman & Lenz-Taguchi, 2010, p. 531).

Desert demands a strong physical engagement with the materials present. It demands a strong presence be given to the materiality of our lives as profoundly visceral, from the 'sensuous leaves', the 'bulbous trunk' to the 'place of moistness' and the ancient 'grit' of the sands. Rautio (2013) speaks about stones in a child's pocket. She refers to the change that is produced in a way of thinking that conceptualises that it is not only the human child playing with those stones, turning them over and over in her hands, but in a sense the child is 'being played' by those same stones. It subverts the human as central to all action and all meaning making. *Desert* exemplifies this. At one moment, the human is playing with the tree, touching the trunk, dancing with the shadows on the sand, sifting the sand through fingers, playing with the old riverbed assemblages in a sensory and sensual performative moment. To view this differently, in a manner that feeds into a Relational Materialist reading, the tree is playing with the human, caressing her with leaves, with smooth bark surface and with shadows, exerting itself equally as an "intra-actant" in this scene (Bennett, 2010, pp. 20–21). The roots exhibit agency by calling on the human to dig them up. The materials themselves, the forces and the unseen world are generative of the human, just as the human is generative of the tree, roots, and the other players here (Hultman & Lenz-Taguchi, 2010).

But do not let these sensual encounters seduce you from the stories themselves, the ones that want you to hear them, from deep down in the earth, the 'interstices' of Paul Carter. He is whispering here, of the "shadowy supplement of stories… that resist explanation" – those sparks of "unconscious impulses, contradictory histories and dream landscapes" (Carter, 2010, pp. 134–135). You cannot escape these stories once you step foot on any Australian land. They will be told.

Take notice of the story of tree branches meeting their own mirroring in shadows projected onto the dry old riverbed from above; there is a story about fish, shiny skinned fish from an ancient inland water; there are dark roots playing with those same shadows, touching their limbs; there is a poultice made of red cloth which wraps the root in fibre, a healing gesture for the vulnerability of the exposed wound; and there are stories of sticks made into 'twigs of bending piety' as a cover for the shockingness of a revelation– the White legacy on Black country. Some of these stories are painful to unearth. They kick you in the guts when you are down. None of them are predictable. Paul Carter knows this. He prefers to cling to "the truth of the ground" (Carter, 2010, p. 11), somewhat similar to Nietzsche clinging onto being "true to the earth" (Desmond, 2003, p. 124).

Donna Haraway says that:

> …we need stories that are just big enough to gather up all the complexities and keep the edges open and greedy for surprising new and old connections (Haraway, 2015, p. 160).

I love this idea of being 'greedy' for 'new and old connections'! Who would imagine that silver fish would frolic with a 'rib cage of twigs'. As the twigs bend themselves over the red cloth-bound root, something emerges that is a surprising new type of connection for me. There is pain, and there is grief. This may have been a massacre site of Aboriginal people, the 'trench burial pit'. The human is in the service of the emergent narrative/s as are other 'intra-actants'. In a process of 'emergence' (Somerville, 2013), all is predicated on inhabiting a realm of not knowing or unfolding in its own way. This is the place referred to earlier where "non-humans perform actions, produce effects and alter situations" (Bennett, 2004, p. 355). So I would always need to be asking myself who is performing this action. What then happens as a result of this action? And how has the whole situation or a part of the situation now changed?

The qualifier that needs to be taken into account in this discussion is that since my poetics with places through arts engagement continues over a long period of time, meaning may be severely delayed. Or rather, meaning is never fixed or absolute. The stories that arise in the original iteration of the encounter may alter drastically over time. At the time of the encounter, being and knowing are still conflated into one sense of Barad's (2007) 'onto-epistemology'. But that overall sense may change and evolve over time as various iterations of art modalities feed into a new dialogue. And the stories begin to form and re-form. A new being/knowing is enacted and re-enacted. Remember, this tree encounter was just one set of stories over a month long of different encounters in the Western Macdonnell Ranges which continued to morph into new and old stories over many years, and still does.

You were not to know I became very sick, the very next day, in the desert, when I thought I was dying and had no idea why. Years later it became clear that perhaps I really was in a massacre site in that old river bed, or I had stumbled onto an initiation site without permission. Was it forbidden for women? There could have been an Aboriginal Law I had not been following- The Law of Respect. I should have known better. This Law demands seeking permission to be on someone else's country so that you are not in danger. In the old days, it meant death. I had attempted to get permission from the traditional owners of that country but it sent me on a wild goose chase with no resolution until the day I left.

On returning from the desert, I painted many, many canvases. I had brought red dust back with me. This I made into six snake eggs on the carpet of my lounge room. They stayed there like that for 6 months. I worked with clay sculptures, wrote poetry, and allowed each distinctive art form to dialogue with one another. The stories continue, even now, to reveal themselves. I do know that I was disturbed by Black/White relations in that country, manifested as a type of apartheid, a legacy of cultural dismemberment of Aboriginal Australia. Not surprising that I went through my own type of dismemberment. These are the 'complexities' and 'new and old connections' that Haraway (2008) extols, as well as the 'unconscious impulses' and 'dream landscapes' of Carter (2010).

I believe that the plight we as a species have got ourselves into is a failure of human imagination. I am now deeply disturbed in a broader sense. I suspect the human species is now deeply disturbed. And so it should be. The earth has been deeply disturbed for a very long time. Carter feeds me hope when he refers to “a sense of what the world could be, if we recollected, imagined and reinvented it” (Carter, 2010, p. 5).

The Anthropocene may be a time when humanity can take a fresh look at itself, particularly in relation to its ground of being, this planet Earth. If the formal adoption of Paul Crutzen’s (2002) notion of the Anthropocene is recognised as a geological era then, as a species, we can take a long hard look at the ongoing impact of our human centredness.

I want to ask myself as a member of the human species: Who am I as a human? How do I live and locate myself as an Earth dweller within a myriad of relationships embedded within the living and non-living worlds? How might I live or respond differently that reflects myself as a dweller of not only this Earth, but of this galaxy and this universe? As Rose asks, “if we humans are the Cause, can we change ourselves enough to change our impacts?” (Rose, 2011, p. 2)

touching the earth takes a step in that direction.

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Chapter 7
Bodyplacetime: Painting and Blogging 'Dirty, Messy' Humannatured Becomings

Sarah Crinall

Introduction

The separation of nature and culture has been identified as a significant problem underpinning the failure to adequately address issues of planetary sustainability. In this chapter I explore the necessity of attending to the sustenance of self in order to sustain places through examining painting and blogging as acts of making involved in 'humannatured becomings'.

As a mother, education researcher, scientist, and inhabiter I have spent time painting with artists of water, and blogging, to consider alternative ways of knowing through art, in an inquiry into new imaginings for sustainable education in these precarious times of the Anthropocene. I live in Southern Victoria, Australia, on a thin slice of land at Surf Beach, on Phillip Island between two water bodies, Bass Strait in the Southern Ocean and Western Port, a bay. Many small rivers, creeks, and drains feed Western Port, which in turn feeds into Bass Strait and the Southern Ocean.

Sending our attention outward to local surroundings with a critical consciousness of sustainability issues has been recommended (Gruenewald, 2003). Involving our bodies and language in this query has brought local, everyday life in places (e.g. Rautio, 2009; Somerville, 1999) into focus as a space from where sustenance can emerge, sustenance being that force which nourishes an entity through multiple cycles of a life. Alternative forms of knowing to science and philosophy are accessible through bodily practices of art making (Deleuze & Guattari, 1991/1994; Grosz, 2008). Creative modes of writing and artistic practices of making are powerful tools for making meaning in relation to local, everyday life and issues of sustenance (e.g. Carter, 2004; Grosz, 2008; Rautio, 2009). In this chapter I exhibit three blog posts that contain artworks I was involved in making with local artists Pip

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Cleeland and Prue Clements, expressive art therapist Anthi Emmanouil, and my daughter Edith, in and around Western Port's and Bass Strait's watery places amongst my everyday life. I call the technique of blogging art making practices of places laced with everyday occurrences 'bodyplaceblogging'.

Bodyplaceblogging has emerged from a critical consciousness of my body, mind, sustenance, and water in places. As I notice my body and how it feels in a present moment, I also pay attention to what my mind is saying, as I write. I simultaneously extend my attention outward from this self – the body and mind, and write of the places I am in. As I write, I apply an overall critical attention to the words and concepts of sustenance, water, and the latest theory I have been reading. The words that come to me in this space are written down the page with images haphazardly inserted into the text stream afterward. This blogged piece comprises a 'bodyplaceblogpost'. I do not edit these bodyplaceblogposts. Rather, I make one then press publish, and return later to use them, sealed, as theoretical forms. Leaving the errors in feels necessary in order to remain in the questioning space of what is certain and finite.

Out of this book's themes, I have chosen to inquire into my 'humannature'. I am looking specifically to the possibility of my own humannatured becoming, and I am wondering as I make this chapter if, in the blurring spaces between human and nature, in the bodyplaceblogposts is there a sustenance that benefits human and nature simultaneously by knowing them differently in relation to each other? I find I enter a space of conscious attention during the acts of making paintings and making blogposts that I come to call a space of 'bodyplacetime.' I find this nourishing bodyplacetime looking between bodies and places for intra-actions (Barad, 2010). These intra-actions are described as dirty, messy (MacLure, 2013) intra-actions because they are not definable in binaries such as object/subject, body/place.

What the space of bodyplacetime is will be clearer at the end of the chapter. I will define what I mean by a humannature and draw together a theoretical frame to examine the blogposts in a way that allows them to speak through their unspeakability. I then exhibit three blogposts with a playful engagement between the theory and data (Somerville, 2007) in the moment of writing.

Researching and Mothering

There was no way for me to conduct this research without my everyday life with Edith or Surf Beach. Through the act of bodyplaceblogging my body becomes one of the strands of voice woven in with the voice of my mind, theory and data. Through this the occurrence of a very local, everyday life become part of the work. Since I have been a researcher I have also been becoming a mother. Edith is now 3 years old. Five years ago we moved to Surf Beach and the more I spend time here the more I feel I come to know this place, and become part of it. I sense a storm coming with a drop in the temperature while I hang the washing. I look for the returning shearwater when I notice the yellow wattle dust fall in September, and so I drive more slowly. I avoid the red cave where the black flies re-inhabit and breed each March, at Surfies Point. Karen Barad (2010) offers an alternative to standard conceptions of matter such that Surf Beach, Edith and I might be all originally one, drawn out into separate forms from this one entanglement temporarily, by what is

given agency. Separated as spacetimematter we entangle back again/at the same time (Barad, 2010, p. 244). I am playful with Barad’s entanglement in this chapter wondering how artists, Edith, Surf Beach, and I are simultaneously one and other in the conscious space of making art in and of watery places here. Hultman and Lenz-Taguchi (2010) empirically consider what happens when a shift is made from an anthropocentric reading of a photograph of children playing with sand to understand the event as sand also playing with the children. I wonder how the local places we make art of and in, invite Edith and I to be sustained, local, and natural.

I became pregnant with our daughter Edith while working to sustain waterway-health as a waterwatch officer. I noticed I was not attending to sustenance of myself, which felt contradictory. I wanted to challenge my sense that it was indulgent to attend my own sustenance. Surf Beach houses are built upon a (re)claimed shearwater-nesting rookery overlooking Bass Strait. Surf Beach is not ‘natural’ nor is it ‘unnatural.’ Edith and I go about our daily life here. Our experiences with its character as and beyond a housing estate/swamp/nesting ground emerge as we walk about collecting pine cones and fire kindling, play in the garden, shelter from a southerly wind, listen to the pounding sounds of waves on the beach, spot blue tongue lizards in the grassy heathland, and make cubbies in amongst the remnant swamp paperbark swales (drains) that take storm water to the sea. Surf Beach negotiates sustenance with us and other life, and we negotiate our sustenance with Surf Beach.

Bodyplaceblogpost, 22nd July 2013

On the floor

I’m perched in the dark
on the floor
being quiet.
Looking through the glowing
crevice
of amber in the fire

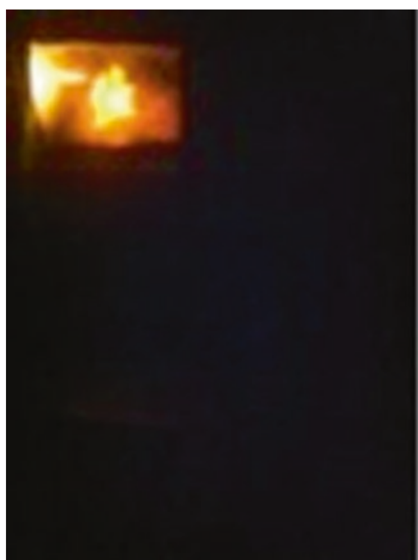
while subtle crashing waves
and slowly flashing lights
swoosh edie to sleep.

It's a step on from the exhaust fan
and gruff rumble of the bathroom heater
she's lulled off to
over the last two days.
It must be noisy in her developing imagination
she needs
a sufficient sound to dull the endless new words
colours
tones
she's growing up
and circling back
perhaps spiralling is more applicable,
with
its
coiling
suggestion of accumulation (Carbaugh 2005 originally cited in Rautio 2012)
her character was immediately present at birth
as life spirals around her
growing self,
the melodrama of her birth
emanates through various holes in the fabrc of Edith's everyday.
I wonder if she's gone to sleep?
No sounds now though the waves splash on
I'm readying to write this blog into
a story
forming this story is like being
the sea
swelling up around the Stromatolites
layering on layers
that are the bodyplaceblogposts.

Stromatolites
are
layered
pillars of blue green algae.
Time-filled oxygen-producing beings
each layer
bridging then and now

each pillar is also its own individual shape and character
just like a bodyplaceblogpost

The fire is so hot.



It's the only sound around me in this dark.
The heat, swells outward from its own body
passing into my toes,
calves,
knees,

thighs
and outward into the surrounding places.
(Crinall, 2013)

In my research, I have been examining how artists come to know waterways in an alternative way to how science knows them. I do so by spending time with artists painting, listening to their stories and watching how they work in relation to the places they paint. After we paint, the paintings are posted on the bodyplaceblog. Simultaneously, the bodyplaceblog captures the experiences in a playful way amongst everyday life in Surf Beach with Edith, transcripts of conversations and photographs of the time spent. All of this 'data' (or stuff) is like wool to me. As wool strands are knitted into a blanket, this stuff of time spent with artists and everyday life is knitted onto the bodyplaceblog with a critical attention to questions of sustenance. Along with the paintings posted, the bodyplaceblogposts are their own form of artistic expression and bodyplaceblogging is an artistic practice in itself.

Painting

Bodyplaceblogpost, 12th November 2013

Sitting in the wind with pip

Bustling day
Pip described as in her genetics
from
Scotland and ancestors who learned to live in this temperament.
We met about art
We dream them over tea at one gathering
Then walk
and talk it out at the next

Seal it with a
well painting
like those pip shared with me all that time ago.
Teeth are covered in the tannins
of the goddess tea
textures and textiles
we've discussed
Oh the materials
It occurred to me
I shared
Often I don't like the order prescriptive layer of paint
It's the second and third
where I rub and scratch paint off
Then the image starts to resonate with me
"I like what you are talking" responded pip.
(Crinall, 2013)

Painting takes us into the place we are visiting specifically. We take a moment to focus here. While it could be anywhere, it is always here. Pip once painted with the clay we sat upon and took water from the sea to wash her brush. Prue once painted as though she was the shearwater coming in to land.

Pip, Prue, Anthi, Edith and I have all sat together in watery places and painted over the last 3 years. Each artist and I choose the location and we all have our own way of painting. We do not get together for long. Pip and Prue both insist it should be quick - an hour at most. A small piece of art is produced before we leave again. While the painting is the focus of the outing, strings of conversation happen along the way, by the way, and photographs are taken in moments when something strikes me and I cannot resist, or at the request of the accompanying artist. These are all the threads of incidental, everyday life that make a bodyplaceblogpost.

(Bodyplace)Blogging

My reflections posted on the blog synthesise body, place and theory, with a consciousness of sustenance laid over. I call the blogging bodyplaceblogging given I use my body to explore the place I am in while I make posts. Using Somerville's (1999) emphasis on drawing experiences of local places through bodies and Gruenewald's (2003) call for sending our consciousness outward critically to places with queries of sustenance, I send my consciousness out through my body to the place about me, then draw my consciousness back in again, like a breath, and write my experience of these moments down the page.

Once the painting session has passed, I grab a moment somewhere that day in amongst the debris of domestic motherhood and I use the blog to make with the experience. Using the material I have at the time, I do not know what will be written in a bodyplaceblogpost until it is made. This bodyplaceblog-making process helps me be playful with these artistic encounters and the bodyplaceblogpost of the event emerges as its own work of art. Art making with the painted artworks in the blogging way gives me access to a space to be between the places, body, and the artists,

without talking about it. I use Pauliina Rautio's (2012) work to think through the way the material is produced. I do not want to work in conventional writing styles, which might problematically solidify what needs to remain fluid and open to negotiation (Rautio, 2012), to continue becoming.

I now notice after 3 years of bodyplaceblogging that I have started to enter the bodyplace space in my everyday life. I find myself composing bodyplaceblogposts in my mind as I put petrol in the car on Phillip Island Road. I catch a glimpse of the grey on grey of Western Port across the street and I am provoked by the encounter and lay out a bodyplaceblogpost in my mind.

Humannatured Becoming

A humannatured becoming is not entirely explainable. It feels knowable, yet unspeakable in a rational, linear language.

This may be because, as MacLure (2013) celebrates of promiscuous feminist writings, sending feminist thought beyond women's issues to issues of the globe, "the messy habits and dirty theories" (p. 625) do not conform solely to traditional, rational boundaries, and so cannot be expressed in traditional, rational language?

This may be because time is in movement, made of split strands (Grosz, 2005). Grosz asserts that time is split with a virtual and an actual strand such that time is made of the preserved past and the passing present (p. 3). Barad (2010) too considers time, not solely linear or jointed nor solely non-linear or dis-jointed (p. 244). How do I write with (dis)jointed, (non)linear time? And how might I describe something that is joined and disjoined in a linear and nonlinear way simultaneously?

This may be because stuff or matter is never fixed as something or other, and so is not describable from a distance, away from the body sensing it in a passing moment. Barad (2010) theorises that what emerges and returns to the entanglement as spacetimematter is always both unified and differentiated. Would describing matter as one or the other then be incomplete in relation to the entanglement (Barad, 2010, p. 244)?

This may be because, as Grosz (2011) suggests, "at its best feminist theory has the ability to make us become other than ourselves, to make us unrecognizable" (p. 87). If becomings are both measurable and indecipherable (p. 1) will these becomings be measurable only when written with the movement itself? How will I write with movement?

Operating in a mode of becoming where "every thing, every process, every event or encounter is itself a mode of becoming that has its own time, its own movements, its own force", then will these becomings be indescribable in a singular, inert way (Carbaugh, 2005 as cited in Rautio, 2012, p. 2)? Where we are not a unified human, as is being theorised now in (post) qualitative inquiries of the posthuman (Braidotti, 2013), this 'dismembered – re-membered' version of ourselves is made of more than ourselves (Carter, 2004, p. 11). Does becoming more than ourselves in a space of making new creative knowledge by weaving (knitting) or material thinking

(Carter, 2004, p. 15) speak differently? How does a collaboration of bodies and places, becoming by acts of making, speak?

The term becoming was used by Greek philosopher Heroclitus (530–470BC) to describe what he felt was the only certainty – that there is change and movement (Rayner, 2008). I notice living with intent to become as a being dominates current western thought over a sense of becoming. Tonight I caught myself saying to Edith, "you will be tall if you eat broccoli." To reconsider this in terms of becomings, growing is doing up and undoing (Grosz, 2011) infinitely as we move through the present. Hair, skin and bone cells die, shed, and replicate. I might have exclaimed, "You are becoming and unbecoming while you eat your broccoli."

It feels safe 'to become,' knowing that I can work toward somewhere where everything will be a certain way. The cost, it occurs to me, is that being occupied with intent 'to become' (e.g. to become a good mother) orients me toward a future in time where this will be achieved. This being, over becoming, is embedded in the future and neglects the rich, sensorial time that is knowable in the movements of becomings now and before (Grosz, 2011). For Grosz, time as movement "splits into two trajectories, one which makes the present pass and the other which preserves it as past…Time functions simultaneously as present and as the past of that present" (Grosz, 2005, p. 3).

Being locks me into an inert, finite sense that I am solely a unified human (Braidotti, 2013), and so does not work in a framework to understand what happens between bodies and places in a humannatured becoming. To continue the broccoli-human example, a sense of becoming that unlocks the unified-human would have me exclaim "you are a humanbroccoli hybrid becoming!"

Theoretically Disrupting Playfully

A theoretical frame that playfully disrupts time and matter assists me to explore a humannatured becoming in the bodyplaceblogposts.

I encountered Maggie MacLure's (2013) celebration of promiscuous feminist authors one day during a study session that found me later, as often happens, out in the vegetable garden. The words 'dirty' and 'messy' came bounding at me during the session working in the garden, and materialised in the moment of making a bodyplaceblogpost afterward. Becoming playful with the terms and concept of a dirty and messy relation assisted me via the blogging to move into a space of provisional uncertainty, spreading across boundaries in an everyday moment.

Bodyplaceblogpost, 24th April 2014

Humanbroccoli hybrid

'So it has been great to witness …
the promiscuous feminist researcher
with her dirty theories and messy habits
her diverse and perverse commitments and
her productive–seductive vulnerabilities' (MacLure, 2013, p. 625)

Reading the terms ‘dirty’ and ‘messy’ here
draws me immediately to the earth
Earth on fingers
under nails
between toes
I am gardening
digging old tomatoes from the earth to plant broccoli for the winter
To water
To watch
To eat
Toward becoming
A *Humanbroccoli* hybrid!
(Crinall, 2014)

I found a literal dirtiness in between my place and body when I was out in the garden. The concept of a dirty and messy becoming in the space of living everyday life tangled about me. I felt the garden engulf me and I engulf it. As a student water scientist I learned about algae (seaweed) and its origins. Brown algae are younger in geographical time than green and red algae. Brown algae are thought to have evolved when a simple single-celled organism, a little alike to a tiny plant, was engulfed by another more animal-like cell. The plant-like and animal-like cell had a symbiotic relationship, helping each other survive. Over time, the two cells became one organism, now known as multicellular brown algae. This hypothesis is supported by the presence of four membranes that surround the brown algal cell’s nucleus or ‘brain centre.’

Promiscuous feminisms work outward toward issues for the globe from issues for women and are comfortably uncomfortable in their “disloyal fidelity” (MacLure, 2013, p. 625). I am disloyally moving out-of-bounds to understand myself through the humanbroccoli hybrid. I peer into the space between bodies and places, humans and nature, becoming engulfed by (and becoming) what is not-me.

I need a travelling, disrupted, engulfing way to express this. In Barad's (2010) article she experiments with disrupting linear time specifically through her writing. In this playful work the reader is invited to participate in a “disruption of continuity” (Barad 2010, p. 240). Imagining unravels in separate time/space coordinates that leap the reader off the paper from one time, place and concept to another. While there is this discontinuity of disrupted time at work, linearity exists in continuity too. Her writing concludes with an intention for justice – justice for the entanglement and all the spacetimematter that emerges and returns. The discontinuity speaks to the bodyplaceblog’s disrespect for linear time, and the continuity speaks to my critical question about sustenance of the bodyplace/humannature.

Occupied with (humannatured) becomings I find I need to shift toward issues of movements (e.g. Grosz, 2011). I want to write with the bodyplaceblogposts. In this context the bodyplaceblog is the loom weaving meaning from bodies and places as I go. The loom, Paul Carter (2004) offers, is the tool for making that is inseparable from the knowledge it produces. The bodyplaceblog is doing up and undoing bodies and places as it makes with the writing, playfully moving between the theory and the data. The work of play between the theorising and data is supported by a methodology of postmodern emergence (Somerville 2007), offered as a way to access alternative knowing in the spaces between.

Three Bodyplaceblogposts

Bodyplaceblogpost One: 5th July 2013

Bunyip River yesterday
was a womb
of phragmites
nurturing
the river

still
in her lap
(Crinall, 2013)

Prue was mentoring me in colour and movement while I showed her how to test the water quality on the day this painting was made. I returned home pleased with this painting, adoring of it in fact, like a mother of her newborn child. I remember the feeling of stopping and being in the space of the river on this day. In itself this was a kind of nurturing act. I had not noticed the wind and its strength until Prue pointed out I should work it into the painting. The wind bent the phragmites that hid the stillness in the pools of river. The reeds were so nurturing. Small birds hopped about them feeding on insects plucked from hidden spaces within the stems. The pools of water sat still behind them protected from the stirring wind.

The river is also a nurturer. A moving being becoming, stroking the banks with the watery body and taking food from one organism to another. The river is always becoming different, different in each moment (Heroclitus as cited in Rayner, 2008). As a waterwatcher testing water to act and make decisions to care for the waterway, I see myself as the nurturer and the waterways as needing my care and nurturing. It dawns on me now, as I write, there is a complexity to relationships of care between

me and the water, the nurtured and nurturing, between this watery body and my human body - a more dirty, messy am. Am I not only relating, are we related?

Bodyplaceblogpost Two: 8th October 2013

Prue Clements and her gouache painting of Rhyll Mangroves

Edith and me at Rhyll Conservation Reserve with our painting

Edith in pink waders at Rhyll conservation reserve

> I'm lying cloaked in western port
> I drift in thought to prue and y day on Rhyll amongst the mangroves.
> The spiraling spiraling crabs
> caramel oozing estuarine tide
> looming mangroves
> etching wind.
> And Edith
> in her pink overalls also a force of matter in boots on our painting
> adamant that was where she was to be.
> If art is of affect as opposed
> to representation like Deleuze asserts
> through Grosz
> A sensation
> An intensity
> What does this brim a waterway-health education that is artful in its ecology?
> I tingle at the possibilities.
> (Crinall, 2013)

This blogpost was made after painting Rhyll mangroves with Prue. It holds many images without many words. I am drawn now to think of children and their non-verbal, non-traditional modes of communication. Edith is so fluent in speaking with her body and even now her body is twisted into mine, while I write, and she breaths through a slightly congested nose. She is trying to warm her body on mine. I had Edith with me this day when Prue and I painted the mangroves at Rhyll. I was concerned about her coming because I knew Edith might find it challenging to be in

the contemplative zone of creative academia with all the tempting features of a barely fenced boardwalk over a muddy mangrove inlet. I was eager to create a painting like the one I had made with Bunyip river (see first image Bodyplaceblogpost One: 5th July 2013) and I wondered if this was possible while being 'mother?' I prepared by taking paint and paper for Edith to use. She was engaged with her painting, quietly making for some time. Then I heard her come up behind me. I turned to one side, as she approached on the other. She laid a big pink splat on my page with her fat crayola paintbrush. Our arms flailed, bodies curled as I dove to save my painting. Then everything came to calm. My painting lay on the boardwalk and Edith was jumping up and down on it in her pink rainsuit with her purple gumboots. Brings me to wonder, was she painting herself into the image?

In the collaborative act of art making with Edith, are she and I dis-membered, and re-membered into the entanglement of Western Port bay/mangrove/water/mother/daughter… and on? Edith painted herself into Western Port! Did my desire for control over the experience to make a 'wonderful' final product evaporate here and the unpredictable, spontaneous, non-linear possibilities of operating in the nature of things emerge with Edith's collaboration? A humannatured becoming might occur in a dirty, messy becoming undone courtesy of, and with, a child, my child Edith.

Bodyplaceblogpost Three: 2nd June 2014

becoming water

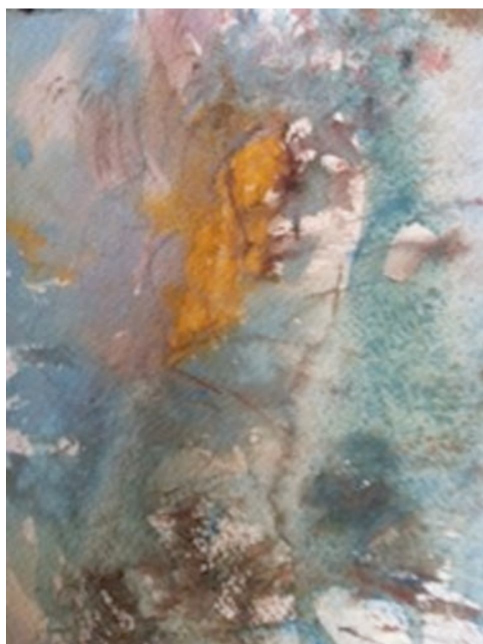
Anthi edie mikala and I dove into water
blue streaks down their faces
i see
they look like
they are the water
bodies shining in water and sun

lazing by green grassed dune
soft cream sand piled
and strung along coast for kilometres
to red

red
orange
red rock.

Crashinvg white foamed waves
become foamier as we stay
the wind
still so so low.
The sun so so streaky and warm.
I realise as we ascend the stairs
I revelled in each move edith made

artistic and other
against anthi's reflection of her own letting go.
What happens when I photograph our painting closeup?
Theres a consciousness
focus
attention to detail/s



awareness
slowing
sl
ow
in
g down.
Each frame is a breath.

Painting by Anthi Emmanouil-Playne, Edith Rowbottom and Sarah Crinall at Forrest Caves, Surf Beach

(Crinall, 2014)

Anthi and I had planned to go to Forrest Caves beach to paint. I had heard women plein-air painters had camped here in the early 1900s to paint, and I wanted to emulate a small session. I also wanted Edith to be involved this time. Edith and I set off with a small bag containing one large piece of water-colour paper folded up, a tin of selected gouaches, and some water in a jar. Edith loves to ride on the bike on a small seat attached to the cross bar in front of me. She looks up at me sometimes and says, "I am a joey in your pouch, mummy." We saw three wallabies as we walked the path to Forrest Coves.

Anthi laid out the rug, as I set out the paints and the paper. The paper was wobbly on the uneven surface and I thought to the sturdy board I had left at home in exchange for being able to ride the bike. We would have to make do. We all began to paint. Edith intently worked on two coloured circles, a white and a blue. I drew colour from these and found a pleasing eggshell blue forming around the edges, while we chatted. Edith's brush was moving fast, drawing in sand from the boundaries. Sandgrains worked their way into my eggshell edge. Anthi used an earthy taupe, less watery than Edith and my colours. The colour was closer to that of the dunes that she was facing while we looked to the water in the sea. The whitewashing waves built momentum over the time we were there.

Edith soon gave up on painting the paper. She walked around the perimeter instead, then across it, flicking sand everywhere. Anthi and I rubbed it into the painting with our hands and kept going, filling all the white spaces in the oceanic silence. When Edith came back to me, she took my brush. At that time Mikala, another friend, arrived. Neglecting the paper, Edith reached up for our faces. Each of us received a cold, moist lick of blue from her brush to our cheek. Edith asked me to remove her clothes, indicating she wanted a swim now. I began to offer the usual excuses for deterring winter swims – "it's too cold, we have no warmer clothes, we are far from home, I don't have a towel". Mikala interrupted – "Great idea Edie, let's go!" I gave over to the crashing waves too, and so did Anthi. Then, there we were, three women and a girl, four females, four bodies, immersing in the water.

I slow down now while writing out this story, and I notice the way the bodies move from being bodies in their home nestled in, outward to their local place. The sea entices Edith who follows her interest away from the painting, to our bodies, to the sea. These bodies come to be messing into the sand, wind, and water through the making processes invited by paper and paint. I find the mixing is inevitable. Then I think to bare skin exposed against the salty sea. I have heard that the negative ions of the sea offer relief for ailing skin, like mum's – she swam that day in Western Port and found her rash eased. I think to Barad (2010) who offers me the "opportunity to engage in an imaginative journey that is akin to how electrons experience the world: that is, a dis/orienting experience of the dis/jointedness of time and space" (p. 244). I take up this opportunity.

From my chemistry days at school I know an electron exists in an atom. An atom is made up of a proton-and-neutron-centre with electrons rotating the outside in 'rings'. The centre is positively charged, and the electron rings exert a negative charge. These charges may cancel out each other's polarity deeming the atom neutral.

If a charge exists though, when two charged atoms encounter each other they may exchange an electron – Electrons jump from one atom to another. In my family we call a hug 'swapping electrons'. When the electron moves from one body to another, does this blur what is one thing and another? Everything is made of the same matter at an atomic level. I notice electrons are not monogamous. They, like feminism like playing out-of-bounds, they are promiscuous.

When I think through this electronegativity, I notice the nature of electrons and the nature of bodies and places – they are all made of the same promiscuous, playful stuff. As I assemble bodies and places and move into the blog from the everyday event of painting, writing and photographing, am I activating Barad's (2010) intra-active assemblage? Is the bodyplaceblog a space of entanglement?

As we left the beach Anthi turned back to look at me while we ascended the stairs.

"It is like a meditation", Anthi reflected.
"I am not worried about how it turns out", I responded.

Anthi added, "I would have struggled with Edith's involvement 5 years ago. Today I didn't even notice".

Bodyplacetime

This blogged space of entanglement is also a space of sustenance for me. The slow, moment-to-moment play with the passing present and preserved past eliminate the ever-forward occupation that so often engulfs the life out of me when I live lead by my organising brain, or more specifically, without my body and a consciousness of the places about me. Might I call this space of entanglement and sustenance a space of bodyplacetime?

I am unconcerned with the future here in bodyplacetime. I leave my role in the future, and any fear of it or responsibility for it. Barad (2010) argues that the future already exists. I am not concerned with whether it exists at all. Writing this stops me. It feels unsustainable to be unconcerned with the future and a gush of guilt swats me. Isn't it my role to save the planet as a sustainability educator and to do so don't I have to name the consequences of our actions on the future of resources and ecosystems and work to change them? Now I query this. As I type, my shoulders float and face falls lightly at this thought. It feels like the very act of looking away from the future into (making in) the space between the past and the present, body, and the local place about me, with my everyday life entangled, might be what comes to sustain it.

Do these moments of making with daughter, water, and body humannature my becoming? I cannot know – how would I recognise myself? It has been nourishing and altering simply to ask the question.

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Chapter 8
Tracing Notions of Sustainability in Urban Childhoods

Marek Tesar

Introduction

This chapter explores shifts in constructions of childhoods in the contemporary urban setting of the city of Auckland in Aotearoa New Zealand. Children and their relationships with local and global tensions and governing practices, and their narratives of sustainability in their local places and spaces, are examined through a Foucauldian and new materialist lens. This paper is conceptualised under the umbrella of a larger study, where stories and narratives of childhoods are examined through case studies of five children in the urban Auckland context to explore their encounters and negotiations within their everyday environments and communities. The larger study is grounded in children's private and public daily experiences, perceptions, and relationships, analysed through images and visions that they portray of their own twenty first century urban childhoods. It asks such questions as, how do these children encounter sustainability, what does it mean to them, and how do they perform it? What forces are at play in urban settings? The analyses capture and illustrate the changing local and globalised natures of urban Auckland childhoods, and changing notions of sustainability for the youngest, under 5 year old, children. This chapter arises from the larger study that aims to influence orientations towards childhoods, and to inform policy and practices by which urban childhoods are governed and lived in urban Auckland. The study was conducted in two early childhood centres and in children's homes, to understand and experience what sustainability looks and feels like in contemporary urban childhoods. This chapter serves two purposes: it introduces methodological thinking and moving from a childhood studies lens into new materialist and posthuman thinking, and it

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introduces narratives and vignettes of stories of children and their childhoods, that allow adults to think with children, as a bridge across these methodologies.

Tracing Childhoods in Urban Auckland

Auckland is the largest Aotearoa New Zealand urban playground. Data from the 2013 census (Statistics New Zealand, 2013a) reveals a population growth of 8.5 % since the last census in 2006, with a total population of 1,415,550 (Statistics New Zealand, 2013b). Moreover, there is a changing idea of what a city is, including its make-up and performance: the 2013 census reports that 42 % of the Auckland population was born overseas, an almost 7 % rise since 2006. Currently 21 % of the Auckland population (300,000 children) is under 15 years old. This rising population, diversity, and subsequent urban planning in Auckland affects the places where children grow up, how they play and learn, and what conceptualisations of sustainability mean to them. While the 2013 census maps the terrain of urban Auckland from an adults' perspective, this chapter explores what life in Auckland means for children, what experiences of childhood 'look like' from their perspective, and from the perspectives of their families and early childhood teachers. In other words, this project elevates the often-subjugated voices of very young children, whose opinions the census, and other research initiatives, do not necessarily take into account.

This project sits alongside recent New Zealand initiatives, such as the New Zealand Royal Society (2013) 'Our Futures' interdisciplinary research project exploring changing New Zealand demographics; and the Auckland Council (2013) 'child-friendly Auckland' initiative and strategic plan, albeit its focus is on youth rather than very young children. Working with children under five, this project is concerned with their wellbeing and safety and their being and becoming local and global citizens and their connectedness with sustainability as influential, responsible, and responsive governors of their local spaces (United Nations General Assembly, 1990). Childhoods in the city are not invisible; they have become a prominent topic in family, community, and local and national politics in recent years, as demonstrated in the Auckland Council reports. However, children and their childhoods are governed subjects in the contemporary urban landscape. This chapter responds to the Auckland Council (2012) report, which makes connections between place, space and education. The Auckland Council aims include "making Auckland a great place for children" (p. 27) and creating "a child friendly Auckland" (p. 31), but the concern remains to what extent this includes children under five.

Auckland is one of the fastest growing residential areas, and in new educational settings, in Aotearoa New Zealand (Statistics New Zealand, 2013a). Historically, state and city interest in children has not been linked only to ideas reflected in curriculum such as 'wellbeing' and 'belonging', but also to the 'future of the nation' (Jenks 2005) and the 'future of the city'. Rose (1999) reminds us that childhoods and children are "the most intensively governed sector of existence" (p. 123). Torn apart by discourses of regulation and de-regulation, this governed space of local

Fig. 8.1 Works end: Children taking a walk on the wild side (Author's photographs)

childhoods and issues (Montgomery, 2013) presents us with a place/space that the Auckland Council wants to 'return' to children to 'protect and save' urban childhoods. What might the adults' concern with the Anthropocene mean for these children? The concerns are sociological, philosophical, and geographical in nature, and in this research they emerge in the theorisation of changes and shifts in local and global Auckland urban childhoods in place/space. The research aims to gain an understanding of how these shifts are shaped by and shape education settings in urban Auckland. In particular, this study deals with how children respond to the Anthropocene.

Some of the responses are presented in mundane situations. Children take a short walk down to the plant shop, not far from the urban area of their early childhood centre. Jacob and Dylan are negotiating their journey through the roadwork area. The concrete pavement is not necessarily comfortable to both of them, and a tug of war erupts about where the children should be walking. Jacob is adamant that he wants to walk on the grass, while Dylan persists in using the concrete pathway. The grass strip is a green area that runs alongside the pathway that on the other side is demarcated by the carpark of warehouses and shops. Such negotiations, as portrayed in this chapter represent ideas and experiences of living in the children's material and discursive spaces, and the everyday negotiations of rules of engagement that occur under the governance of the urban setting and careful adult gaze (Fig. 8.1).

A Childhood Studies Research Lens

The study from which this chapter emerges is based on thinking about local policies and practices, where global issues impact urban Auckland childhoods, and children negotiate resultant tensions in their everyday public (such as early childhood) and private (such as home) settings. The theoretical underpinning of the study is in interdisciplinary childhood studies. Childhood studies is a disciplinary turn that focuses

on thinking about and researching childhoods and children from multiple disciplines, such as philosophy, sociology, geography, anthropology, psychology, architecture, education, and others. Within recent years, various projects have described, captured, and analysed the shaping of the landscapes of urban life and childhoods, their histories, geographies, social inequalities, sustainabilities, economic tendencies, and performances (e.g. Airini, 2013; AUT & Auckland Council, 2008; Christensen, 2014; Christensen & O'Brien, 2002; Duhn, 2012; Ergler, 2012; Ergler, Kearns, & Witten, 2013; Hanna & Mason, 2010a, b; Mason & Hanna, 2009; Oliver et al., 2011). Furthermore Malone (2013) argues that human subjects gain understanding, and therefore learn, through their actual interactions with the world around them, and their environments. In non-urban settings, some of the seminal work recently conducted includes Somerville's (2013), utilising water as a point of entry to work with concerns of the Anthropocene through Indigenous culture, and Taylor's (2013) whose natureculture assemblages further theorise and reconfigure the relationships between nature, culture, and childhood. In addition, in a Finnish context Rautio's work with relationships between child-subjects and objects in environments, and interrogating their relationships between the discursive and the material, are some further recent contributions to thinking through and utilising a childhood studies lens (Rautio, 2013; Rautio & Winston, 2013).

Building upon these foundations, the overarching ideas can be carried over as concerns and explorations of the notions of 'belonging' (Mana Whenua) and 'wellbeing' (Mana Atua), and of what these notions mean for children, nonhuman subjects, and objects, in urban settings. These notions are two strands of the holistic bicultural ECE curriculum framework in Aotearoa New Zealand, *Te Whāriki* (Ministry of Education, 1996). While some seminal research has been conducted in this area, the focus of researchers, policy makers, and the public remains on children over 5 years old, who can articulate their needs more clearly, can become comfortable partners in discussions for adults, be in front of the media as members of child-adult panels, and represent particular visions of childhood in a range of other situations. This study focuses on the voices and experiences of children that are under five, who are embedded in the wider holistic experiential web of the child, family and educational setting, and who interact with diverse forces that place them within diverse socio-economic and ethnic urban settings.

Childhood remains a continuously contested notion. To capture, theorise, and make sense of the changing natures of twenty first century Auckland urban childhoods means also to understand the historical turns in Auckland urban childhoods, for example, from rural childhood experiences (Powell, Taylor, & Smith, 2013). The importance of understanding the 'natures' and 'shifts' of urban Auckland childhoods is also to understand and make sense of sketches of 'cartographies of childhoods' (Duhn, 2006). The interdisciplinary nature of critical childhood studies guides this project to explore broad and multiple perspectives on Auckland urban childhoods. Ideas around histories of childhoods (May, 2013), constructing childhoods and governing the child (Tesar, 2014), and researching childhoods from sociological, anthropological, and philosophical positions (see for example James & James, 2008; James, Jenks, & Prout, 1998; James & Prout, 1997; Jenks, 2005)

provide a background for using philosophy as a method to theorise children's voices and experiences of their ideas of sustainability in the time of the Anthropocene.

Participants of this study included children and their peers, caregiver/family, and the teacher and teaching team who have a close relationship with the child in the early years setting. Settings in different geographical suburban, socio-economic areas in Auckland participated in this study, representing both local and immigrant contexts. The research involves 'established' families and children growing up as 'locals', in the multicultural 'global' context (Montgomery, 2013) of Auckland. This study also involved 'immigrant' childhoods and families, of those who are sometimes called, or call themselves, foreigners (Arndt, 2012, 2016).

One of these projects reflects elements of indigenous epistemologies and spirituality that are embedded within everyday practices of the early childhood centres in urban Auckland. In celebration of Matariki, the constellation that signals the start of the New Year for Māori, children and teaching staff sprouted a kumara (sweet potato) and then potted up the shoots for the children to take home. What does this mean as a performance of sustainability in urban Auckland? In the urban environment of protected childhoods, the kumara becomes the mother to the shoots that are taken home and looked after by the children, inserting a politics of food into this process, as if contesting the unsustainable food industry. However, there are also other forces at play in this narrative: the children impact upon the urban environment around them as the environment impacts reciprocally upon them. The connectedness and governance of urban childhoods are a common refrain that this project has encountered (Fig. 8.2).

The methodological framework for this research was shaped in the beginning by concepts of governmentality (Foucault, 1982) and genealogy (Foucault, 1980), through which it explored the genealogical link between child and adult, and histories of practices of childhoods in urban settings. These genealogies search for unexpected relationships, and non-linear, accidental origins, whilst they focus on complexities and contradictive productions of citizens (and hence childhoods) through power/knowledge relationships (Ailwood, 2004; Dreyfus & Rabinow,

Fig. 8.2 Growing-up in public: Children working on collaborative Matariki projects (Author's photographs)

1982; Foucault, 1980). This research is also guided by Tobin's (2009) 'multivocal ethnography', focused on multiple voices that influence and work with and within childhoods. In that sense it shifts the attention and focus from actual events to the multiplicity of voices of childhoods. Spending time together with children in the centre allowed us, the researchers, to experience everyday experiences of childhoods with children, while narrative inquiry was used to reveal the lived experience of children, families and teachers (Connelly & Clandinin, 1990; Holstein & Gubrium, 2011). This combination of philosophical, ethnographic, and narrative methodology offered a holistic approach to the experience of childhoods in urban Auckland, and to the rich, diverse, and multi-layered data collected through observations, unstructured and semi-structured interviews, group conversations, focus groups, document, and policy analysis. Throughout the research, it led to a number of unexpected theoretical turns and 'thinking with theory'.

One of those unexpected turns was our engagement with the theoretical stream of new materialism. Upon analysing the children's experiences and voices, thinking about relationships between subjects and objects, it made sense to engage with what is concerned as a 'new metaphysics' (Dolphijn & van der Tuin, 2012), as represented by the work of scholars such as Bruno Latour, Rosi Braidotti, Manuel DeLanda, Karen Barad, Donna Haraway, and Jane Bennett. Their thinking is not homogenous, however the connections across their work includes their rewriting and traversing of uncharted territory, challenging dualistic Cartesian thought, and, of particular interest in this paper, re-thinking 'matter' and what Bennett (2010) calls "thing-hood" (p. 4). In the centre of this thinking is Barad's (2007) articulation, which, in the sense of Haraway's earlier work, introduces what she called an 'agential realism', the challenge to individual metaphysics and constitution of objects through what she refers to as 'intra-action'. For Barad and other scholars of new materialism matter is both discursive and material at the very same time. Through her term 'onto-ethico-epistomology' she perceives everything in the world as ontological, epistemological, and ethical (and political) at the same time: everything, subject and matter, is in constant entanglement, so there is a denial of a separate entity. Barad's agential realism becomes a method, and for her "matter and meaning are not separate elements … [they] cannot be dissociated" (2007, p. 3). The following discussion will engage with the notion of how this thinking about subject/object, and the problem of the human subject, can be utilised to think with children in contemporary urban settings in Aotearoa New Zealand, as a re-working, re-imagining, and re-analysis of the data merging discursive and new materialist lenses within/into childhood studies research.

Childhoods, Forces, Matter

Heather is drawn to be in the garden and to working with the plants, with her Grandmother. There is something very special about Heather's garden at her home. Heather is just over 4 years old and she spends a lot of time in her garden with her

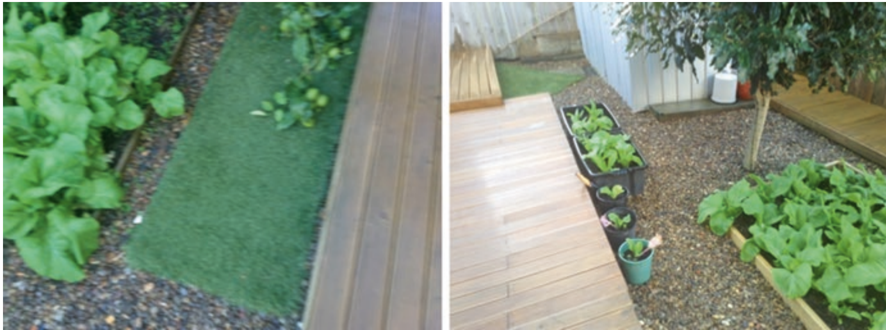

Fig. 8.3 Heather's garden: Forces that shape – and feed – childhoods (Author's photographs)

grandmother in the heart of an inner city Auckland suburb. They both engage with play and care in the garden, growing food and looking after the plants. The plants and garden feed the whole family, and there is a reciprocal relationship in which Heather understands that the plants are edible. The plastic grass off-cut next to the deck is crude plastic juxtaposition, and perhaps a reminder of the ideal lush greenery that the garden is striving towards. What are the forces that pull Heather to act upon the plants and objects in the garden, and how do plants and objects act on Heather? (Fig. 8.3).

The forces and power at play in the garden can be explored through the lens of new materialism. Thinkers that theorise and utilise this lens perpetuate the concern of non-satisfaction with reducing everything to the discursive, and therefore their argument is for legitimating other ways of seeing, being, and relationships, rather than the postmodern governance of the 'discursive' over matter and thing-hood. Whilst postmodern thought has been articulated and related to as the linguistic turn, 'new materialism' offers not its denial, but yet another turn towards the material, the matter, and a move beyond the discursive. For example, Deleuze and Guattari, Foucault, Spinoza and others serve for Barad as important points of familiarity, as a canvas on which they re-interpret and trace the origins of their argument. Foucauldian thought, Hekman (2009) gently argues, has been here to pleasure and discipline us, and she reads Foucault as someone who has 'new materialist' thought, in a sense, saying:

> I argue that Foucault, far from emphasising discourse to the exclusion of the material or 'reality' is always acutely aware of the interaction between discourse and reality. (Hekman, 2009, p. 438)

Thus reading the Foucauldian concept of power emphasises the physical, visceral, and not just discursive aspects of his anatomy of power relations. Hekman (2009) further speaks of the 'materiality of power', as she reads Foucault's analytics of power as material:

> … Foucault's understanding of power is very physical. He is concerned with how power affects us, and, particularly, our bodies. But this is not all there is to the story. Foucault's understanding of power is also about the discourse of power. Indeed, his central thesis is

> that it was a significant change in the discourses of power that produced the unique form of power that characterizes the modern world. Foucault's analysis is about the complex interaction between the discursive and the non-discursive in the constitution of power. The goal of his analysis is to examine and explain this interaction. (Hekman, 2009, pp. 442–443)

Such interactions seem to play out in this project, that shift the theoretical lens past Foucault, to work *with* Foucault. What power forces are acting on Patrick as he makes up a 'garden', following what he 'knows' of gardens, both the sand pit, and the old planter box acting on him, as he acts on them, inserting small branches, to represent, what, perhaps trees? Perhaps they are vegetables… Their representation appears secondary to Patrick's interactions with them and the materials, his nudging into the sand, the delicacy of the leaves further affecting how he in turn affects them, gentle pincer grip, negotiating the sand, until they stand. During this play he also moved on to build a fire over to the side of the sand pit beneath the bushes, using a longer stick to poke the fire, and to understand the scarcity of wood in the urban childcare setting: "I can't burn all the wood, we need to save some" (Fig. 8.4).

Perhaps, relationships between organic subjects can be explored and further complicated through the lens of the object, matter, the inorganic. Bennett (2010) is one of the most intriguing commentators and representatives of new materialism. She argues that matter is not passive, but that it is active, and therefore productive in nature; or as she argues vibrant. Traditionally, matter is a form that science has prescribed as something objective: we can observe it, touch it, play with it, feel it and work with it, and use our senses to register it. Matter can be measured, evaluated, and molded. Bennett argues for the dichotomy of 'things', 'matters', 'objects', and active, vibrant organisms and beings, similarly to what Latour calls 'actants'. Latour's (2004) actant (the de-anthropomorphised word 'actor') is any 'thing' that impacts, and modifies another 'thing', and therefore changes its being/behaviour. In Bennett's thinking, she refers to this active process as "vital materiality" (p. vii). She builds upon Spinoza's ethics and his concept of 'conatus', which she claimed is explained in his work as:

Fig. 8.4 Patrick's garden: Making up growth and fire (Author's photographs)

> Each thing, as far as it can by its own power, strives to persevere in its being … The striving by which each thing strives to persevere in its being is nothing but the actual essence of the thing. (Spinoza, n.d. as cited in Duttom, 2006)

Spinoza has seen 'conatus' as essential to everyone and everything: both subjects and matters have it, and it is a natural inclination of things to exist and enhance themselves. Bennett also traces notions of material vitalism in Deleuze and Guattari's (1987) *Treatise on nomadology*, as they viewed "vitality is immanent *in* matter-energy" (p. 10), and further examples can be found in their work on intensities, becomings, and assemblages. Her aspiration, she writes, "is to articulate a vibrant materiality that runs alongside and inside humans to see how analyses of political events might change if we gave the force of things more due" (p. viii) and she asks "why did Foucault's concern of 'bodies and pleasures' or Deleuze and Guattari's interest in 'machinic assemblages' not count as materialist?" (Bennett, 2010 p. xvi).

'New materialism' shifts the centre of attention to the nonhuman-centred world of power and things. Things 'speak to us', and 'speak to the children', as they have agency that is both political and ethical in nature. Bennett (2010) argues for a shift from thinking solely about 'think-power', to also consider 'thing-power', and the quality, the subjectivity, which is not necessarily either good or bad, but "thing-hood" (p. 4). Bennett urges us to take the call for/of things seriously. Things have a vitality and a capacity: there is no ontological hierarchy in her thinking about matter and subjects, but there is an "urge to cultivate a more careful attentiveness to the out-side" (p. 17). Do children take this call for things seriously? Duhn (2014) explores similar ideas with infants and toddlers and argues that "[i]t is a pull towards life and vibrant matter, a bodily awareness of the world" (p. 9), which we share with children in the urban settings where "[a]gency and the capacity for action remain key concepts in educational discourse and are deeply embedded in national policy documents" (p. 10), returning back to Barad's (2007) claim 'onto-ethico-epistomology' and political governance of childhoods.

Childhoods Connectedness

The encounter with data in this chapter started with Jacob and Dylan negotiating the pathway and the forces of organic and inorganic. On the way back from the trip, they passed a row of Auckland Council recycling bins. Auckland Council's (2015) recent push for recycling was accompanied by the slogan 'make the most of waste'. What is waste for these children? Do they notice the giant bins that they pass, or do they remain unnoticed? The bins appear inaccessible to the children – they are huge, sturdy, and plastic – they remain visibly out of reach for children. What forces are at play, when these bins just witness the children's movements, but the children do not respond? What connectedness is there between children and objects, and what agency and forces are at play, when the politics of the local space expect certain

Fig. 8.5 The neighbourhood walk revisited: Giant recycling bins (Author's photograph)

things to happen, such as that children should "better understand their impact on the environment" (Auckland Council, 2015)? (Fig. 8.5).

A discussion around the notion of subjectivities can explore these questions further, as this chapter argues that one of the subjectivities of matter is connectedness. Matter does not exist on its own, rather it is linked and connected to other 'matters'. What all approaches, tentacles, versions of these materialist philosophies have in common is their urge to disconnect, and remove from simplified, absolute, and 'objective' definitions and classifications of matter as unitary, passive, inactive, and dead. Bennett (2010) and others argue instead for an active, productive power/force that is harnessed by both 'matter' and 'subjects'. Matter has agency that acts in non-predictable ways, as material bodies are assemblages, aggregates of powers, forces and 'thing-hoods', interacting with other forces and 'thing-hoods', and impacting upon each other, shaping and molding, with an agency that plays out in non-predictable ways. The way actants operate is implicitly explored by Grozs (2008) in art: "Art enables matter to become expressive, to not just satisfy but also to intensify – to resonate and become more than itself" (p. 4); or, in other words we need a 'territory' for the 'objects', 'things', and 'matter'. Perhaps ordering the waste could be re-imagined as art, art that young children perform in their own capacity, if they are given the chance with a different binding force (bin/child) in their urban landscape, to connect with the subjectivities of these giant bin/objects.

Conclusion

In this chapter I have explored how children under five encounter and relate to adult's understandings of sustainability, including what these understandings might mean to young children, and how they perform their own understandings in their places and spaces. In particular, this chapter has attempted to uncover forces that are at play in urban settings, leading to a re-negotiation of a philosophical framework

using not only a discursive analysis, but re-working the data from a new materialist perspective within a childhood studies lens. Particularly in the early years educational discourse, many thinkers work with the above notions, theories and philosophies and ask such questions as Duhn (2012), for example, "What are the forces and forms that make a place? How does 'place' work in current political and social economies?" and "What does it mean for early years' pedagogy to take seriously the agency and vitality of matter that makes up places?" (p. 100). And as she argues, the concern is not to answer these questions, but to ask these questions "to stimulate thought regarding the entanglements of self, matter and place" (p. 100). This thinking is present in Malone's (2007, 2016) work on how children produce their subjectivities through their use of space in their environments, where they become transformative agents, and, through Duhn's argument, this chapter continues in this tradition.

The conclusion to this chapter is an opening to new investigations. In a Deleuzian sense, matter becomes the embodiment of sensations, affects and aesthetics. The chapter thus leads to Bennett's argument that "… cultural forms are themselves powerful, material assemblages with *resistant force*" (p. 1) implicating "the active role of nonhuman material in a public space" (p. 2). For example, as discussed above, Duhn (2014) in her recent work argues that agency "is no longer the expression of sovereignty and of an autonomous, knowing self but a seeking of encounters with vibrant matter that force continual invention to maintain the relation between movement and rest" (p. 8). Duhn works with Bennett's (2010) idea of modes, where "[c]onsidering vibrant matter as modes, including complex organic organisms and nonorganic structures, overturns the old hierarchy of mind-over-matter" (p. 8). Through a new materialist lens it becomes obvious that this lens is not only about how children act, but about how they are interlinked with the environment in reciprocal ways where forces push and pull, and create complex relationships between organic and inorganic, and other than human subjects. While new materialism involves a vast range of diverse approaches, and an intricate, distinctive, and nuanced web of disciplines, thinking, and being, that is political, ethical-epistemological, and ontological in nature, this chapter has brought urban childhoods into the heart of these interactions. Through their mundane acts children perform and re-imagine their understandings of sustainability in relation with their urban childhood environments.

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Chapter 9
Beyond Sustainability: New Visions for Human Econnection in Early Childhood Education

Kumara Ward

Introduction

According to Crutzen and Ramanathan (2000) we are now living in the time of the Anthropocene – a geological time where humans as a single species, are having the greatest impact on Earth systems. Climate change, diminishing biodiversity, environmental degradation, and variations in ozone protection of the Earth are all human-generated phenomena and combined, constitute one of the most significant changes the Earth has seen in human history (Bender, Burns, & Guggenheim, 2006).

Since the 1970s there has been a concerted effort to counter the negative impacts of human activity on the Earth. As the indicators and impacts of changing climate worsen (Davis, 2010) it is clear that new approaches are needed. Such action requires new ways of thinking about our relationship with the Earth that encompasses environmental issues, social justice and access to resources, cultural and personal wellbeing, politics and business considerations, and education. This imperative and the acknowledgement of the period of the Anthropocene have given rise to a number of philosophies and theories (see Somerville, Chap. 2), and in this chapter, I draw on these theories in two ways. First I identify some of the theories that have previously underpinned environmental education practice in the early childhood sector such as biophilia (Wilson, 1984), ecopsychology (Roszak, 1998), and nature deficit disorder (Louv, 2006) and consider their past positive characteristics. However, I also examine the ways in which they may now be contributing to barriers for implementing effective early childhood education for sustainability (ECEfS) as the early childhood sector struggles to implement high quality practice in sustainability education (Australian Children's Education & Care Quality Authority [ACECQA], 2014). Secondly, I engage with emerging posthumanist

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(Rautio, 2013; Somerville, in press) and relational materialism (Hultman & Lenz-Taguchi, 2010) theories and the ways in which they can be enacted through arts-based pedagogies in early childhood. Through discussion of these theories and by using practical examples from my research and arts-based practice, I am attempting to find ways of making these contemporary theories accessible to early childhood educators and to find new ways for *eco*nnection and for engaging with the Earth and with the challenges we face in these precarious times.

The notion of *eco*nnection used in this paper acknowledges the relationships that humans have with the nonhuman world through ecopsychology, biophilia and place connection. In addition, this notion of *eco*nnection includes affective states such as wonder (Wilson, 2010), the notion of love for the natural world (Gray & Birrell, 2015) and the affinity that we have with the natural world through artistic sensibilities such as recognition and appreciation of colour, movement, dynamics, form, sound, and smell. These fundamental qualities not only serve to assist us to apprehend the phenomena of experience but also work deeply into our long term memory assisting us to consolidate understandings, build up schema and through creative expression, to reengage with and relive experiences (Eisner, 2002) after the primary occurrence.

Theoretical Considerations

This chapter conceptualises the theoretical perspectives often applied to ECEfS in two waves: the anthropocentric and the posthumanist. The anthropocentric perspectives and theories place the human at the centre of species and Earth formations. These include biophilia (Wilson, 1984), which highlights the biological and chemical similarities between humans and the elements of the Earth and reasons that due to these inherent similarities humans have a yearning to be connected to the natural world. We want to spend time in nature, we feel good in nature and, at the same time, we have a desire to master and control it (Wilson, 1984). Ecopsychology (Roszak, 1998) is also part of the first wave and approaches our relationship with the natural world through the psyche by attributing to humans a subconscious ecological ego that is essential for our sense of identity and belonging. This comes via the recognition that we are part of the Earth and the cosmos and deeply, psychologically connected to it through this relationship. More latterly they also include nature deficit disorder (Louv, 2006) wherein the lack of exposure to nature causes physiological, emotional, and psychological deficits.

The posthumanist philosophies and theories in focus in this chapter stem from post-structuralist and non-human paradigms, and offer possibilities for responding to the anthropocene (see Somerville, Chap. 2, this volume). Decentring the human and reconfiguring the relationship between human kind and the planet, these theories include posthumanism (Barad, 2003; Haraway, 2008), relational materialism (Hultman & Lenz-Taguchi, 2010; Rautio, 2013) and common worlds (Taylor, 2011). By engaging with these theories using art-based pedagogies to interpret and enact them, I explore the possible synergies and the ways in which they can rein-

vigorate ECEfS. I also consider how they can be applied to particular curriculum areas and discuss why these new lenses are relevant in helping to develop a society that lives in a sustainable, harmonious and joyful state of being with the Earth.

Nature and Culture

Throughout history, Aristotelian and Cartesian philosophy has positioned humans at the pinnacle of evolution where mind, culture (collective mind), and the psyche or soul are the attributes that reify us but position the body in the realm of nature (Louv, 2006; Shields, 2009) along with the natural world which is a sum of particles that make matter (Barad, 2003). While nature has been seen as something that is good for us (Dewey, 1926; Suzuki, 1997; Warden, 2012), it is not of us. However, it is available for us to utilise for the benefit of our conscious, intentional minds, creating a modified context for our enacting of human culture and for supplying our physical needs for shelter, food, leisure etc… Indeed it is this utilitarian attitude toward nature that is the root of our current planetary imbalance (Louv, 2006; Macy, 1995; Roszak, 2001) and has left us with a legacy of a nature/culture binary that has become the status quo.

The first wave theories and approaches articulated above, while seeking to connect us to the natural world in an effort to address humankind's disconnection from nature and the resulting planetary ailments, are still, anthropocentric in essence. These include but are not limited to biophilia (Wilson, 1984), ecopsychology (Roszak, 2001) and nature deficit disorder (Louv, 2006). That is not to say that the practices they generate should be discounted. Indeed much good work has come from a focus on and through them (Buchan, 2015; Kiewra, Reeble, & Rosenow, 2011). The key tenets of these theories can be seen in the rationale for many more recent iterations of sustainability education in the western world with adventure camps, outdoor challenge courses, and in Forest schools (Knight, 2009) and Walderkindergartens (Esterl, 2008). While these theories have the benefit of positioning humans more closely with the natural world, they assume the human as the dominant player, manipulating, perceiving, appreciating, or engaging in nature. While promoting awareness of the natural world and encouraging humans to experience and appreciate it, the very articulation of the need to bring nature and culture together, while valuable in its own right, also has the potential to reinforce the nature/culture bifurcation.

Nature/Cultures – Common Worlds

A recent new turn of theories that decentre the human or posthumanist theories include Latour's (2005) actor-network theory where human and nonhuman objects can participate in social networks and give rise to material-semiotic relationships.

Similarly, relational materialist theories (Dolphijn & van der Tuin, 2012; Hultman & Lenz-Taguchi, 2010), where humans and nonhumans interact, have become a lens for investigations into human (culture)/nonhuman (nature) and position humans as part of nature where the nonhuman has agency and where cause and effect may flow from the nonhuman to the human. (See Malone and Truong, Chap. 1 in this volume for more discussion on posthumanist theory). Rautio (2013) gives an example of children engaged in the autotelic practice of carrying stones in their pockets. The motivation is simply that the stones are there to be collected and carrying them and perhaps feeling or looking at them is reward in itself that is prompted by the presence of the stones in the first instance. This action may also lead to other intra-actions that unfold depending on how and where the child engages with the stones. Taylor (2011) discusses these concepts by talking about an assemblage of messy connections, where the human and nonhuman are interrelated actors in common worlds that recognise the multifaceted realities in which children live – rather than requiring them to live in a pure state in nature in order to reap the benefits of such an existence. For example, the child takes the stones and arranges them on a shelf in their bedroom beside a small glass sculpture, a soft toy, and some seed-pods. These items are relegated to a similar place in the child's regard and coexist in a human-made and natural context where the child engages with, thinks about, and is prompted by his or her ongoing relationship with them.

The interrelationships between the human and nonhuman are taken a step further through Barad's agential realism (2003) where the relationship becomes one of intra-relations – a merging of the actors both human and nonhuman. On a recent research trip I had very telling example of this. In an environmental art class, I was handed a palm-sized red/orange, smooth, water-rounded stone. However, this stone turned out to be the remnants of a brick that was built at the Toronto Brickworks during the depression years, used in a city building, thrown into Lake Ontario during a rebuilding program in the mid twentieth century and then eroded by the waves in the lake to form a natural looking stone. Both nature and humans had intra-acted and at different times changed the form, use and effect of this brick or stone. To use a classroom example, this merging of actors may be conceptualised more readily by imagining a drama scene in which a child is playing a character of the wind (See Fig. 9.1).

Movement, body, idea, and imagination merge to become the wind for an instant and the players become merged in an intra-active nature/culture moment where the possibility of being in a state of common worlds exists (Taylor 2011). While an example such as this is readily comprehensible due to the creative arts elements of culture with which many are familiar, Barad (2003) takes this idea of intra-relations to an atomic level where the interplay of bodies, concepts, cause and effect are in a constant state of evolving, or performativity, and where boundaries are enacted through "agential cuts" (p. 824) in time, which define and give rise to discourse, products, and objects, such as the performance of the wind or the stone. The moment of being the wind is perceived during one of these agential cuts where subconscious perception of biological and anatomical interplay coalesces into awareness and being.

Fig. 9.1 Jake is the wind (Author's photograph)

Having briefly considered the contemporary theoretical frameworks in the Anthropocene, the following question arises: What role do these theories have in changing our relationship with the Earth and what can they contribute to children's predispositions or capacities to develop lasting and sustainable intra-actions with the planet into the future?

Education in the Anthropocene

There have been many efforts at national and international governmental levels (DEEWR, 2010; Department of Environment and Heritage, 2005; Tilbury & Cooke, 2005; UNESCO Section for Education for Sustainable Development, 2005) to prioritise education for sustainability. The evolution of environmental education policy in Australia has followed sequential foci *about* or knowledge of the environment; *in* or experience in the environment; *for* or action for the environment; and *sustainability* or participation in future thinking and action (Tilbury, Coleman, & Garlick, 2005).

Practice in the early childhood sector has also followed this sequence (Davis, 2010) and the Early Years Learning Framework (EYLF) (DEEWR, 2009), and the National Quality Standards (NQS) (DEEWR, 2010) have made ECEfS a requirement. For example, the NQS Standard 3.3 requires early childhood settings to take

an active role in caring for their environment and to contribute to a sustainable future (DEEWR, 2010, p. 104). Outcome Two in the EYLF is particularly explicit, where it highlights the need for children to become socially responsible, to show respect for the environment, and where it refers to children developing an awareness of the impact of human activity on the natural environment (DEEWR, 2009, p. 29). It also highlights the need for a range of natural elements in outdoor environments to foster appreciation for and understanding of nature. These documents, according to Edwards and Cutter-Mackenzie (2011) reflect a more environmental education approach or education *about* the environment and as such could be seen to be anthropocentric in nature, which may serve to reinforce the nature/culture divide. This anthropocentric orientation in the documents could be more likely to generate feeling among educators that ECEfS is something more they have to do in order to achieve accreditation. Indeed, the NQS Quality Standard Three has the second highest number of services that have either not met or are still working towards meeting the required standard (ACECQA, 2014, p. 63). While there are some exemplar services who have received an 'excellent' rating for Quality Standard Three, this rating has been awarded, for Standard Three, to the second lowest number of services in Australia (ACECQA, 2014, p. 63).

Elliot and Davis (2009) identify some key barriers to early childhood services implementing ECEfS. They include the lack of research in ECEfS and the time it takes for research to infiltrate everyday practice. They also suggest that many early childhood educators hold the view that outdoor play is sufficient outdoor experience, and for many, that sustainability issues are considered too difficult to address with young children. They highlight the anthropocentric nature of much post-structural theory in the early childhood field, and its focus on language, and the extent to which it can silence discourses around the role of nature.

Barad (2003) also talks about language being "too substantializing" (p. 203) and points to a need for performative understandings to consciously intra-act with the discursive nature of matter. This means developing an awareness of the agency of the nonhuman as actor in our lives and recognising the common worlds we inhabit. From this naturecultures perspective early childhood educators may be more inclined to recognise the symbiotic relationships between humans and the other than human world and to see the potential for transformative curriculum that is possible when the natural world is considered an intra-active agent in our lives and brought to life through the arts.

Common Worlds

As discussed earlier in this chapter, nature and its attendant ecosystems, are often seen as outside, as separate to the human made world, and as pure and stable. However, when we examine closely it becomes apparent that the natural world is a complex assemblage of parts that are in a constant state of interaction with humans (Taylor, 2011). This may include small green spaces in streets, vacant blocks,

parklands, backyards, beaches, local national parklands, playgrounds, etc. All of these spaces have ecosystems that include flora and fauna that live in varying degrees of proximity and in a state of dynamic interaction with human made worlds. The more urban of these green snippets may also be the main experience many children have of the natural world (Malone, 2004). The idea of common worlds used by Taylor, originating and extending on Latour's (2004) notion of "composing common worlds" (p. 91) is a phrase that is used to signify the bringing together of nature and culture in a manner that provides access to intra-activity. It is particularly useful in recognising the elements of the nonhuman world available in a given space. Common worlds validates the interactions between human and nonhuman without recourse to romanticised versions of pure nature. The various messy ways that human and nonhuman interact – whether it be through stewardship of local flora and fauna, food production and waste, or mining for energy and building resources or water consumption, must be recognised. To experience common worlds it is useful to consider other ways of knowing and being and a most useful way of accessing these other ways of knowing is in education is through the arts (Egan, 1997; Eisner, 2002; Wright, 2012).

In my practice as a kindergarten teacher and as a researcher (Tarr, 2008a, 2008b, 2009; Ward, 2011, 2013), I have used arts-based pedagogies to deepen experiences, reinforce concepts, and enliven ideas – particularly when engaged in supporting young children to understand their local environment. For young children this begins through joint investigation of the local area, the plants and animals that are part of our everyday lives, and creatively rendering these facts into stories. While this process often involves a degree of anthropomorphising, I am referring only to giving the creatures or characters in these stories a voice that may describe their experiences and interactions in situ – not to non-representational characterisations such as koalas in frilly bonnets making scones. Creating and telling stories about the interaction of the animal or plant, their possible adventures (according to their capacities, habitats, and role in the complex ecosystems to which they belong) and their characteristics is a first step in establishing a creative bridge from the cognitive to the imaginative. Marveling about the capacity of an ant to carry ten times its weight or the willingness of a native bird to nurture the newly hatched chick of an interloper cuckoo are matters of fact but also examples of strength, endurance and adaptation that have inherent movements, sounds, and interspecies/social interaction associated with them. Creating verses, songs, drama, or dance experiences or a visual arts representation of these characters brings them to life further and allows for the children to engage in what Somerville (2012) calls a postmodern emergent experience where the natural world is experienced in multiple creative modes. This is exemplified in her description of seeing a video presentation of a rehearsal for a children's end of year concert where she describes them as becoming frogs:

> There on the interactive screen, the children came to life as frogs, dancing their frog dance to music made entirely of frog calls. The children get to know the frogs in the wetlands. They learn how frogs live and move, and the sounds of the distinctive calls of each species. The classroom, cleared of clutter becomes the space of the wetlands. Children dance to frog calls, moving frog limbs, fingers splayed, jumping, leap frogging, becoming-frog to frog music (Somerville, 2011, p. 67).

While creative arts are not what Barad (2003) is referring to when she talks about performativity in agential realism, there is a sense in which the intra-active performativity between human and nonhuman is still occurring. The depth of knowledge gained through multiple experiences of performing, expressing, and being render the relationship as one of intra-action between frog and child and will influence later knowledge and decisions where these relationships are focal. Here the corollary of Chawla and Cushing's (2007) findings, that children, whose experiences in the natural world, that are positively scaffolded by significant adults, are more likely to engage in actions related to environmental stewardship as adults, resonates. The teachers in the above scenario have certainly privileged the children's primary experiences in the wetlands, their subsequent deep exploration of the frogs they encountered there and the development of related artifacts through drama and costume making.

These creative artifacts, the dispositions toward the planet and the practices engaged in by these children, and those in the example of being frogs above, are the 'agential cuts' (Barad, 2003) in time that result in performing the intra-activity between human and nonhuman and bring nature and culture together. The understanding gained through these experiences encompasses but goes beyond biophilia and ecopsychology to a deep awareness that we are nature, nature is us, and together we are a common world. In my own practice as a kindergarten teacher, the children engaged in ongoing, emergent common world experiences as they performed, sculpted, coloured, sang, and moved the elements of the natural world in which they lived. This creatively imbued manifestation of common worlds is a fundamental expression of *eco*nnection and these experiences formed the basis of our curriculum.

Performativity, Arts, and Science

The process of bringing together human and nonhuman into common worlds can be explored in a number of ways in the classroom and with all age groups. Investigation into systems, ecologies, and relationships in the natural world reveal wondrous processes and models of intra-action and are applicable to all subjects justifying the development of an eco-centric curriculum. For example, simple processes that have inherently mathematical properties such as the logarithmic unfurling of the Fibonacci series in leaves, or the golden mean inherent in the nautilus shell, are examples of 'bioinspiration' (San Diego Zoo Global, 2012; Saylan & Blumstein, 2011) that have inherent form and symmetry that can be explored through natural sciences, arts, and humanities.

Combining the creative arts and the natural sciences in the daily program can also form inspirational curriculum. After a story about the 'Sundancers' (characterised sunbeams – during my doctoral research) the children engaged in water-colour painting (see Fig. 9.2) and were fascinated by the 'dancing' (Ward, 2011, p. 124) of the colours and the emergence of secondary and tertiary colours which led to in-

Fig. 9.2 Children engaged in water-colour painting (Author's photograph)

depth investigations with light tables, creating rainbows using sprays of water outside in the sun and prisms hung in windows for refracting light. The children also enacted 'dancing the colours' by putting on partially transparent silk veils and dancing together to become secondary colours – an example of combining cognition, imagination and being or another kind of performativity (Barad, 2003) that consolidates knowing. This enacting and understanding of the rainbows goes to the heart of the relationship between light and water (Ward, 2015).

In another preschool, a child, having heard a story about kookaburras looking for a new home, created a home for them by creating a drawing of a hole in a tree (see Fig. 9.3). This child had considered the rain and the fact that the kookaburra would be wet and cold with nowhere to live.

The examples above reflect the children's intra-action with the story content and characters (that came from the nonhuman world in their own local environments), their identification with them and a momentary being in common worlds with them that included embodiment through empathy, scientific experimentation, dance, drawing, and painting. These activities and examples show the extent to which a locally oriented eco-curriculum can be generated that is relevant to all subjects in education. This eco-curriculum is infused with engaging exemplars from the natural world and in particular with the natural worlds which surround the places in which children live and intra-act.

Place: Individual and Community Identity

Place plays a pivotal role in children's lives (Marcus & Francis, 1997; Sobel, 2005; Somerville 2012, 2013; Tooth & Renshaw, 2009). Understanding of the local area, civic and commercial realms in which they live is a contributing factor in identity

Fig. 9.3 Drawing a nest for the Kookaburra (Author's photograph)

development, sociocultural funds of knowledge, and social efficacy (Orr, 2005). Even small urban green spaces are a feature in children's experience of place and provide opportunities for developing resilience, for reduction in stress, and for restoration (Chawla, Keena, Pevec, & Stanley, 2014; Malone, 2004). It is no surprise that immersion in green spaces supports wellbeing. The additional point being made here is that research also indicates that intra-acting with the myriad of processes and dynamics of the other than human world through creative investigation across the curriculum also supports this sense of belonging and a 'connected' state of being (Torquati, Gabriel, Jones-Brand, & Leeper-Miller, 2010; Ward, 2011).

Connections between natural processes and curriculum content are not new in education although recontextualising them through relevance to place and through multimodal exploration make them more meaningful. Findings from my research (Ward, 2011) with preschool children showed that stories about place had sufficient meaning for the children to claim them as 'their stories' and to share the stories of the local natural features with their families. This in turn resulted in additional family outings on weekends to the beach, park or other local areas, which became a trigger for family learning in place and identifying with local place. David Sobel (2005) reports on numerous programs with children engaged in civic exploration and action where they learned about their local human and nonhuman environments, including the local civic infrastructure. The key message here is that when children become acquainted with and identify with the features of their place, they readily engage in remediation, planning, advocacy, arts, problem-solving, and future-oriented sustainable thinking.

Lorimer (2012) supports this idea in talking about an "interdisciplinary biogeography" (p. 594) as being essential for navigating our way through the Anthropocene where questions about the nature of nature, biodiversity and difference, social justice, and political power may be asked and genuine answers sought. Engaging children in conversations and experiences about their place on the planet, their identity as human and nature, and their role as social beings now and in the future are essen-

tial. Promoting engagement through the arts and postmodern emergence (Somerville, 2012) provide an anchor to place and an entry point to experiencing common worlds. By including investigations about local flora/fauna and phenomena as key elements in educational curricula, we also provide a platform from which to engage in common worlds where cause and effect are experienced in the doing and an ecological performativity becomes a conscious state of being.

Conclusion

This chapter has engaged with some of the key issues in education for sustainability in the Anthropocene. It has discussed some of the issues and barriers to effective education for sustainability and sought to reposition the human relationship with the natural world through reference to posthumanist paradigms in ECEfS.

Human and nonhuman relations have been explored through relational-materialism and posthumanist lenses and the centrality of 'place' in education has also been shown to be intrinsically linked to human relationships with and in the natural world. Common worlds and our intra-relations with the nonhuman worlds have been highlighted as relevant and useful underpinning concepts in education curricula and align strongly with arts-based pedagogy and eco-curriculum approaches. *Eco*nnection has been described as the power of experiencing common worlds through cognitive, psychological, affective, and arts-based experiences that work deeply into the child's identity as a common worlds citizen, deepening their connection to place and their sense of stewardship for the human and other than human worlds.

Finally, facilitating this strong sense of identity and community have been highlighted as essential components of engagement in ECEfS in order for children to have a sense of belonging to place, of being in relationship with the natural world and a sense of becoming citizens of the future who know intrinsically that nature is us and we are nature.

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Chapter 10
Transnational Knowledge Exchange: Connecting Knowledge Traditions for Sustainability of the Planet

Neera Handa

Introduction

The call of the Anthropocene invites re-configuring the impact of human-centric attitude and neglect of nonhuman rights on the precarity of all life on this planet. As an oracle of the impending disaster, it is a call to act now, before the time to take "preventive measures" is exhausted (Oreskes & Conway, 2014, p. 13). In this chapter, I put forward the case for bringing an alternative way of thinking with the potential to change the dominant discourse of development in which nature and human life have become opposite entities. I argue that to address the crises facing the world today, new and different understandings of sustainability, and alternative metaphors of nature that reflect these understandings are needed. These new understandings and theoretical framings of sustainability and development may be informed by indigenous and non-Western knowledge systems Underpinned by a holistic understanding of human and nature relationship (Haigh, 2006, 2010; Jackson, 2003; Kuokkanen, 2010; UNESCO, 2009), these knowledge traditions might hold alternative perspectives that challenge "the dominant values, world view and knowledge systems" (Kuokkanen, 2000, p. 414) of the modern capitalist global society we live in.

The chapter is divided into three sections; first it brings the internationalisation of higher education and education for sustainability together. When each field juxtaposed to the other is viewed, similar aims, objectives, and processes are revealed. Going through similar stages in their respective neo-colonial trajectories, they meet at a nexus where both are looking for alternatives. In their shared mission to develop

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global citizens, both seem to be looking at finding alternative perspectives for addressing the complex and controversial dilemmas faced by today's global society.

Secondly, this chapter presents evidence of theoretical and conceptual knowledge from intellectual traditions that flourished outside Western culture. When compared with the dominant Western conceptualisations, these knowledge traditions are seen to embed a holistic understanding of both sustainability and development as they consider human relationship with nature to be reciprocal rather than one sided and dualistic. These alternative conceptions provide tools for sustainable living (Wade, n.d. as cited in Bullivant, 2011, p. 18).

Finally, based on a reconceptualisation of the internationalisation of education for sustainability as a trans-cultural, transnational knowledge exchange, Westernan argument is mounted for the imperative to accessing non-Western knowledge. Teacher education is suggested to be the best place to connect knowledge traditions for education for sustainability, as future teachers of this global society will need to instill in their students appreciation of diversity, and a sense of social and environmental justice (Oxfam, n.d. as cited in Bamber, 2011, p. 69). Pedagogies for encouraging international students to access their non-Western theoretic-linguistic tools in their teacher education studies are suggested; and a model for a trans-cultural, transnational knowledge exchange through the internationalisation of both the teacher education and the education for sustainability is presented. My purpose in bringing this discussion is not to be exhaustive, as a call for alternatives is made in educational research each time a researcher talks of decolonization (Kuokkanen, 2008; Tuck & Yang, 2012). However, my aim is taking the next step to find a venue for these alternatives to take place.

Internationalisation of Higher Education and Education for Sustainability

The internationalisation of higher education and education for sustainability are both contested concepts due to the conceptual confusion from their respective definitions and because of their connection to globalisation, which itself is a confusing concept with multiple realities (Bates, 2008; Rizvi, 2009). However both are crucial to be understood and applied especially in teacher education as both aim to develop graduates with global perspectives, which is also an aim of teacher education (Hickling-Hudson, 2004, 2011; Quezada, 2010). Global perspectives to educate future teachers are inherent in their "self-knowledge as a foundation for increasing their understanding of themselves in relation to other cultures" (Hickling-Hudson, 2004, p. 78).

Internationalisation of Higher Education

The most quoted definition of internationalisation comes from Knight (2004) who defines internationalisation of higher education as "the process of integrating an international, intercultural or global dimension into the purpose, functions or delivery of post-secondary education" (p. 11). This definition reflects the complexities of higher education in its global scope, as the global connectivity and interconnectivity between and within nations with multiple realities of globalisation are integrated into higher education (Knight, 2004). As an emissary of the notion of globalisation, which some argue is "linked to the expansion of capitalist ideologies and practice" (Rizvi, 2004, p. 161), this definition leads to a narrow view of internationalisation. First, the cultural homogenisation led by the 'culturally powerful' West (Tomlinson, 1997) sees Western knowledge and practices infiltrating the global consciousness through higher education. Second, in the economic context of globalisation (Bates, 2008), the short-term economic benefits and competition between education providers in terms of the recruitment of the full fee paying international students in Western universities become the strongest driving force for internationalising (Bolsmann & Miller, 2008).

On the other hand, in the cultural context of globalisation, as global connectivity increases the processes of hybridisation and cosmopolitanism (Bates, 2008; Rizvi, 2009), the internationalisation of higher education is expected to prepare graduates who are global citizens. The aim of higher education in this context is to foster "a global consciousness [and] respect for plurism" in students (Gacel-Avila, 2005, p. 123). Similarly, academics are also expected to develop global perspectives by embracing a global mindset through intercultural and metalinguistic experiences (Otter, 2007; Quezada, 2010; Robson, 2011; Tait, 2010).

Amongst academics however, there are varied understandings of internationalisation and its relevance to their own teaching (Petocz & Reid, 2008; Sawir, 2011). Some academics, not being cognisant to multiple realities of teaching and learning in a globalised university, find it difficult to adapt to any changes in an internationalised environment (Hughes, 2008). Internationalisation remains an unanswered question for these academics (Sanderson, 2008), and since, Western theoretical knowledge and the English language both remain the basis of higher education (Hickling-Hudson, 2004, 2011), an internationalised curriculum remains an unaddressed issue (Handa, 2014). For example, following the ethos of Western teacher education, which aims to prepare mainly white/'Anglo' students (Hickling-Hudson, 2011), teacher educators show confusion and uncertainty about internationalisation (Handa, 2014). An Australian teacher education course, which aims to educate global teachers with knowledge and competencies required to work and live in a diverse world, is not found to be internationalised in any sense other than having international students in it (Handa, 2014).

There are academics however, who are exploring beyond such ideas (Ryan, 2010, 2011; Singh & Shreshtha, 2008; Tange & Kastberg, 2011), and engaging with ideas of an "enhanced global education where everyone benefits by learning from

the experiences and skills of others" (Haigh, 2002, p. 62). A need for concrete examples of how internationalisation can be achieved is persuading them to look for alternatives (Haigh, 2002; Ryan, 2011). These academics, especially in teacher education (Johnson, 2006) and educational research (Singh, 2009), are making efforts towards internationalisation through knowledge exchange.

Education for Sustainability

In the same way as internationalisation of higher education is about adding an international dimension to a university's facets (Altbach & Knight, 2007; Knight, 2004), education for sustainability in a university "incorporates a focus on social, cultural, economic and environmental sustainability in the curriculum, research and engagement activities" (Scott, 2011, p. 1). However, the term education for sustainability itself, just like the term internationalisation of higher education, has created confusion and uncertainty regarding its very purpose and application. It is said to "integrate(s) environmental knowledge into all relevant disciplines …" (Haigh, 2005, p. 34), but this definition does not specify whether this particular education is environmental education, or whether it is about social and ecological responsibilities (Fein & Tilbury, 2002, p. 8).

The reason for this uncertainty lies in the concept of sustainability or sustainable development itself, as it is a problematic one. 'Sustainable development' is an oxymoron, made up of contradictory terms, which, as Redclift (2005) claims, have been brought together to fit in with the capitalist model of development and neo liberal perspectives. Even though this term, devised by the highest body of world nations (Tilbury & Wortman, 2004), was to establish a link between a balanced economic growth and its impact on environmental preservation, it ended up being a self-contradictory term. For example, those who consider sustainability in terms of development and economic growth and those who are critical of unlimited economic growth and development, both have a purchase on the same concept of 'sustainable development' and its contrasting values (Fein & Tilbury, 2002, p. 2).

An effective education, which establishes sustainability as "a matter of concern" and not an artificial separation between facts and values, points towards a need to move beyond this instrumental approach to sustainability (Van Poeck, Goeminne, & Vandenabeele, 2014, p. 3). The term Education for Sustainability (EfS) without the word development in it, which is rapidly replacing the term Education for Sustainable Development (ESD) (Wade, as cited in Bullivant, 2011) is already suggesting a move towards a new vocabulary and a new language to reflect these new imaginings. Education for sustainability is "a tool for social change" (Tilbury & Wortman, 2004, p. 4), as it aims to create sustainability literate people who can engage in their own learning for a sustainable future (UNESCO, 2010). Hence, the aim of education for sustainability needs to be educating societies to preserve nature, which is one of the most obvious crucial elements for the sustainability of this planet.

Ward in this book (Chap. 9) suggests that the aim of education for sustainability is "to develop a society that lives in a sustainable, harmonious and joyful state of being with the Earth". Since nature and human relationships are paramount to this ideal, education for sustainability needs to incorporate a holistic integrated concept of sustainability, so it does not remain the meaningless and empty term as Washington (2015) claims it has become.

Just as reorienting education to sustainability is "the most appropriate and effective form of action" (Sterling, 1990 as cited in Tilbury, 1995, p. 196); an education that holds an alternative conception of sustainability and challenges the dominant model of development and its neoliberal ideology (Orr, 2004) is the only answer. Moreover, since the need for education for sustainability has emerged as "a critique of the very Western-dominated discourse on development" (Bullivant, 2011, p. 18), a new vision of education for sustainability (UNESCO, 2010) would need to incorporate non-Western conceptions of nature, sustainability, and development.

New Imaginings to Connect Knowledge Traditions for Sustainability of the Planet

To continue this discussion for new imaginings, it is relevant to point to research that has been carried out towards re-conceptualising nature from different Western perspectives such as "evolutionary biologists, cosmologists, and cultural historians in Europe and North America" (Verhagen, 2008, p. 20). Even though every aspect of this research is beyond the scope of my chapter, it is important and "it is time" as Taylor (Chap. 5, this volume) too explains "to reconfigure our fraught relationship with nature" that is the root of our current planetary imbalance.

In relation to understanding and acting towards nature, Rifkin's claim is valid that "knowing a civilization's concept of Nature is tantamount to knowing how a civilisation thinks and acts" (Rivkin, 1980 as cited in Verhagen, 2008, p. 20). For example, the capitalist model of development and in turn, sustainable development and related metaphors, which show the dualistic and antagonistic relationships between humans and nature, dictate both perception and action towards nature in modern society (Keulartz, 2007, p. 27).

It is not that Western knowledge traditions never had a close relationship with nature, but during the industrialisation of Europe, and its exploration of the other worlds for wealth accumulation, different conceptions of nature and human relationships emerged. Nature in Western knowledge became a resource, a commodity to be developed solely for the benefit of humans to fulfil their "mercantile needs" (Hongladarom, 1998) Similarly, following the rationale of humans being superior and capable of thinking – due to Bacon's 'Knowledge and Power' logic (Bacon n.d. as cited in Orr, 1991, p. 53) – and the ethnocentric bias brought by Darwinian understanding of evolution (Hubbard, 2003, p. 52), education became a means of controlling or conquering nature and the Other, with just one aim of economic development.

Along with the violation of the rights of non-Western and indigenous peoples, no consideration was given to nature's right for biodiversity and other environmental protections (Shiva, 2005). These notions and values are reflected in the modern Western developmental model, which aims for economic development in the world even if it is at the cost of environmental sustainability.

As compared to this domination and dualism found in Western traditions, non-Western understanding about the nature and the role it plays in human life is complex and holistic (Sangha et al., 2011 as cited in Bohensky, Butler, & Davies, 2013). In non-Western knowledge traditions, humans have a reciprocal relationship with nature (Kuokkanen, 2000) as they are not apart, but a part of nature (Orr, 1992). These knowledge traditions may offer innovative alternatives not available in the dominant Western knowledge traditions (Berkley, 2012; Haigh, 2006; Kuokkanen, 2008). The next section provides a discussion of how nature and development are perceived in non-Western knowledge traditions.

Non-western Knowledge

Nature, or Country, as Professor Nikola Rose declared in a keynote address at Western Sydney University at the Knowledge/Culture/Social Change International Conference, "is a gift without entitlement, it is a gift that is always coming, every moment is a gift, the food we eat, the water we drink and every breath of life, it is all a gift" (as cited in Somerville Chap. 2 in this book). Non-Western knowledge traditions hold this respect for the environment. Sustainability of this environment as a religion reflects in their respect for its divinity. This is represented in a variety of indigenous and non-Western approaches.

Nature from an Indian and indigenous paradigm is complete, alive, reciprocal, an integrated organism, and as an interconnected aspect of human life, it needs to be celebrated (Kuokkanen, 2000; Shiva, 1989; Tagore, 2006). For example, in Indian knowledge, the human body is understood to be made of the life-sustaining elements of nature, or the panch-bhutas of prikriti: Earth, Water, Air, Fire, and Space (Bhagavad Gita, n.d., Chapter 7, Text 1, Swami Parbhupada, 1984) very similar to Wilson's concept of 'biophilia' (as cited in Ward, Chap. 9 in this book). If humans can use nature for their own purpose it is because of their harmony with nature and through it "with the power which is universal" (Tagore, 2006, p. 10). Contentment and harmony with one's surroundings is a source of both "joy and peace" (Tagore, 2006, pp. 9–10.).

From this perspective, development does not mean spending one's energy in material pursuits but it is about development of the self in a progression to "become more and more one with god" (Tagore, 2006, p. 121). Similarly, the aim of education and obtaining knowledge in Eastern philosophy has been self-development in the form of finding self-control and obtaining contentment within one's surroundings (Dallmayr, 1998; Kapoor, 1998; Tagore, 2006). According to Mahatma Gandhi "the highest form of learning is based not upon competitive advancement at all

costs, but on the self-realization of personal potential and harmonious service to the well-being of all" (Haigh, 2009, p. 64).

Buddhist philosophy shows the way to compassion, care and selflessness (Gunaratne, 2010; Haigh, 2009; Loy, 2004) and "tranquility of mind, satisfaction, contentment and knowledge" (Pathar, 2006, p. 9) to be the goal for humans to aspire to. Contentment and generosity towards others and obligations towards their surroundings therefore have very much been the natural attributes in people who grew up in these cultures (Norberg-Hodge, 1992, 2010; UNESCO, 2009).

However, as "the structural violence of Western modernity" (Gandhi, 1998, p. 21) has brought globalisation, and the consequent mentality of unabated consumerism and competition to the developing world (Norberg-Hodge, 2010), people's world views in these cultures too have started to change. And as the "mechanistic and materialistic metaphors of nature" (Keulartz, 2007, p. 30), have started to become global terms, non-Western understanding of the world has also started to become much more human-centric. Due to the changes in human attitude and perceptions of nature, as Keularz (p. 30) claims, "the decline in community spirit (and) the alienation from nature" has followed. This is visible in the rising discontent, dissent, civil wars and regional clashes in developing countries (Ikejiaku, 2009; Norberg-Hodge, 2010).

For the sustainability of this planet, which is divided into the developed and the aspiring to develop developing world, alternatives to the current competitive individualism inherent in the developmental model are needed. Sustainable Development has not delivered what it was supposed to deliver in terms of reducing poverty and hunger or in enhancing social wellbeing, but has also managed to pollute and damage the environment. A criticism of such a model of development from a post-development perspective has come from both the developing (Mathews, 2004) and the developed worlds (Banerjee, 2003). Shiva, who is a non-Western ecofeminist involved in a movement to protect the rights of farmers and the land they till, explains how any form of development per se needs to be based on an agenda of "partnerships, mutuality, and reciprocity", in which not only human rights, but the rights of every species and nature are considered (2005, p. 17). Hence, as Banerjee, an Australian academic from an international platform had declared a few decades ago, "a reconceptualization of current notions of progress and development … requires a search not for developmental alternatives but for alternatives to development" (2002, p. 19). These calls for alternatives to capitalist development highlight the importance of a multi-dimensional, holistic understanding of both development and sustainability for the future of this global society. There is a need for the redevelopment of perspectives of contentment, generosity, and devotion for nature and nonhuman rights. At a time when the consequences of human activities have started to impact on and change the natural world (Oreskes & Conway, 2014), an action oriented but knowledge based educational response is the only answer.And, I argue that a trans-cultural, transnational knowledge exchange on the platform of internationalisation might be able to bring a much-needed shift in today's profit ridden and economic growth driven conceptualisation of globalisation, which speaks of development in capitalist terms, and exploits both nature and human as resources.

Non-Western knowledge traditions have resources (UNESCO, 2009), which I argue need to be engaged in redefining sustainability. Sustainability, to borrow Tuck and Yang's (2012) words is not to be taken as a metaphor for something that fits in with the capitalist project of development. Similarly, redefining nature and its value systems (Cuello, 1997), with a holistic understanding of human relationship with nature is a sensible move towards prosperity without growth (Jackson, 2009). In Hindi and Sanskrit, the languages used in India and in Indian classics and literary texts, sustainability is a condition of स्थिरता, (*sthiratA*), having stability and depth, unaffected by motion, commotion or emotional turmoil. Sustainability in terms of the *Vaishnava* and *Buddhist* maxim of simple living and from the Hindi/Sanskrit language will mean stability without any movement or "sustainability not growth" (Doctor cited in Haigh, 2006, p. 50). Mahatma Gandhi's Hind Sawaraj, based on such a sustainability paradigm, is an ideal state of being independent and prosperous (Gandhi, 1884–1946). His maxim "live simply, so that others may simply live" (Kumar, 1993, p. 17) promotes intra-generational and inter-generational equity. These non-Western concepts present meaningful alternatives to bring solutions to the current exploitation of nature (Gacel-Avila, 2005), and help move beyond the critique of the socio-economic disparities taking place for the political and economic gains of some people.

Internationalisation of higher education, which brings both the Western and the non-Western worlds together, can play a role to access opportunities to look for these alternatives. Teacher education and education for sustainability could be the best places to bring these sought after alternatives, since both teacher education and education for sustainability prepare global citizens to join the global market but also to solve the social and environmental issues facing this global society. This way, both teacher education and education for sustainability can bring a change towards finding sustainable solutions to global issues. Education for sustainability aims to empower people by providing them with "the values, knowledge, skills and competencies for sustainable living and participation in society" (United Nations Educational, Scientific and Cultural Organisation [UNESCO], 2009). Teacher education in the same vein, aims to prepare "future oriented educators empowered with a sense of social justice and an educational change" (Allen, 2009 p. 468) to address global inequities.

Just as social justice and equity are the priorities in education for sustainability (Tilbury & Wortman, 2004); global citizenship and social justice are the aims of internationalising teacher education (Otter, 2007; Wang, Lin, Spalding, Odell, & Klecka, 2011; Zeichner, 2010). In terms of global perspectives and graduate attributes to prepare graduates for their role in global society, both the internationalisation of teacher education and education for sustainability point at the need for education to be more than what it seems to be to instill in students a commitment "to social justice and human rights; [and]acquire the critical consciousness, necessary knowledge and skills to participate in the democratic process" (Wang, Lin, Spalding, Odell, and Klecka 2011, p. 116).

In a move towards establishing the joint ownership of the planet for all people, Shiva (2005) has established her Earth University in Uttarakhand, Navdanya, in

India, based on the concept of "Earth democracy", which in turn is based on Gandhi's concepts of swadeshi and swaraj (self-reliance), satyagraha (resistance) and ahimsa (non-violence) (Handa, 2014). The principles of Earth democracy encourage local movements that are universal in their reach to fight against "corporate globalisation" on one hand and the "narrow nationalist identities on the other" (Shiva, 2005, p. 96). Earth democracy is as much about the rights of the farmer as it is about the rights of the Earth. This is a "holistic model of sustainability" (Cuello, 1997, p. 42), which presents means for both the conceptualisation of Nature or Earth and the action needed to protect Earth democracy.

As both Ward (Chap. 9) and Taylor (Chap. 5) in this book argue for econnection and world pedagogies in early childhood and primary education to bring children close to nature, I propose a trans-cultural, transnational knowledge exchange in education for sustainability to provide an alternative conception of nature. This is especially true for teacher education, as this education has the responsibility to find innovative ways to prepare future teachers for a global society.

An increasing number of studies are investigating both pedagogical and academic possibilities for intellectual interaction between Western and non-Western knowledge traditions (Dooly & Villanueva, 2006; Haigh, 2010; Johnson, 2006; Singh, 2009).

Trans-cultural, Transnational Knowledge Exchange, and Education for Sustainability

Haigh (2006), one of the pioneers of this movement, explores the Hindu Vaisnava beliefs as an inspiration for self-realisation in environment education. In his aim to engage with means of "self-improvement and striving towards greater Self-realization" Haigh (2006, p. 51) connects with the Vaisnava goal of Self-realisation and sustainability movements. Building on his understanding of deep ecology from Arne Naess and Gandhian philosophy and education, Haigh (2009) goes on to test the usefulness of Buddhist/Samakhya theory to achieve the internationalisation of the Geography curriculum in the UK. He finds Sattva, Rajas and Tamas, the three gunas (attributes) of a substance, useful for creating a three-level curriculum for Geography. "The development of the learner's spiritual self", according to Haigh (2009, p. 65), and not only their capacity and application of their knowledge in their profession, is the difference that can be achieved by using this holistic non-Western framework.

In Australia, Johnson (2006), a teacher educator, looks towards the wisdom of Indian epics to create a culturally responsive/inclusive teacher education program. Singh, while working with research students who came from different intellectual traditions, encouraged them to access theoretical tools of criticality from their linguistic resources (Singh & Chen, 2011). However, this exploration is limited to criticality in these students' individual theses. This non-Western knowledge

however, needs to extend to others' education too. Dooly and Villanueva (2006) argue that future teachers should learn "from other trainees in other cultures – and they should also learn from themselves – from the empirical knowledge drawn from living and teaching in another culture" (p. 227).

Students who come from non-Western cultures have access to knowledge from their intellectual sources. Their perspectives are not only sources of data, but can also be used conceptually, as theoretical tools. I suggest that a link needs to be made between the need for alternative concepts for education for sustainability and the knowledge that these students may bring from non-Western knowledge traditions. Trans-cultural and transnational knowledge exchange pedagogies are needed to engage non-Western concepts in producing graduates who are "much more in tune with the needs of the environment" (Haigh, 2010, p. 3512).

Pedagogies for Transnational Knowledge Exchange, and Education for Sustainability

In Australian national curriculum for school education, the three cross-curriculum priorities, namely: Aboriginal and Torres Strait Islander histories and cultures, Asia and Australia's engagement with Asia, and Education for sustainability, all demand an acknowledgment of diversity (Australian Curriculum, Assessment and Reporting Authority [ACARA], 2012). Clearly, teacher education must link to this "curricular vision" (Nolet, 2009, p. 410) and incorporate similar themes.

Language carries a wealth of cultural knowledge (Harrison, 2007) that is demonstrated in a culture's perceptions and the theoretic symbols such as metaphors (Larson, 2011). It is through languages that the knowledge of Indigenous and non-Western cultures can be brought to Australian teacher education for a transformation in the way how sustainability issues are addressed in education. Non-Western international students who have access to their theoretic-linguistic resources are the agents of this transformation. Especially as the question to be addressed today is whether "the environmental metaphors we use … nurture sustainability" (Larson, 2011, p. 96), and whether alternative/Indigenous terminology can be brought into the sustainability discourse.

Education for sustainability provides students with global perspectives, which are developed in their appreciation for diversity and the value of diverse knowledge systems available to them in their global society (Department of the Environment, Water Heritage and the Arts [DEWHA], 2010). Educators teaching in an internationalised program such as teacher education need to move beyond just using examples and case studies from other countries, and/or just having awareness of students' cultural backgrounds to internationalise teaching and content (Leask, 2005).

However, these educators have a responsibility to model what they want their students to achieve in terms of knowledge development and its application or to adopting a reflective practice. Hence, if they aim to encourage their students to have

"respect for plurism" (Gacel-Avila, 2005, p. 123), which as mentioned earlier is one of the aims of teacher education, teacher educators need to demonstrate this respect in their own teaching too. They need to build opportunities for knowledge exchange into the curriculum and adopt pedagogies to encourage their students to interact, exchange and respect multiple modes of knowledge. Malone and Truong in this book (Chap. 1) suggest breaking down "the disciplinary boundaries that are prominent in higher education" for opening up pedagogies.

An engagement with non-Western concepts in the form of metaphors, discussed especially in Australian teacher education programs, might bring alternative discussions in this discourse. Especially as this engagement with diversity is the crucial key to addressing the three curriculum priorities for reorienting education (ACARA, 2012) as well as to fulfilling Australia's vision to engage with Asia (Goedecke, 2008).

Non-Western concepts may be discussed as a basis for developing students' awareness of their obligation to environment and eco-social justice. These concepts are "culturally variable ways of looking at sustainability" (Kopnina, 2014, p. 7508). A discussion about the origin of these concepts can highlight the similarities or differences in how these concepts and issues can or cannot be adequately translated into English. These concepts beyond economic metaphors which are "culturally unique and ecologically sensitive ways of conceiving environment and human development" (Kopnina, 2015, p. 1), unpacked in class, could involve both local and international students seeing how these concepts are used in different contexts. Non-Western international students can share knowledge from their language to bring "new depths, insights, and motivations" (Haigh, 2006, p. 52) to develop knowledge, which may or may not be Eurocentric or Asiacentric but will be international knowledge.

Conclusion

If the internationalisation of higher education has the remit to develop global citizens who can take care of this interdependent, interconnected global society, then the internationalisation of education for sustainability needs to find alternatives to the Western capitalist and scientific world views. This internationalisation, as a means of bringing diverse knowledge on sustainability issues, could play a crucial role by providing "the opportunity for students to explore and evaluate contested and emerging issues, gather evidence, and create solutions for a sustainable future" (DEWHA, 2010, p. 4). Especially in teacher education, such an exploration is crucial as it will prepare educators of future generations of students who will need to address a range of global problems (Mansilla & Jackson, 2012, p. x), which demand global solutions (Rizvi, 2009). Engaging non-Western theories about these various global issues could internationalise education for sustainability.

There is still hope, as we are still in "the early stages of the Penumbral era" before the complete eclipse annihilates the civilization as we know it today (Oreskes

& Conway, 2014, p. 13). In a search for new ways of thinking, knowing and acting sustainably, especially in a posthuman Anthropocene when the human centric view of the world is being shattered and humans are forced to look at the rights of other species, and most of all the rights of the Earth (Shiva, 2005), the development of an innovative alternative perspective could bring a possibility for addressing the sustainability crisis of the planet. This is the vision of internationalisation as a transcultural, transnational knowledge exchange, which can connect knowledge traditions to find alternatives not available in the Western knowledge traditions.

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Part III
Re-reading and Grappling

Chapter 11
Ecological Posthumanist Theorising: Grappling with Child-Dog-Bodies

Karen Malone

Introduction

The power of the human/nature divide is that it positions humans as 'exceptional' and outside of nature, while at the same time seeking to invite nature in by using its tyrannous colonising domination (Cronon, 1995). Some could argue that it is this very sentiment that has led humanity on such a destructive path with the planet ending up in these precarious and uncertain times. And while research on children's environments, environmental and sustainability education often addresses some of the contradictions between the needs of humans in relation to the survival of the planet, the theoretical work accompanying much of this research has found it difficult to shift from a form of human exceptionalism and domination. In this chapter I intend to share with the reader my grapplings when applying new approaches of theorising research, namely ecological posthumanism, in my children's environments research studies. By doing this I am looking to move away from generalisations and assumptions that universalise children's environmental experiences and provide a glimpse of the complexity of a common world of ecological communities that includes all things. Also through an ecological posthumanist lens I have been considering a re-imagining of the transitional potential for environmental education and education for sustainability by revealing the messiness of these human/nature relations. Taking on the challenge presented by Kalof, Zammit-Lucia, Bell and Granter (2016, p. 204) that a "holistic approach is necessary in responding to the environmental crisis, and since many forms of human, animal, and environmental injustices are interconnected, it is important to consider animals in environmental education". That is, I am asking myself could there be possibilities for imagining new educational traditions that could be a catalyst for enacting new ecological and

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posthuman pedagogies? Pedagogies that are built on entirely new ontological subjectivities that allow humans to re-think what is means to engage with the more-than-human world as an ecological community. To perform this work I am considering the potential of ecological posthumanist approaches to support a re-thinking of the idea of subjectivities in order to question binaries such as human/nature, subject/object. In particular, I am ruminating on the work of Rosi Braidotti (2013) and specifically her thesis in the book *The Posthuman* where she identifies the vision of posthumanism as having three central elements: the development of new subjectivities; the embracing of a posthuman ethics; and, the construction of an affirmative posthumanist politics. Braidotti argues all three of these elements are required for the construction of a sustainable alternative future. In this chapter, I focus in particular on the first of these elements – the development of new subjectivities as the means for decentring the human.

Anthropocentric Predicament

According to current debates in Earth Sciences, the planet is in a new epoch, a new geological era where humans have become the single most significant global force in determining the future of the planet. They have named this the epoch the 'Anthropocene' (Crutzen, 2002). The call of the Anthropocene and its implications challenges us to consider new ways of thinking, knowing, and acting in our everyday lives; how we engage with the world and how the world engages with us. According to Lorimer (2012) "it represents a very public challenge to the modern understanding of Nature as a pure, singular and stable domain removed from and defined in relation to urban, industrial society" and that "[t]his understanding of Nature has been central to western and environmental thought and practice" (p. 593). While considering a new relationship with the more-than-human world is not new, deep ecologist, indigenous philosophies also have presented alternative ways of being with and relating to 'nature'. There has been recently a lot of interest in theorising through posthumanist approaches across a range of disciplines and fields, and in particular the field of children's environments.

By engaging with ecological posthumanist approaches I am seeking to navigate "across the stormy waters of the postanthropocentric predicament" (Braidotti, 2013, pp. 86–87). This perspective opens up possibilities for re-thinking the notion of subject-object relations and well established binaries such as the nature/culture binary. I am particularly interested in considering what happens if we decentre the human, if we foreground those elements of the research environment that often just act as a 'context' or 'background' to understandings of child in relation to nature. I ask of myself and the data in this work: "What if the hierarchical positioning of the human was questioned" where the key strategy or approach to our theorising was to consider "non-separatist and non-purist ways of thinking and conversing about nature?" (Taylor, 2013, p. 66).

In this chapter I argue that rather than continuing to rely on nature/culture binaries when analysing the way children engage with the more-than-human world, if we consider new possibilities maybe there is a chance to think differently about sustainability and sustainability education? And if we are to decentre the human in our research, what new approaches for theorising the human/nature divide could provide ways to live with the planet differently, rather than to continue view ourselves as dominate over it? In particular, in this chapter I am documenting my struggle to do my work differently, to contemplate the difficulties and consequences of retrospectively applying ecological posthumanist approaches to previous studies of children in environments that weren't planned with this analysis in mind. As a researcher and author who advocates the value of children's engagement with the more-than-human world, I believe it is important to revisit my research and consider why binaries such as child/nature and subject/object have been so central to my framing of children experiences and relationship with nature. Therefore, rather than understanding my research as articulated from the modernists divides of human/culture, subject/object, child/nature as my previous work using sociocultural theory had done, I challenge myself to grapple with the inconsistencies of a complex set of relations that can't be described in neat categories or pre-determined schemas. In this theoretical work I take up the challenge espoused by Taylor (2011) when she writes:

> …in encouraging childhood scholars to engage with geography's hybrid nature/culture analytic, I am not seeking to provide an answer to the 'nature' of childhood but to open it up to a new form of political enquiry which attends to the interconnectedness of the human and more-than-human world. (p. 432)

The purpose of the initial study and the tools used were focusing on inserting children's voices in the stories of community where they had previously been absent; my re-reading of the data has shifted this focus to one of decentring the human and bringing attention to the entanglement of all entities in these complex ecological communities.

Ecological Posthumanism

In my understanding and applying of a posthumanist perspective I am taking seriously the need to stop the 'anthropological machine' by contesting the production of absolute dividing lines between humans and other worldly matter. I am considering what it means to recognise the fragility and porosity of all matter and objects - not to collapse categories of objects entirely into each other but to bring to attention to the porousness of what has been viewed in the past as distinct boundaries and distinct entities. The purpose of using posthumanist theories is that it allows me to problematise the concept that humans are exempt from the 'ecological world'. An idea that somehow ecology and human are entirely distinct realms with humans being outside and/or exempt from any ecological consideration. Posthumanist

theories also allow me to consider what it means if I problematise the view humans are exceptional. Whether from a religious or humanist perspective, being exceptional allowed human communities to distinguish themselves as having a unique ethics, culture, and politics in which only they could participate. This meant 'being human' was central to, and the only legitimate way of, knowing the world. Both these positions assume what matters to humans is most important, and other species and objects matter less. Some might say, hasn't this been the work of deep ecologists for many years? And while I am sensitive to the theoretical work of deep ecologists who have critiqued human exceptionalism, they have mostly done this by alluding to the indirect knock on and systemic effect of an ecological crisis for humans. If there was, for example, mass extinction, environmental degradation, or climate change due to the impact of humans on the environment, it would indirectly compromise the capacity for humans to continue to exist. Therefore, I agree with Braidotti (2013) when she states deep ecology is potentially a regressive movement reminiscent of the sentimentality of the romantic phases of European culture. Using this framing the Earth is seen as deserving the same or equal ethical and political considerations as humans. When applied, this approach "humanizes the environment" and becomes "a well-meaning form of anthropomorphic normativity being applied to non-human planetary agents" (Braidotti, 2013, p. 85) According to Braidotti and others (Haraway, 2003, 2008; Smith, 2013) this does little to disrupt well-established human/nature, subject/object binaries. "Such difficulties", according to Mick Smith "are compounded by various (predominant) forms of human exemptionalism and exceptionalism that allow little or no space for considering other species as parts of the same community as ourselves at all" (p. 23).

The theory of ecological posthumanism I am wrestling with and exploring in my work, contests the arrogance of anthropocentric approaches – even those found in deep ecology by enabling a shared sense of the world. This enabling of a multiplicity of ecologies/beings defines community as central – the world is, and becomes, a community of beings. I am interested in incorporating the work of Smith (2013) here, who defines an ecological posthumanist perspective as a strategy for supporting his concept of an 'ecological community'.

This posthumanist ecological community emphasises the myriad of ways that beings of all kinds, including human individuals and collectives interact to create, sustain, or dissolve community. Others have also explored these ideas, such as Jean Luc Nancy (1997) stating we are always 'beings in common' (Smith, 2013) – bodies being sensed ecologically. Donna Haraway (2003, 2008), although not calling herself a posthumanist, has also discussed a new way to consider community in her work. She argues subject/object nature/culture divides are linked to patriarchial, familial narratives, and calls for an enlarged sense of community based on empathy, accountability, and recognition extending to the nonhuman as subjects such as cells, plants bacteria and the Earth as a whole. Therefore, to speak of ecological communities – that we are 'beings' objects and subjects in common – means we can't be exempt from the consequences of being in this common world with others. If we are not exempt or exceptional then we are exposed to same consequences of a changing planet and to each other in a variety of ways. This has been going on all the time,

but in my work I have tended to not notice it or be attentive to. This is the work I seek to do.

Therefore, in my theorising by drawing on ecological posthumanistic approaches I believe there is the "potential to contest the arrogance of anthropocentrism and the exceptionalism of the humans" (Braidotti, 2013, p. 66) because it allows me to support a process for redefining children's entanglement with a shared world, to consider that they are a member of 'multiple ecologies of belonging'. I hope to engage in this approach in order that the more-than-human 'things' and 'materials' become more than simply *objects* being directed and responding to children but that everything within the environment can be understood as *subjects* who exercise agency in their own right (Tipper, 2011). With the aim of disrupting the Cartesian divide between children and 'nature', I seek to question what in our educational and research work is 'viewed as nature', what is 'valued about nature', and what happens when children are 'placed in nature'? In the defiance of a past idealised child/nature relationship I am employing new materialism and posthumanistic approaches, in order to open up the possibilities when agency is no longer the property of humans alone (Barad, 2007), this new materialist ontology "supplies a conception of agency not tied to human action, shifting the focus for social inquiry from an approach predicated upon humans and their bodies, examining instead how relational networks or assemblages of animate and inanimate affect and are affected" (Fox & Alldred, 2014, p. 1). Therefore, I am now considering if the child body becomes more than a 'naturalised child' if they are a product of the assemblages, associations and relationships through which humans are connected to the more-than-human world in diverse and complex ways, then how can I present my research in such a way to illustrate this? I am seeking to find the means to encapsulate the complexity of human and more-than-human world relations in my writing.

In this grappling of a retrospective engagement of 'ecological posthumanism', by re-imagining in a materialist manner I want to explore what Braidotti (2013) states as "the intricate web of interrelations that mark the contemporary subjects' relationship to their multiple ecologies, the natural, the social, the physic" (p. 98). A feature of this new ontological perspective I am taking up is that "it shifts from conceptions of objects and bodies as occupying distinct and delimited spaces, and instead sees human bodies and all other material, social and abstract entities as relational" and that these "…assemblages of relations develop in unpredictable ways" (Fox & Alldred, 2014, p. 3).

To describe this work, I have composed an ecological posthuman narrative of child-dog-bodies as interspecies relations in La Paz. The data I used for the narrative came from research activities conducted with children in their local neighbourhoods, including photographs taken by children in their 'everyday' activities in their communities and the conversations they had with us about the images, and the second where mobile methods of data were collected while travelling through the landscape with our human child and more-than-human guides. Data included conversational interviews, photographs, and spatial recording and observations of the spaces.

Child-Dog (Bodies) in La Paz

La Paz is a city of 500 thousand dogs and one million children. The children and dogs I am researching live in the slum communities here, in the upper reaches of the valley. It is 2012, and after 2 days of travelling from Australia the plane comes to land at the El Alto, the plateau above the valley floor. With our final descent we do a sweep over the valley. La Paz city is laid out in front of us. While the question is still being debated as to whether we are in the age of the Anthropocene, where humans have made undeniable irretrievable impact on the landscape, the call of Anthropocene feels very real looking across this great expanse of humanity.

My first encounter with a street dog in La Paz was on the first day of my research work. I had just arrived and was touring around the tourist mecca, a place called the Witch's market. The market is where you go to buy white baby lamas and other essential elements to use during the frequent Pachamama offerings. As I was walking around a small street dog started following me – I thought she could probably smell the food in my backpack or maybe she was accustomed to looking sweetly on tourists. I have to say I was smitten both by her familiarity with me and how she looked. I took a photo and sent a message with the photo to my two daughters in Australia: "I found Poppy's South American cousin"(Fig. 11.1).

Unlike my own pampered dog pet, Poppy, this street dog of La Paz experienced a lot of freedom. I was told later in conversations with the local children and adults, this freedom was understood as an ancient and respectful alliance: "she is free to do as she pleases as long as she doesn't get in the way". She is neither pet, stray or wild; she is probably, loosely connected to a family, coming and going sometimes wandering into the crowded family yard but mainly living on the streets. Because

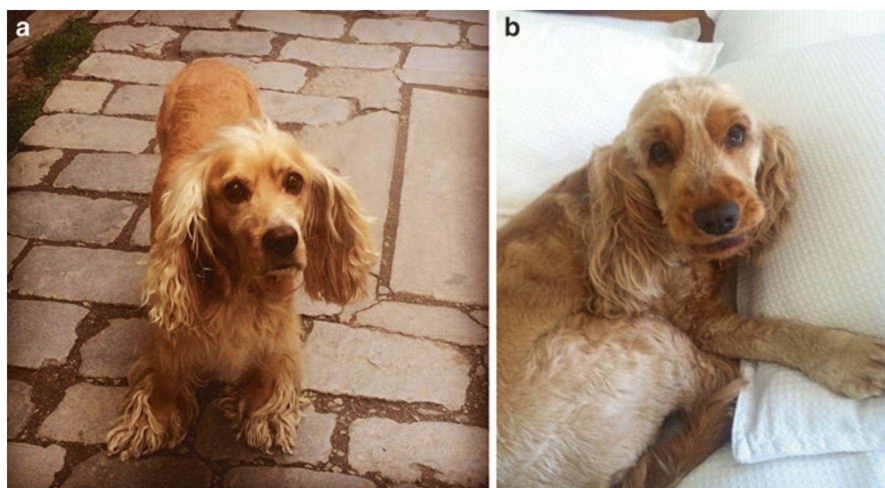

Fig. 11.1 (**a**) Street dog, La Paz, Bolivia (Author's photograph). (**b**) Author's dog, Poppy, Sydney, Australia (Author's photograph)

she may or may not have carers, she can go hungry, be abused, or left to die in the streets if she gets sick. Thinking of different ways of thinking about domesticated dogs (working dogs, pets, strays, ferals, community) dogs – she would likely be classified as a *community* dog. I am familiar with this idea of community dogs from my travels in Asia, Africa, and even in our own Indigenous communities. I have come across dogs in communities where, for thousands of years, they have been well regarded as a friend, guardian, and protector of humans. In Australia, for instance, there had been media discussions about the role of community or what is named as camp dogs in Indigenous communities, and how the wellbeing of the dogs was viewed as inextricably connected with the health of the humans. Camp dogs live in such close proximity with children that they both exchange each others diseases. The street dogs of La Paz are urban scavengers, not western-style, house-dwelling, middle class 'family pets', who as I came to realise through my research, spend long periods of time on the streets with the children.

Children and dogs relate to each a variety of ways. Unlike a western centric theorising of human-dog relations, which often sees the dog presented as a substitute dependent child, humans finding solace in the seemlingly unconditional love from their dogs, the child-dog relations, and 'being together' in La Paz is more likened to Donna Haraway's (2015) notion of 'making kin'. The purpose of, or to make 'kin', according to Haraway, is to recognise the coming together of different entities who may not be tied purely by ancestry or genealogy. She argues the stretch and re-composition of kin represents the understanding that earthlings are all kin in the deepest sense – kin becomes the purest of entities in assemblages of the human, more-than-human, and other than human, and by the fact that "all earthlings are kin in the deepest sense, and it is past time to practice better care of kinds-as-assemblages" (Haraway, 2015, p. 162). Kin relationships emerge in this study as a deep sensitivity by the children when describing the similarities of the child-dog experiences.

During our time Diego showed me his photographs (Fig. 11.2) of stray street dogs, the ones he said often accompanied him while walking around the streets. In one of the photographs he had taken I could see a dog high up on a roof, alone looking down:

Fig. 11.2 (**a**) Roof: safe place to hide. (**b**) Dangers of being on the street (Photographs by Diego, age 12, Cotahuma)

Fig. 11.3 (**a**) Dumped rubbish. (**b**) Steep valley areas for play (Photographs taken by Juan, age 13, Cotahuma)

> This photograph is of a dog that I take care of because it doesn't eat. The dogs are badly treated and the people beat them for no reason [pause] a bit like the children [he giggles as he looks at his photograph] sometimes we hide on the rooftops to be off the streets with the dogs.

"And the other photograph?" I asked him. "That is the dog that sometimes gets beaten, the streets are dangerous". Children care for and feed street animals. They told me they felt distressed when dogs and children were treated badly by the adults or strangers in the neighbourhood.

Juan's photographs (Fig. 11.3) illustrate a child-dog journey far from neighbourhood streets into the upper reaches of the valley. The land is steep and, due landslides and floods, dangerous. Rubbish is often dumped here. Coco, his dog, is playing in a large dumping area for household rubbish, rummaging for food: "I don't like rubbish and it makes it look bad and the dogs stop here".

Describing his relationship with Coco, Juan states:

> Coco was my best friend. He was near me, always he was near me. He hear me, he was always with me. He understand the things I want. He always comes with me into the forest to play. He is my play mate. He was the same as a human friend, it was no difference between us as friends.

The child and dog kin relation is a meeting of the other in all its fleshy detail. They child-dog companion, the story of co-inhabitation, is an entangling of bodies. I start to see the child-dog body as connected.

Dogs take us on a walk– wandering through and between the cobble stone streets, they forage for food, bark at intruders, and humans walk behind watching. "They are our protectors, and our guides" state the children – dogs know the landscape intimately and sense the dangers. Children are closely attuned to the sensory perception of the dogs. It is an ancient alliance of dogs supporting human survival by their capacity to be alerted to, and have sensitivity for, the precarious landscape. The child-dog intra-action and cohabitation provides a space for this mutual reciprocity, care and protection, to be thrown together, living well together. Dog as companion to child, child as companion to dog, child-dog as protector. Karen describes her relationship with Bicho as one where together they assume the reciprocal role of protector and being protected: "I have a dog, his name is Bicho

and he takes care of me a lot, he protects me from other dogs, sometimes I protect him". While much of the myth of why dogs cohabitated with humans was based on the view that it was the human who domesticated the dog – it has become a more compelling argument to say that it was the dog who domesticated the human.

I am now reading biological information about dog species in the Americas on the internet. I find a picture of a 'bush dog' that lives in the Bolivian Amazon region. It is said to be the rarest dog in the world. One of few dogs in history that have never been domesticated, therefore it has no shared DNA with the dogs of the valley of La Paz. The Aymara people, like the bush dog, are an ancient people who have occupied Bolivia for somewhere between 800 and 5000 years ago. They have come to be entangled with the Quechuans and their dogs. As they advanced south from Peru increasing the Inca Empire in the fourteenth Century the Quechuans had with them Peruvian hairless dog. It is believed 15 % of modern Bolivian dogs carry the DNA of this ancient dog, a dog that has links to extinct Asian wolves possibly brought to South America over 12,000 years ago. But the community dogs in the streets of La Paz also tell a story of a postcolonial world, a different time and space frame. Ninety per cent of dogs in La Paz are linked through DNA to the Spanish conquest. Once countries like Bolivia were colonialised, the gentry who arrived brought with them their gentry companion dogs – spaniels and poodles – both infamous Spanish water dogs. The study of dog gene diversity provides a history of peopling of the new world. My dog at home in Australia is a cocker spaniel, the dogs of La Paz are her kin; they share a common Spanish ancestry.

These child-dog ecological narratives are complicated, located across three time-space scales. First I am considering the historical spiritual dimensions and speaking to the co-evolution of companion species, and in the case of dogs the longest of evolutionary human and nonhuman animal relations, dating back for at least 15,000 years with the advent of ancient dogs being domesticated. The second is a postcolonial story, the Inca Empire from the North in the fifteenth century and then the Spanish invasion in the sixteenth century. The Spanish who brought dogs domesticated within European traditions. The third time-space story is located within the everyday, at the scale of real bodies, where I as a researcher grapple to be attentive to the complexity of co-constituted and co-evolutionary historicity of interspecies relations while I inhabit the everydayness of child-dog relations. Child-dog-bodies a story of companion, kin, guide, and protector.

"Being with the world" is how Rautio (2013b) describes forming a different view of ourselves as human in relation to nonhumans:

> [I]t is about realising that the relation is always already there, and as much influenced by behavior and existence of other co-existing species as it is by our actions. (Rautio, 2013b, p. 448)

The complexity of the child-dog relations of La Paz challenges me to consider what 'living well together' with a host of species and histories might contribute to a common world. Living well with animals, inhabiting their/our stories in order to reveal the complexity of cross-intra-species relationships. This work of theorising interspecies relations through an ecological posthumanist lens draws me to consider

a co-habitation of child-dog-bodies as an active history of body connectedness. The story of child-dog relations in La Paz is a cobbling together of 'cross species' conversations that take their inherited histories seriously. They are tied together by genealogy, a history of child-dog as bodies entangled on this land. I am reminded here of the studies of Pacini-Ketchabaw and Nxumalo (2015, p. 153) with raccoons and children, when they argue also of this inherited settler history, "The perceived nature/culture divide that the raccoons constantly challenge in the childcare centre is entangled in the inherited settler colonial histories of this mountain forest". In my re-reading of child-dog relations in La Paz I have reoriented and brought together child-dog-bodies as a single entity, who in the messiness of daily life are located in an ancient knowing of animal kin and a more recent shared postcolonial connectivity.

Conclusion

In this difficult work I have been on a quest to imagine the complexity of a common world of ecological communities that include all things (human and more-than-human). Not by elevating all things to the status of exceptional human or de-elevating human to the status of object or things but by exploring political, ethical, and ontological questions that reveal the complexity of the human/nature, subject/object divide. I do this work in order to pay attention to the subtleties of relations formed as 'kin' in a shared ecological community of all beings who have in common a planet we co-habitat. The theorising I am retrospectively applying is played out in the messy, disordered landscapes of La Paz through a lens of ecological posthumanism that recognises the fragility and porosity of all matter and objects. I have tried not to collapse categories of objects entirely into each other but to bring attention to the porousness of what has often been viewed as distinct boundaries and distinct entities. Child-dog-bodies transgress the boundaries of the human/nature divide by challenging what it means to be living well together outside of adult human lives. By shifting away from the child as the central object of my gaze and being attentive to and noticing the nonhuman entities through which their world is being encountered, I am wondering can this theoretical work support a new imagining for sustainability and environmental education? In these precarious times I am considering can an approach of posthumanist ecological communities rather than deep ecology have the potential to be a new configuration for interspecies co-habitation? I am also trying, in recalling this ecological narrative of child-dog encounters, to consider the importance of applying "messy methodologies" (Rautio, 2013a, p. 403) in my reading of the data. That is, to recount data that does not fit into neat categories of certainty with closure; rather to explore possibilities where the "complexity and open-endedness of phenomena" are not sacrificed (Rautio, 2013a, p. 403). As Haraway (2015) insists "we need stories (and theories) that are just big enough to gather up the complexities and keep the edges open and greedy for surprising new and old connections", if we are to imagine or embrace "flourishing

rich multi-species assemblages" (p. 160). I am being greedy in my theoretical grappling.

By theorising through a posthumanist lens retrospectively I have been attempting to decentre the human and disrupt the idyllic view of child in nature. Maybe I have done neither of these jobs very well. It is an ongoing process to consider how to take research that has been developed using humanistic/child-centered methods and attempt to accomplish an ecological posthumanist re-reading. Beyond acknowledging the difficulties of the task, I believe even at a surface level what these studies illustrate is that nature/child encounters are difficult and complex, rather than restorative and idealistic, as is often proposed in the nature, environmental, and sustainability education literature. I am challenging the continued support for education that reinforces anthropocentrism and the exceptionalism of humans. A call to the Anthropocene in education for my work entices me to move away from sustainability and environmental education research that focuses directly on 'getting children back into nature' as if 'nature' exists solely as a restorative 'resource' for seemingly un-natured, disconnected children.

In this chapter I have utilised new ways of thinking and re-theorising my research in order to represent the complexity of relations over time and space, where children and the more-than-human world come to encounter one another through shared histories and everyday encounters. It supports the "ways that we might learn with, rather than about, other animals, in small ways and within our immediate and everyday common worlds" (Taylor & Pacini-Ketchabaw, 2015, p. 3). I have explored these common worlding relational and materials aspects of child-animal, relations by decentring the human and embracing strategies of intra-action in new materialism to provide a re-reading of child-animal-earth-bodies that is outside of popular and dominant views that focus on an idealised view of children where children are 'naturally' and innately 'connected' to pure nature.

By shifting away from the *child* in nature as the only agential body, and focusing on the materiality of child bodies and the bodies of other nonhuman entities (such as dogs) as relational assemblages, I considered how this view of children and their encounters with nature could inform a new imagining for sustainability education that is more open to the complexity of common worlding. And like Gannon (2015, p. 17) I have considered what "(t)hese encounters in particular places and moments and between particular bodies suggest the sorts of 'prosaic' but powerful 'common worlding pedagogies' we need for these times".

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Chapter 12
Connections, Compassion, and Co-healing: The Ecology of Relationships

Denise Mitten

Human's Entangled Relationship with Nature

In these precarious times we truly do not know what the future holds (not that we ever have). As we move forward in a time of uncertainty with the results of climatic changes already being felt, what attitudes and tools will help us forge the relationships that we need to survive and thrive as we travel into the unknown?

Today many people in developed countries spend little time outside or in direct contact with the more-than-human world. Exceptions to this isolation often occur in the midst of natural disasters: earthquakes, fires, tornadoes, cyclones, hurricanes, flooding, mudslides, and tidal waves. Considering the impact such encounters imprint on those who experience them, it is not surprising that many people react with pervasive fear and mistrust of the natural world.

The weather channel, in the USA, relentlessly tells about the horrors that 'nature' imposes upon us, adding to feelings of animosity towards the more-than-human world.[1] A subtitle in a March, 2015 article about a ski patroller's death is "Nature always wins". Other titles include the words "nature strikes", giving the sense that nature is purposefully hurting people. Still more titles such as "Fight climate change" encourage conflictual relationships. As this sort of reporting continues and people witness and experience what they see and feel as violence towards them from the more-than-human world, many people, especially in developed countries, have become nature-phobic.

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[1] Nature can imply a nature/culture split even though there is no split. However, mainstream Western vocabulary uses the term nature. In this chapter mostly the term the more-than-human-world will be used. Though in some contexts 'nature' will be a clearer word to use. See Clarke and Mcphie (2014) for a critique.

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It seems that our relationship with the more-than-human world is coming full-circle from a time when we lived daily and intimately in the outdoors to now having the natural environment ubiquitous around us, literally knocking at our doors, seemingly asking us to pay attention. We are seeing and feeling the embedded nature of nature and we would benefit from examining this phenomenon in the context of relationships.

This chapter reflects how our relationships are intertwined with all beings and natural systems as an ecology of relationships. This ecology uses the understanding of the world, as Ellen Swallow Richards intended in about 1892 when she named the discipline of ecology (the first term she used was oekologie, meaning *knowledge about every person's house*, and shortly after that she used ecology) (Clarke, 1973). Swallow Richards understood the connection between the environment and human health and that we needed to change the way we related to the environment in order to maintain our health as well as the health of the environment of which we are a part (Ewert, Mitten, & Overholt, 2014). She understood that we are entangled with nature and that the study of ecology is a study about relationships.

Francoise d'Eaubonne (1974), a French activist, recognised that by externalising and treating the environment in ways that were violent, uncaring, and destructive we were actually hurting ourselves. Building on Swallow Richards' notion of ecology she coined the term ecofeminism in 1974. Eco, from the Greek word oikos, denotes the whole household of life; the term ecofeminism therefore means to care for all life. Ecofeminism is the merging of feminist and ecological principles for the purpose of mediating humanity's relationship with nature (Kelly, 1988). d'Eaubonne explained that the way western cultures[2] treat women is parallel to how western cultures treat the more-than-human world. She understood how impacts on the biosphere, questions of energy choices, genetic engineering, and women's reproductive rights were concrete manifestations of the intersections of feminism and ecology. She and others urged people to see the link and to change the patterns of violence, which means changing our relationships. Ecofeminism fosters a sense of our belonging, rather than being in control of, the community of life. Noddings (2005) suggested using an ethic based on care and belonging to guide our relationships. Ecofeminism provides a framework for understanding possibilities using co-creative power that has been suppressed through patriarchal damage to women, wisdom, and the more-than-human world in order to heal as we navigate the Anthropocene.

Relationships are central to every dimension of our lives and shape our lives because we are social, relational beings and because feedback loops continually operate in relationships. Relationships govern our lives because we are entangled with the whole cosmos. This entanglement discussed by Brown (1997) and later Barad (2007) gives us no choice about whether to be connected or not. Our understanding of relationships and skill in developing and maintaining relationships is central to sustainability.

Relationship does not mean separate entities. There is the western construct of the 'other' and the culpability of 'othering'. However, as noted in ecofeminisum and

[2] The use of the word culture does not denote a nature/culture duality.

ecopsychology we are one whole. Our human bodies contain stardust and are the 'home' for literally billions of other beings. We exist because of the entanglement of all beings. Relationships are connections without denying the basic inter- and intra-connectedness of all. I am 'me' and I can have a relationship with my body and myself. Integration and differentiation go hand in hand. 'You can run but you can't hide' is a metaphor that works for most relationships. We carry relationships inside our hearts, minds, and bodies. So, too, our relationship with nature is literally part of our psyche, our soul, and our bones. The concepts of ecopsychology and terrapsychology (Chalquist, 2007) connect the health of humans, as well as soul connection, with the health of the environment and connect ill health to the destruction and dominance over the more-than-human world (Plumwood, 2002). Discovering how to be in healthy relationships is key to the overall health and sustainability of the planet and beyond.

Western cultures have historically had violent relationships with the more-than-human world. When we exhibit violence towards anything we exhibit violence towards ourselves. The receptor of the violence reacts. The environment responds through reaction or adaptation, which often includes dramatic climatic events, such as cyclones, hurricanes, drought, massive snow fall, cold snaps, and the like. In a relationship with another person what we do to the other person influences their behavior toward us. If we yell at them, they may yell back. If we smile at them, they may smile back. The environment is no different; we are part of the web and connected to every thing physically, spiritually, and mentally, with no degree of separation.[3] Therefore what we do to the environment causes reactions within the natural environment and humans feel these reactions in many ways and on many levels, including damage to our psychological, physical, and spiritual health (Ewert et al., 2014). Many authors talk about the disconnection of modern humans from the more-than human world; while there may be a perceived disconnection, there is an infinite connection. Parents need to establish a loving secure environment for their children in order to raise securely attached children. Children with attachment disorder generally lack impulse control, may be violent, and tend towards addictions. In this same way many humans may have an attachment disorder with nature and as a culture exhibit symptoms of attachment disorder. This attachment disorder may relate to common western child rearing practices, including a lack of time in nature (D'Amore & Mitten, 2015). There is still an attachment; it is a disordered attachment.

One place people learn about and engage in reparative relationships among humans and the more-than-human world is though outdoor education (Mitten, 2004). Outdoor education experiences can help people to form relationships based on care, curiosity, and mutual respect, which can lead to an environmental identity that includes a secure attachment to nature. This positive attachment feeds the desire to learn more about the more-than-human world leading to environmental literacy. Outdoor education experiences can help people develop critical thinking skills and

[3] These labels here and elsewhere are used to help the reader know the depth and breadth of these relationships, not to imply a separation between these realms.

creativity while they learn about and physically live outside of the human built environment. The outcome can be a relationship with the more-than-human world based on an ethic of care and an appreciation of and desire to use critical thinking skills and creativity, as well as the sense of civic duty to be responsible in maintaining the health of the planet (Litz & Mitten, 2013).

This chapter offers a path to more ease with the anticipated environmental changes through examining how outdoor education experiences can influence our relationships. Outdoor education, when done with certain program pedagogies and leadership, incorporates the heart of ecology as Swallow Richards envisioned it, helping to reduce human suffering through promoting a well-informed citizenry that connects the health of the more-than-human world with human health. This aligns with what d'Eaubonne (1974) promoted, namely understanding the intersections of violence and working to change that violence to a sense of caring and healthy relationships.

What Is Outdoor Education?

Simply, outdoor education is education in, about, and for the out-of-doors (Ford, 1981 p. 12). Spurred by the western phenomenon of naming and owning, in the last few decades many arms of outdoor education have grown. Currently there is debate about pedagogy, including how people 'ought' to relate to the natural environment during programs (Beringer, 2008; Mitten, 2004; Quay, 2013; Ross, Christie, Nicol, & Higgins, 2014; Wattchow & Brown, 2011). Mainstream educators are beginning to explore how outdoor education might be positioned with issues about the more-than-human world and sustainability.

Expanding on Ford's definition, Medrick and Mitten (2010) said outdoor/adventure education, a process-oriented approach to learning and exploring the world, examines the transactions among humans and between humans and the more-than-human world, thereby encouraging and educating about systems thinking. Therefore, outdoor education practices ought to incorporate understandings about the entanglement of humans to all else and that we are in constant communication with all beings living and what some humans consider non-living.

During outdoor programs participants examine relationships with each other, the leader, and the more-than-human world. This ecology of relationships is a useful place for people to learn about themselves and increase their capacities for secure attachments and positive relationships (Mitten, 2004). Modeling and encouragement of healthy relationships with other participants and the more-than-human world largely depends on the values of the organisation and the values and skills of the leaders.

Therefore, because I argue that healthy relationships are central to positive participant outcomes from outdoor education programs, I argue that in order to carry out the job of an outdoor leader, the leader must understand the nature of relationships and be able to model healthy relationship practices (Mitten & Clement, 2007).

Outdoor Education and Sustainability Education

Outdoor education and sustainability education are related and complementary. When practitioners appropriately teach outdoor education they also teach sustainability education. Outdoor education and sustainability education are two of the many ways that the philosophy of experiential education is put into practice. Experiential education is a philosophy that informs many methodologies in which educators purposefully engage with learners in direct experience and focused reflection in order to increase knowledge, develop skills, clarify values, and develop people's capacity to contribute to their communities.

Both outdoor and sustainability education are ecologically centered, explore relationships, apply a systems approach to inquiry, are potentially transformative in nature, can challenge the learner's worldview or narrative, emphasise citizenship and responsibility, and rely on a constructivist view of education where the learner constructs meaning from experiences. Relationships are key in outdoor education and in sustainability. Outdoor leaders can help build the capacity of people to compassionately engage with other people and the more-than-human world, including helping people develop emotional intelligence and their ability to cooperate.

Outdoor programs that experientially emphasise a respect for life and a deep relationship with the more-than-human world, as well as emotional ties and identification with the landscape can have a positive impact on attitudes and behaviors towards the environment, other human beings, and self. These programs tend to be based on an ethic of care and the intrinsic entanglement among all beings is emphasised and respected throughout the pedagogy. Participants gain an experiential understanding of the intra-relationships often leading to a paradigm shift about the need to engage in healthy relationships with the more-than-human world, including the reinforcement or development of the skills to do so (Mitten, 1996). This can result in positive contributions to short and long-term sustainability.

As an opposite example, mainstream outdoor adventure education has its roots in a militaristic style of outdoor travel, stemming from historic notions of conquering and taming the wilderness and the postmodern view that males have become weak and need toughening. If the outdoor environment is used as a testing ground, there is an adversarial (even if covert) relationship with nature. These notions *separate* people and encourage having power over each other and the more-than-human world. Risk-taking, domination, and egocentric attitudes are explicitly or implicitly encouraged. Participants return home thinking more about what they can achieve rather than connectedness. Or, said another way this attitude creates a 'winner' and 'losers' dynamic, which then shapes future relationships (Mitten, 1985). This perceived separation or relationship built on power and control helped initiate the environmental crisis we have today.

Women's outdoor programming by women has retained a way of being and an attitude towards the outdoors that includes positive relationships and an understanding of entanglement. The leaders offer a genuine feeling of comfort and ease in the outdoors having transcended (or never went there) the western notion of separateness

and recognise our embeddedness in nature. This helps participants relax, feel more at home in outdoor environments, and begin a reparative process, including widening their sense or process of identification. Case study research of women's outdoor programs in the 1970s and 1980s supplemented with contextual research using women's outdoor trip literature from the 1800s to present found congruency of values in these programs, namely post-heroic, a respect for and embracing of the more-than-human world, a desire for the participants to 'know' the place in which they traveled, not using the natural world as an arena for testing physicality, and a genuine feeling of belonging. Women outdoor leaders considered the cultural and societal relationship to nature and provided tangible tools to participants in order to provide experiences that offer renewed and positive relationships with the more-than-human world (For a more in-depth examination of traits of women's programming see Mitten & Woodruff, 2010). Women working within co-ed programs do not necessarily share these traits (Allin, 2000; Henderson, 1996; Lugg, 2003) and patriarchal practices continue to bury this history.

In recent decades some of these values and practices have started to be adopted by mainstream programs, including more choice about participation, a greater focus on place-based pedagogy, a pace allowing time for engagement with the more-than-human world, and a gentler approach to being with the land.

Reinforcement of Positive Relationships

During outdoor education events people can experience healthy relationships based on care and respect with the more-than-human world. Healthy connections come from beings acting from a place of compassion and inner peace, rather than reacting from fear or a place of power-over. When people form healthy connections they enter relationships where they maintain ethical standards and individual responsibility, function well in community, and feel a sense of belonging. Healthy connections stem from common interests, shared experiences, learning together, or accomplishing tasks together and result in relationships based on respect, trust, and intimacy (Mitten, 1995).

In contrast, unhealthy relationships are built on reactions against something — disliking a thing or a person, a treatment perceived as negative, or various evils to be fought. In unhealthy or dependency relationships, bonding is based on power-over or on a perceived 'truth'. This form of relationship is exemplified by what one is 'against'. Outdoor programs that stem from historic notions of conquering and taming outdoor environments, including using the outdoors as a testing or proving ground, reinforce negative relationships.

Nash (2001) claimed that a mark of achieving civilisation is humans clearing land and domesticating animals. Thomas (1984) made a case for civilisation being "virtually synonymous with the conquest of nature" (p. 25). Evidence of this embedded view of nature as needing to be tamed and controlled is manifested profoundly in the founding of the USA on individual rights and freedom for rich white men

where power and control of the land extended to women and slaves. Reflecting on this current and historical reality, Nils Olaf Vikander's (2007) observation seems particularly poignant: "It is a paradox that the waves of European immigrants escaping constrictive societies did not shape nations with freedoms extended into nature" (p. 18)—he might have added slaves and women to 'nature'.

Using the outdoors as a testing ground would be inconsistent with fostering respect. Outdoor leaders can overtly or covertly reinforce nature-phobia by encouraging participants to bond together against nature (for example, 'we will conquer the mountain') and to view nature as separate and less important than humans. For example, some mainstream outdoor programs use the outdoors as a proving ground and way to achieve accomplishments (Mitten, 1985). In this case participants may bond to survive the outdoor experience. Connecting in order to survive supports the idea that nature is separate, and something to be afraid of and conquered, and is inconsistent with fostering respectful and comfortable connections with nature. Either blatantly or subtly, some professionals in the outdoor field use outdoor environments and the potential difficulties faced there to encourage group cohesion and, in theory, build individual esteem (Beringer, 2008). This paradigm does not work in the long run to build sustainable communities. To build sustainable communities humans need to partner with the more-than-human world in an atmosphere of compassion, respect, and understanding of our mutual entanglement. Therefore, in order to have healthy relationships with the more-than-human world, people ought to "travel in nature and the wilderness for its own sake, not using it as a means to an end to create situations to take risk or prove competency" (Mitten, 1985, p. 2).

Feeling connected in healthy attachment to the more-than-human world and experiencing ourselves in community serves as an action metaphor for human relationships and helps promote community in a larger sense. It can impart an understanding of community that reaches beyond the group members in the program and human communities; it promotes 'thinking like a mountain' (Leopold, 1949), an understanding that community includes soils, waters, plants, animals, and humans; we are an entangled web.

Healthy relationships are easier understood and practiced with an understanding of systems. From family therapy to ecology, professionals rely on systems thinking to understand interactions and to move relationships forward constructively. Systems have positive feedback loops and negative feedback loops, both of which are present in relationships.

Relationships and Family Therapy

Borrowing from research about human relationships we can extend concepts to humans' relationships with the more-than-human environment. Oftentimes in a family one person is sent to counselling, the person who allegedly has 'the problem'. Family therapists challenge that notion, saying that families are systems and others influence each person's behavior. The orientation is seeing the individual as

a system embedded in other systems, including the family, the community, and the society, including the more-than-human world. Individual therapy often is more successful if the systems around the individual are included. Some people talk about nature as if nature is the problem child and human society has nothing to do with the problem. However, the individual, family, and societal systems are part of ecological systems, as well as other systems in the universe. We are our parents and they are us; we are the soils and they are us: embedded and entangled.

Gottman (2010) gained notoriety studying what causes relationships to fail. He and his team learned to predict the success of marriages with a 95 % rate after watching couples for about 5 min, by focusing on the markers of criticism, defensiveness, contempt, and stonewalling. These markers could be subtle, but if present, the relationship would likely fail. Of these markers, contempt was the best predictor of divorce. For some couples when these behaviors were pointed out they explored the systematic factors that created these negative patterns and repaired their relationship.

Extrapolating this research to human interactions with the more-than-human world, we see evidence of criticism, defensiveness, and contempt in humans' reactions to and relationship with 'nature'. Thinking that one is more knowledgeable or more intelligent than others or any statement made to another from a superior place is a form of contempt. Examples of contemptuous writing about nature are abundant. Stating a problem in a relationship as a deficit of the other is criticism. For example, saying that we would have fun if only it wasn't raining is making our lack of happiness about a perceived deficit of nature.

If people travel in the outdoors or sit at home with a critical, contemptible, or other negative perspective including fear or power-over the more-than-human world they stay in a state of hyper arousal, just as they do if these attitudes are part of their human relationships. This primes people to stay conflictual because they are hypervigilant (exaggerated intensity of behaviors in order to detect threats), guarded, and non-receptive; essentially too many physiological systems are on high alert and fire quickly from a defensive position. These behaviors lead to anxiety, exhaustion, and immune diseases. Our attitudes about the more-than-human world impact health.

In order to engage in healthy relationships Gottman (2010) identified the importance of maintaining communication that includes appreciative, reciprocal, and compassionate exchanges as a way to build positive perspective about another person or about the more-than-human world. If people see the more-than-human world as more positive than negative, then when events happen that might be interpreted as negative they are more likely to be overlooked or repaired, just as in human relationships. This includes changing the habit of the mind from looking at what's going wrong to using an appreciative inquiry lens and focusing on what's going well. For example watching a sunset or seeing a meadow of flowers helps create a sense of awe and appreciation.

Paying attention, or as Gottman (2010) terms it, 'turning towards' creates emotional connections and shared meanings, and maintains ongoing intimacy. Spending time in nature is crucial to paying attention to the more-than-human world. Outdoor leaders help participants have a positive relationship with the environment by

initiating curiosity about the more-than-human world and modeling and enabling emotional connections.

Outdoor leaders can support participants exploring and repairing their relationship with the more-than-human world including diminishing or extinguishing criticism, defensiveness, contempt, and stonewalling. They do this through modeling positive communication and appreciation of the more-than-human world rather than looking for problems, mistakes, or disasters within the human and more-than-human world. Appreciative inquiry helps grow a relationship system of fondness and admiration grounded in gratitude and respect, which when done at the individual, family, community, and universal (including the more-than-human) arenas adds to sustainability.

As in every relationship, conflict and even periods of alienation are normal. Some people see hunting, fishing, and agriculture in conflict with the more-than-human world. In order to maintain relationships one needs to be able to acknowledge and process reparative and restorative actions and have skills to do so. Many indigenous cultures have rituals to repair and restore the relationship after the harvest. Spring is reparative after winter. After the flood in the Christian Biblical story the dove with an olive branch is reparative. Hurricanes, tornadoes, and fires can be looked at as relationship conflict and alienation between humans and the more-than-human world. Coming from a place of positive emotional connection, when there is conflict we repair our relationships instead of furthering alienation or more destruction. The inevitable conflict can lead to stronger relationships.

However, if outdoor leaders model a conquering or survivalist attitude towards the environment, which is a passive aggressive way of being contemptuous and having power-over, then participants may continue to fear and commodify the environment. Some outdoor programs have been criticised for 'using' the environment but not protecting or appreciating it. Appreciating the environment includes recognising other ecological members and bio-diversity, using low trace traveling and camping techniques, discouraging conquering or adversarial attitudes and language, and working with the challenges that inevitably come up when traveling in the outdoors with good cheer and resourcefulness.

If during programs participants build positive relationships with the more-than-human world they may continue to spend time outdoors, essential for human health, development, and well-being (Ewert et al., 2014). This results in long-term health benefits, which can reduce medical expenditures (Mitten, 2010). It potentially increases positive ecological identity and pro-environmental behaviors (PEB) because both depend on the capacity to maintain positive relationships. A person's ecological identity determines how they interact with the more-than-human world. Secure attachment to 'place' is an important antecedent to environmental awareness, pro-environmental attitudes, and PEB, with higher levels of place attachment being associated with more PEB (Halpenny, 2010; Ramkissoon, Smith, & Weiler, 2013).

Sustainability, as currently thought about, depends on PEB. PEBs, defined by Kollmuss and Agyeman (2002), are "behavior that consciously seeks to minimise the negative impact of one's actions on the natural and built world" (p. 240). To

express PEBs one needs emotional affinity with nature and a stated willingness to commit to its protection, which is reinforced by experiences that foster a sense of affinity (Williams & Chawla, 2015). As Gray (2016) demonstrated this nature connection can continue even in office work spaces.

Gottman (2010) talked about the importance of knowing and supporting others' dreams and honoring their aspirations. Learning and practicing this sort of relationship with the more-than-human world and human communities will increase sustainability. When outdoor leaders act ethically and with sensitivity to the human community and the biosphere they help participants understand, thrive in, and enhance our world community including the more-than-human world. A committed relationship includes a shared meaning and purpose. Humans have a shared purpose with the more-than-human world around sustainability.

Changing Relationships Helps Change People's Narratives

Outdoor education contributes to sustainability through its potential to help people change self, societal, and environmentally destructive narratives to life affirming narratives, a basis for ecofeminism. In its broadest terms ecofeminism asks us to examine our relationships, shows us that all relationships are entangled, and relationships based on compassion lead towards health.

Narratives are stories that we tell ourselves that inform our worldview. Outdoor education can help people see new possibilities for narratives in terms of our relationship with the more-than-human world (Mitten, 1995, 2010; Willis, 2011).

Though many indigenous narratives have remained connected to relational and compassionate roots with nature, western views moved towards narratives including ownership, commodification, dominance and control over nature and other humans, and a mechanistic explanation of the universe. Korten (2006) labeled it the 'Empire story' in which people are hard wired for greed, competition, and violence. Even within outdoor education there has been a culture of competition with and ultimately disregard for and domination over the more-than-human world (Warren, 1996).

Currently, there is a perception of disconnection from nature. A pervasive narrative has been created that people are separate from one another and the rest of the natural world and that the purpose of life is to primarily serve individual interests. Playing into the humans-are-separate-from-nature narrative was the transition of populations from rural to urban environments. In developed countries fewer people related to the more-than-human world as a part of their everyday lives resulting in a state of landlessness (Baker, 2005) and landlessness perpetuates more landlessness or loss of a sense of place. Landlessness negatively impacts spiritual, mental, emotional, and social health and development. A sense of place is rooted in the concept that people form emotional, spiritual, and meaningful bonds with the more-than-human world making the welfare of the land personally significant (Williams &

Stewart, 1998). Outdoor recreation experiences can help people form a sense of place and counter the sense of landlessness.

Rachel Carson, an early outdoor/environmental educator, in her article "The Sense of Wonder" (2011) encouraged humans to wonder more, to approach nature and life with curiosity. Sustainability is often overlain from a patriarchal perspective of humans knowing what is best for the environment and Carson suggests that instead we talk to the more-than-human world. Another way to say this is to help people wonder as they wander in the more-than-human world. These experiences help change narratives, which help change ecological identities. Carson suggested that nurturing children's innate curiosity and love of nature nurtures a connection to the natural that fosters the development of adults and a society that values the broader family of life on Earth.

Participating in outdoor activities in an environment that feels emotionally safe to the participants offers support to examine and change narratives. Women's groups have offered participants a road home to a sense of belonging with the more-than-human world. With values of care, these experiences help people change confrontational, combative, and conquering relationships with the more-than-human world to relationships of compassion and connectedness that embody our intra/interrelationship with all. They increase people's understandings of their transactions with self, other people, and the environment. These understandings help people constructe narratives that include appreciation and respect for the more-than-human world allowing for relationship intimacy and repair as needed.

We can learn from indigenous people who have embedded traditional wisdom and practices that honor the reciprocity between people and their natural surroundings. Laws of science now recognise that all human activity is inherently entangled in the natural world, which sustains us. Outdoor educators can be part of the conversation and choice about narratives considering the inclusion of empathy, curiosity, inquiry, compassion, and freedom to embrace the mystery of the universe and admit that we do not know. Outdoor experiences can help change a narrative of competition to one of mutualism/collective/relationship and belonging, which will influence our relationship with the natural environment, ecological identity, and environmental behaviors.

Conclusion

Tending our souls and tending our soils are necessary for lush growth and healing in our relationships with the more-than-human environment. As a strand in a polycentric approach, outdoor education contributes to global sustainability through moving towards ecofeminist values and changing the etiology of human domination over nature.

Thoughtfully designed outdoor education programs with leaders skilled in healthy relationship building, have the potential to provide rich, transformative, paradigm shifting experiences for participants. With appreciation and close positive

emotional attachment to the more-than-human world participants connect to the more-than-human world from a place of compassion and awe that helps counteract negative images and fear of 'nature' that result from western narratives. Instead of seeing the more-than-human world as something to be controlled, as they learn about it they see it as part of themselves.

Outdoor leaders supporting, encouraging, and modeling how to establish healthy relationships offer people lived examples. Relationships with other people, the environment, and ourselves can be experienced through an ethic of care; to potentially awaken and intra-consciousness that understands our need for a positive affiliation with the more-than-human world on visceral level. The outcome is people eager and prepared to engage with the more-than-human world as we face complex and challenging decisions in the Anthropocene.

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Chapter 13
Exploring 'Thing-Power' and the 'Spectre of Fear' on Schooling Subjectivities: A Critical Posthuman Analysis of LGBT Silencing

Tania Ferfolja and Jacqueline Ullman

Introduction

> It is evident from new materialist writing that forces, energies, and intensities (rather than substances) and complex, even random, processes (rather than simple, predictable states) have become the new currency (Frost & Coole, 2010, p. 13).

Research related to gender and sexuality diverse subjects in schools and educational contexts has been a burgeoning area of research for the last 25 years. During this time, much work has taken up post-structuralist frameworks, including social constructivist, feminist-poststructuralist, and queer paradigms. These paradigms largely rely on the social construction of subjectivities, their various locations in discourses, the importance of language in constructing the subject, and the implications of the power/knowledge nexus (Dumont, 2008; Weedon, 1987). Indeed, we too have used such theoretical frames as the basis for our work and believe there are merits in these approaches (see for example, Ferfolja, 2013, 2014a, 2014b, 2015; Ferfolja & Ullman, 2014; Ullman, 2015; Ullman & Ferfolja, 2015).

However, more recently we have been interested in experimenting with the ways that critical posthumanism can inform our work in relation to lesbian, gay, bisexual, and transgender (LGBT) diversities in school education; in particular, the ways in which these identities are silenced and rendered invisible in these contexts. Hence, in this chapter, we draw on Jane Bennett's (2010) concept of 'thing-power' to explore the active propensities of institutionally inscribed documentation, such as curriculum, alongside our own research excerpts to explore the ways in which both the tangible and intangible entangle and enjoin human subjectivities. We endeavour to understand the envelopment, circulation, location, engagement, and interplay between the human and nonhuman and the complexities and instabilities around

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subjective becomings. We conclude with an exploration for transformations in education that encourage a celebratory recognition and understanding of the fluidity of gender and sexuality diversity – and the ways in which it is contingent and entangled with all sorts of things, practices, and people. In doing this, we reject a monistic focus on the self and on individualism and instead concede the human subject's interconnectedness with other things. Within this framework, the subject is contiguous with the external world, beyond the self, and related to nature, the social, the psychic, the non-living, and the nonhuman (Braidotti, 2013). We consider that recognition of these relational and intertwined understandings and knowledges can provide a kind of justification for a more equitable, harmonious, and socially sustainable planet, if ever justification is needed.

Through this approach, we engage with our various data moments and experiences to "open up new ways of seeing and thinking" (Mazzei, 2013, p. 777), moving beyond conceptions of the subject as normal/abnormal. As Braidotti (2013) points out, the power of the centrality of humanism has rendered particular subject positions to be privileged "on a hierarchical scale as a tool of governance" (p. 61), creating Others who do not reflect the 'normalised' subject – conceived of as heterosexual, white, middle class, and male (Braidotti, 2013; Weedon, 1987); such normality, constituted in a constricted range of subject positions, renders the Other as disparaged, marginalised, invisible yet surveilled, silenced, and punishable (Foucault, 1978).

An apparent blindness to the subject's external connectedness to the world and the result of centring the 'normal' human has resulted in the establishment of certain (im)material regulatory structures and modes of operation that overtly or covertly enable and maintain discrimination towards 'Others'. Of pertinence to this discussion is how the complexities of gender and sexuality have been reduced to a "binary machine that privileges heterosexual family formations and literally steals all other possible bodies from us" regulating and confining the infinite knowledges of these bodies (Braidotti, 2013, p. 85). In schools, this is discernible through policy, curriculum, institutional rules, pedagogies, and interpersonal, and professional interactions (Epstein & Johnson, 1998; Harris & Gray, 2014). By placing select conceptions of the human as central, everything/one else becomes inconsequential or derogated.

However, the sheer magnitude of unprecedented transformations pervading our world – including those pertaining to sexual and gendered bodies and subjectivities, such as their increasing visibility and the recognition of the range and complexities of these subjectivities – requires the conception of "new social, ethical and discursive schemes of subject formation" (Braidotti, 2013, p. 17). These new schemes would challenge, destabilize and stretch the "systematized standard of recognisability – of sameness – by which all others can be assessed, regulated and allotted to a designated social location" (Braidotti, 2013, p. 27). Such (re)visioning and reconceptualization is of particular significance for school education, which could be critical in the creation, shaping and transformation of a kinder, and more caring and humane planetary future. Despite the egoism of humanity, the human subject is no

longer, if ever it was, the central pivot to all nonhuman/human, im/material beings and existences (Frost & Coole, 2010), but rather a part, or simply another entity, of the world (Barad, 2007).

Educational Documentation through a Posthumanism Lens: The Criticality of 'Thing-Power'

The ramifications and limitations apparent in the positioning of LGBT subjects in school education are not only entrenched, but are also well-recorded. Historically derided, LGBT subjects, or those perceived to be LGBT, have been marginalised and discriminated against, silenced in pedagogy and practice, and positioned as 'Other' in relation to the 'normal', centred human. This has been reflected in everyday interactions and relationships in schools and enshrined in policy and curriculum documentation (Epstein & Johnson, 1998; Hardie, 2012; Hillier et al., 2010; Jones, Gray, & Harris, 2014; Ullman, 2014; Ullman & McGraw, 2014). Our own work has analysed the ways in which this Othering is realised through implicit endorsement in official educational documentation, within which we have highlighted the limitations and ramifications of the discursive constructions of subjectivity. For example, our research examining the New South Wales (NSW) Department of Education and Communities (DEC) "Homophobia in Schools" policy and NSW state and federal curriculum documents in the key learning area of Health and Physical Education illustrates the contradictory framings, invisibility, and bureaucratic constructions of gendered and sexuality diverse subjects in relation to the mythical 'normal' subject (Ferfolja, 2013, 2015; Ferfolja & Ullman, 2014; Ullman & Ferfolja, 2015). In our previous publications, we have argued that such documentation produces spaces in many schools and classrooms for overt and covert enactments of silencing coupled with potential disregard for, and avoidance of, LGBT-related content, thereby reinforcing the marginal position of gender and sexuality-diverse subjects.

Critical posthumanism and the subsequent move to agential realism provides room for a more nuanced exploration of this phenomenon, in its decentring of the human as either "pure cause or pure effect" (Barad, 2003, p. 812) and in its explicit interest in the close exploration of other nonhuman agential forces at work. From this vantage point, a word or grouping of words such as those located in official educational documentation lack inherent meaning; as Barad writes, "Outside of particular agential intra-actions, 'words' … are indeterminate" (2003, p. 820). Agential realism views discursive practices as intrinsically material by nature, wherein meaning is made through:

> …specific (re)configurings of the world through which local determinations of boundaries, properties, and meanings are differentially enacted. That is, discursive practices are ongoing agential intra-actions of the world through which local determinacy is enacted within the phenomena produced (Barad, 2003, p. 820–821).

This is evident in policy and curriculum documentation, which, as a case in point, does not just construct the discursive framings in which subjectivities are constituted, but rather manifests the matter of both past and future discursive practices by clearly delimiting the boundaries of what 'counts' as meaningful; viewed in this way, such documentation is "iteratively reconfigured and enfolded through the world's ongoing intra-activity", interwoven into "the spacetime mattering of the universe" (Barad, 2012 as cited in Juelskjaer, 2013, p. 758). Further, from the perspective of agential realism, "time and space are produced through iterative intra-actions that materialise specific phenomena, where phenomena are not 'things' but relations" (Juelskjaer, 2013, p. 755).

These theorisations allow for the exploration of entanglements of nonhuman matter with human subjectivity where, for instance, policy and curriculum in spacetime mattering are relational phenomena. We can examine how such official documentation results in more than ongoing legacies of silencing in education about LGBT people, and is instead inextricably intertwined in, and exists as part of, teacher subjectivities. Bennett's (2010) concept of "thing-power", which she describes as "the curious ability of inanimate things to animate, to act, to product effects dramatic and subtle" (p. 6) extends this theoretical base for the exploration of this phenomenon. Bennett's work with the theory of *vital materialism* intends to blur the distinctions between subjects and objects, humans and things – focusing, instead, on the ways in which these are co-constitutive. We might apply these theorisations to consider the apparent 'thing-power' of school policy, curriculum, and school resource documents via their relative position in spacetime – afforded power and marked as they are by their various logos, document numbers, and copyrights as meaningful elements of their assemblage. More than just words on a (web)page, these documents are visually positioned and officially endorsed in ways that encourage specific, local principal/teacher/student actions and utterances while discouraging others.

The trajectory and release of the new Australian Curriculum: Health and Physical Education (HPE), recently distributed by the Australian Curriculum, Assessment and Reporting Authority (ACARA, 2014), provides a useful case for a critical posthumanist exploration of 'thing-power' and its relational phenomena. In this document, the limited references to sexuality and gender diversity are grossly insufficient to render adequate support to teachers to confidently include this area of content knowledge in state-based and school-based health curriculums (Ferfolja & Ullman, 2014). This version of the curriculum was released for use despite the significant recommendations made during the public consultation process during the document's development that specifically requested LGBT-content inclusions. For example, 11 of 17 submissions that were publically-available on the internet independently identified a need for specific, clear inclusions in relation to gender and sexuality diversity. These submissions further criticised the draft document for its implication that LGBT-visibility (e.g. the existence of 'out', LGBT-identifying students in schools) was somehow a precondition to LGBT-inclusive classroom content. The Australian Human Rights Commission epitomised the sentiment behind many of the submissions, asking for the HPE curriculum to explicitly state that:

> Same sex attracted and gender diverse young people *are part of all school communities* … As students facing these issues exist in all school communities, *whether they are visible or not*, it is expected that opportunities will be taken when implementing the Health and Physical Education curriculum, to ensure that teaching is inclusive and relevant to their lived experiences (Australian Human Rights Commission, 2013, section 3.3b, emphasis in original).

Similarly, in relation to implementation of LGBT-related content in schools by teachers, the National LGBTI (Lesbian, Gay, Bisexual, Transgender, and Intersex) Health Alliance (2012) wrote:

> We believe that specifying LGBTI inclusion throughout the proposed [national HPE] Curriculum is needed to provide teachers with adequate guidance for its implementation (National LGBTI Health Alliance, 2012, p. 2).

Furthermore, the Victorian Curriculum and Assessment Authority (VCAA) critically highlighted a need for specificity, stating that "there is a risk that because teachers do not identify students as SSAGDY [same-sex-attracted and gender-diverse youth] that they will not teach in an inclusive way" (2013, p. 11). We will return to this sense of risk and teachers' reluctance to engage with LGBT subjectivities in the section that follows.

We may wonder how it can be possible that, despite the multiple, evidence-based recommendations of state, federal and non-government organisations from across the nation, the new National HPE Curriculum, like its state-based predecessors (Ullman & Ferfolja, 2015), continues to omit guidance or provide clarity for teachers in terms of mandatory content and/or implementation strategies. From a critical posthuman perspective, the relational nature of 'thing-power' within a network, or assemblage, of human/object relations can offer some explanatory power. In Bennett's (2010) explanation of thing-power, she theorises that the agency of 'things' is located in their intra-action with other objects and bodies, both human and nonhuman, and discusses the power dynamic across these assemblages, stating that:

> They have uneven topographies, because some of the points at which the various affects and bodies cross paths are more heavily trafficked than others, and so power is not distributed equally across its surface (Bennett, 2010, p. 24).

The various electronic consultative/feedback submissions to ACARA do not sit in a cohesive public online space, rather, they can be searched and found – if at all – within each host organisation's own website archive. In the public HPE Curriculum drafting process, formal submissions were never centrally collected and presented or 'branded' in any way by ACARA as documents of import; while ACARA-authored summaries of the drafting process are available on their site, the 99 formal submissions to ACARA providing draft recommendations are not.

Accordingly, we may consider the thing-power of these recommendations as a fundamental element of their web-based assemblages, limited as it is by the documents' relative inaccessibility and spacetime positionality – each as individual, discrete and discontinuous. As these recommendations are not located on state or federal education departmental sites, interested school staff members cannot locate

this material within or through their 'official' online workspaces/websites. Thus, we suggest that this human-online-information pathway has been less 'trafficked', both in the more simplistic sense of movements of online 'traffic', as well as in line with Bennett's theory of vital materialism: certain pathways of affective movement and resultant power were/have become more 'heavily trafficked'.

It could be speculated that the lack of submission centralisation and ACARA's lack of take-up of the aforementioned recommendations may be the result of their stated desire to provide schools with 'flexibility' to meet the perceived needs of their community illustrated through statements such as, "The Australian Curriculum: Health and Physical Education (F–10) is designed to allow schools flexibility to meet the learning needs of all young people, particularly in the health focus area of relationships and sexuality" (ACARA, 2014, p. 12). However, regardless of author/organisation intent, the resultant intra-action of the national HPE curriculum documentation as currently written and positioned in concert with the "local determinacy" (Barad, 2003, p. 821) of school contexts and actors enables sufficient justification for continued LGBT invisibility and related pedagogical inaction; as such it inexplicably appears to support and condone the ostracism of LGBT subjects. Indeed, the almost entirely silent approach to sexuality and gender diversity in the document may be read as an appeasement of a conservative and/or religious element and a fear of parental/community objection, which through the very silences around LGBT-related content serves to indulge these factions at the cost of potentially reducing discrimination, increasing understanding of diversity, and making for a more equitable and harmonious society – essential components for a sustainable future.

Teacher-Becoming–Spectre-Becoming-Teacher

A critical posthuman theorisation of these silences in official school documentation alongside teacher apprehension and/or subsequent (in)action and/or silencing in relation to LGBT-related content inclusions in schools, enables us to recognise that there is more to the materiality of the HPE curriculum and the discourses and discursive subjects constituted within and through it. Contained yet simultaneously uncontained in its materiality, lies an immaterial phenomenon, a *'spectre' of fear-of-LGBT-subjectivities-in-schools* [hereafter referred to as 'the spectre'] that transcends a mere 'haunting' of school education and is, instead, interwoven into its material and human fabric. The spectre is more than a ubiquitous presence; it is a compelling force that is entangled with (rather than merely coexisting with) subjectivities and shapes material practices. The spectre is a force – a type of 'dark matter'. Frost and Coole (2010) point out that in physics:

> …the universe is composed of the so-called 'dark matter' that is needed to explain the gravitational pull manifest in the galaxy, and [physicists] claim that only some 10 to 15 percent of the theoretically required material is visible (Frost & Coole, 2010, p. 12).

In line with this dynamic in physics, the spectre's dark matter is realised through its omnipresence, its power, it productivity, its 'pull', and its capability to share its subjectivity; it bridges the nonhuman – human divide in the formation of subjects.

Few teachers who are aware of the spectre's presence (and who isn't?) can be devoid of it, enlivened as it is by the material documentation that is meant to inform and scaffold teachers' daily work. There can be no doubt that the spectre takes material form within school policy, curriculum documents, and school practices while simultaneously featuring in the processes of their production; the nonhuman/more-than-human spectre and official school documentation co-exist and produce one another in "(entangled) processes of materialization" (Barad, 2003, p. 810). As such, teachers respond to the spectre, through it, and in association with it through, for instance, their behaviours, responses, conversations, and thoughts. In this way, teacher becomes part-spectre and spectre becomes part-teacher. This *becoming-spectre* invokes teachers' ambivalence towards, advocacy for, or detraction of, gender, and sexuality diversity acknowledgement and inclusions in the school context.

Such theorisation enables different conceptions of teacher *and* spectre subjectivity, not as unified, singular, and central, or even complex, dynamic, and contextual (Weedon, 1987), but as a connected and interactive formation between the human and material. It "compel[s] us to think of causation in far more complex terms; to recognize that phenomena are caught in a multitude of interlocking systems and forces and to consider anew the location and nature of capacities for agency" (Frost & Coole, 2010, p. 10). Thus, we are not purporting that all teachers are fearful of enacting/including LGBT-related content in their daily practices, nor are we saying that they lack agency to act in the interests of equity and social justice for LGBT subjects; rather we are suggesting that *how* they do so and how they take up these issues (or not), reveals an entanglement of subjectivity *with* the spectre. This entanglement informs which lessons are learned, which discussions are had, which resources are mobilised and which subjectivities are included.

We note the affordances of theorising teacher-becoming-spectre-becoming-teacher as a process of 'diffraction', where, as with the movement of ocean waves, as forces encounter one another in a movement of overlapping, there is change and accumulation in a process of intra-action (Barad, 2007). By viewing the boundaries of the material curriculum and policy documentation, the spectre, and human classroom agents as indistinct and overlapping, we are able to underscore the ways in which each are always affecting or being affected by one another and further, how the degree to which teacher-becoming-spectre inevitably shifts this trajectory in an individual classroom.

To examine how this subjective contiguity plays out, we draw on examples from two of our research projects. The first example draws on the voice of George (a pseudonym) who was a participant in a study examining the workplace experiences of lesbian and gay-identified teachers in New South Wales. (For more about this research see Ferfolja, 2014a, 2014b; Ferfolja & Hopkins, 2013; Ferfolja & Stavrou, 2015). George was employed in a school leadership position – a position that enabled him to work with educational policy to implement LGBT-positive approaches in his school. He stated:

> Some [teachers] are quite happy to deal with it [LGBT content]. Others find it more difficult. … I however, probably because of who I am, have a recognition of the statistics and the facts about male teenage suicide in country towns and the very great belief that a lot of that may well be contributed to sexual identity issues. So … throughout the year I will make comments just in terms of bullying and teasing and … name calling … you know I don't accept racism, I don't accept homophobia, I don't accept sexism – so I bundle it in with all of those things. And most of the kids I would say in all the schools I have been … they know my position on that sort of thing. I have had a number of openly gay students in schools, and I guess they identify with me in some ways but … I always follow DET policy you know, so it is never a case of favouritism.

This extract illustrates a number of insights pertaining to subjectivity, agency, and teachers' relationships to, and entanglements with, the spectre. George refers to the impact of surveillance and regulation on sexuality and gender, and recognises the relational effects of discriminatory discourses and marginalisation pertaining to not 'normal' masculinities in schools ("[I] have a recognition of the statistics and the facts about male teenage suicide in country towns and the very great belief that a lot of that may well be contributed to sexual identity issues"). He actively endeavours to alter the subjectivity-policing discourses circulating in his school context; discourses that call on the spectre ("I will make comments just in terms of bullying and teasing and … name calling, … you know I don't accept racism, I don't accept homophobia, I don't accept sexism"). In doing so, he is aware of the spectre, but actively seeks to purge this entangled presence from the school environs. Of resonance to the focus of this discussion, George alludes to other teachers' subjective relationships to the spectre (as all are familiar with it) through their agentic (in) actions. ("Some are quite happy to deal with it [LGBT content]. Others find it more difficult"). Moreover, despite his personal understanding, openness and reputation in relation to these issues, George is simultaneously and throughout the above-mentioned encounters, entwined in and colliding with, the spectre, while desirous to expunge it. This entanglement is apparent through his felt-need to assiduously abide by institutional policy because of the possible (or more likely imagined) ramifications of doing this work ("I always follow DET policy you know so it is never a case of favouritism"). The spectre and George are one becoming – enmeshed, fluid, and complex.

Additionally, for some teachers who identify as sexuality diverse, self-silencing, and deliberately remaining inconspicuous in terms of their sexuality are mechanisms employed to assimilate to their heterosexist and heteronormative workplace context. Natalie, a lesbian-identified teacher, illustrated her subjective entanglement with the spectre demonstrating how it became as one with her subjectivity, although it is critical to remember that subjectivity is always a "contingent and ongoing material practice" rather than a settled identity position (, 2007, p. 240). Recognising that to access the privileges automatically granted to heterosexually-identified teachers in her school, she felt it requisite to neutralise her sexual subjectivity in favour of the spectre in this space:

> I started off this year and I kind of made a conscious decision to keep like, to not be so out, to keep my personal life more private, just to kind of be more professional and try to get a permanent job and stuff and try to get promoted (Ferfolja & Hopkins, 2013, p. 10).

These examples illustrate the spectre's subjective existence and its entanglements in the daily lives of teachers. The spectre exemplifies how the human and nonhuman, material and immaterial experience no clear separation between their entities (Frost & Coole, 2010). Maintaining silence about LGBT subjects in one's classroom thus exemplifies, not only the impact of a material object on a human subject, but also the entanglement of the human and the immaterial; thus, teacher-becoming-spectre-becoming-teacher.

The nature of the spectre's 'pull' is observable through the witnessing and voices of a variety of subjects. In another of our research projects, which examined parents' and students' perceptions of the inclusion of LGBT-related content in school education across the state of NSW through a series of adult and student focus groups, all participants were cognisant of the spectre. Its presence alongside teacher subjectivities was clearly discernible to both parents ("It's just something they can't talk about at the school", Parent 1) and students as illustrated by the quotes from Mark below (see Ferfolja & Ullman, 2017, in press; Ullman & Ferfolja, forthcoming). While parents and students alike called for increased LGBT-inclusive content in defiance of the spectre, students in particular bore witness to the spectre. This was apparent in reports of their teachers' trepidation, disengagement and distraction techniques when LGBT-related content was raised.

Mark (a pseudonym), a regional NSW high school student, clearly articulated the ways in which students witnessed the spectre as it entangled their teachers' subjectivities, and subsequently resulted in the foreclosure of LGBT-related content in their classes. Noteworthy too, is Mark's inevitable participation in this assemblage, ensnared and implicated by his teacher-becoming-spectre, and forced to reframe, or at least reconsider, the boundaries of appropriate school conversation:

Mark	I think it's one of those things that teachers feel they're not meant to talk about often, and I think they seem to kind of shut down if it comes up….It just seems like no one wants to talk about it. Not sure why. In school and in class where everyone's open about everything else – I sit there with my biology teacher and talk about politics to her. So, I don't know; it just seems strange.
JU	Do you think those fears might have something to do with parents, or what students might say?
Mark	Yeah…yeah…I don't know. Because like it's a Catholic school but then like in a lot of areas of the Catholic faith - there's a large portion of the community that don't actively go to church and that sort of thing, so I guess I doubt the backlash would be that big, but there could be something. If some parents found out they could take offence at it and cause all sorts of problems with the school…just call up and complain. Yeah, not sure.
	Later…
Mark	Most of the teachers would probably acknowledge its [LGBT-inclusive education] value, but, just like I said, a lot of them see it as a really taboo subject. But personally I think they'd acknowledge its value.

Mark describes his teacher-becoming-spectre in instances where student interest illuminates the potential of, and desire for, LGBT-inclusion and notes the lack of similar hesitancy in the context of other subject matter, even that which might be considered personal or polarising ("I sit there with my biology teacher and talk about politics to her"). Mark is clearly puzzled by this inconsistency – even as he,

too, is a participant in it, entangled and silenced as he appears to be by the spectre – particularly in light of his assumption that most of his teachers would acknowledge the value of LGBT-inclusive education outside of a public classroom space. His struggles to offer an explanation acknowledge how teachers-become-spectre within a relational spacetime assemblage, inclusive of official curricular in/exclusions ("they're not meant to talk about [it]"). Mark's speculation that, in all likelihood, most parents would not complain about LGBT-inclusions reiterates Bennett's notion of uneven topographies of power within material assemblages (2010, p. 24); the spectre's invocation is situational and its power localised, strong enough within educational contexts to foreclose on LGBT-inclusion within them ("If some parents found out they could take offence at it and cause all sorts of problems with the school").

Transforming the Spectre

As our discussion has illustrated, the spectre has very real implications for teachers and their (in)actions and thoughts related to LGBT-content and subjectivities in schools. We have written about the ways in which official documentation possesses 'thing-power' and how this informs teacher subjectivities regarding LGBT-inclusions. We focused on the effects of teacher-becoming-spectre (and spectre-becoming-teacher). Our theoretical considerations using a critical posthuman framing illustrate how the spectre is intimate and entangled with the teacher subject, executing a process of shaping and (re)forming, inclusive of the documentation that informs their work. In many ways, the spectre presents a fraught situation for those of us who seek social and cultural change for genuine equity and for those who champion the formation of understandings and celebration of gender and sexuality diversity. At the crux of such aspiration is the search for a more humane planet, which feels an elusive desire considering the seeming inescapability from the spectre that is always present, as dark matter and a compelling force, entangled and colliding with the teacher subject in myriad diffuse and particular ways. School education, which could light a way forward, seems almost hopelessly ensconced in the dark matter of the spectre and its effects.

However, we believe that other futures are possible. Although it is unlikely that the spectre as described in this discussion will be entirely vanquished and expunged from teacher consciousness, at least in the immediate or foreseeable future, other material opportunities that form competing knowledges are possible. While the spectre may be addressed by many reforms, we focus here on the affordances of revising policy and curriculum documentation to explicitly include LGBT-related content. We suggest that, over time, such unambiguous inclusions would contribute to the becoming of a different, and potentially equally forceful spectre, that could similarly entangle teacher subjectivities: a heightened awareness of opportunities for LGBT-inclusivity across all stages and areas of the curriculum and within the ordinary social practices of everyday school life. Indeed, the way that "components

are produced together in one on-going movement" (Juelskjaer, 2013, p. 755) through spacetime mattering, may enable the reduction of the power of this present dark matter from teacher subjectivities and everyday actions and slowly dismantle the normal/abnormal binary, expanding the range of multiple ways of being, both in schools and in the world at large.

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Chapter 14
Re-Thinking Human-Plant Relations by Theorising Using Concepts of Biophilia and Animism in Workplaces

Tonia Gray

Introduction

Sustainability is an amorphous concept that people are using in a myriad of ways (Washington, 2015). To date, organisations have used the Indoor Environmental Quality (IEQ) framework to assess aspects of sustainability in both a quantitative and technical manner (US Environmental Protection Agency [EPA], 2000, 2003; Wong, Mui, & Hui, 2008). In this chapter I seek to explore a broader sense of what sustainability might mean in the workplace by considering human well-being, especially in relation to workplace design. Specifically, by incorporating qualitative data, I attempt to delve into how biophilic or nature-based design may enhance human interactions by investigating especially human-plant relationships. This way of considering sustainability is a radical departure from a mechanistic IEQ view that focuses on factors like air quality metrics or ergonomic workstations as the barometer of optimum design principle, to consider how human-nonhuman relationships might influence worker well-being and the experience of the workplace, contributing to sustainability in a broad sense.

Building on earlier findings that signal the significant role plants and gardens play for advancing health and wellbeing in a variety of contexts, this chapter attempts to 're-think' office sustainability. This dimension of human-plant relations was an unexpected component of the study, and it resonates with the re-emergence of 'animism' as a way of thinking about human-eco-system relationships in which an 'animist' is one who believes that "the world is full of persons, only some of whom are human" (Harvey, 2006, p. xi). More broadly, posthumanism encourages us to consider how relationships are part of what makes workplaces sustainable for employees, not just relationships with other people. This discussion draws on

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insights from 'new animist' considerations of what anthropologist Irving Hallowell (1960) termed 'other-than-human persons' (see also Bai, 2009; Bird-David, 1999; Descola, 2013; Flowers, Lipsett, & Barrett, 2015; Pierce, 2015).

In the project, retrofitted biophilic design elements, especially plants and greater opportunity to interact with the natural environment, were introduced to a construction site office. In reconsidering these research findings, I was particularly interested in new ways of exploring data that was originally collected using a largely empirical lens. The initial data was quantitative and focused narrowly on links between measurable qualities of the environment and indicators of human sustainability like absenteeism and employee satisfaction. This chapter turns the researcher lens to revisit the qualitative data to look at the interspecies and human-environment interactions that cannot specifically be quantified but that no doubt influence the 'sustainability' of the workforce in a built space.

Underpinning my re-examination of the data is the acknowledgement that humans co-exist in multifaceted and complex entanglements with other animate and non-animate entities and materialities. These entanglements are the 'ecology of things' that Bennett (2010) refers to as the vitality of materialities. Further, Bennett (2004) suggests that 'thing-power' (in this instance, greenery from a biophilic office) has agential influence that "flow[s] around and through humans" (p. 349). From cross-cultural research in anthropology, we know that other societies more consciously thematise these relationships, often speaking about them in ways that we might call 'animism' (Bird-David, 1999). This chapter discusses unexpected human-plant interactions that emerged within the site-office 1 year after the study commenced, suggesting that we see elements of human-nonhuman interactions that are more than simple, dichotomous definitions find in human/nature binaries. The outcome suggests how relatively simple activities to enhance human-nonhuman relations can potentially create feelings of stewardship toward nature. The workers came to recognize the value including in their spaces 'other than human' living beings. This shift in emotional connectedness to plants disrupted normalized tendencies in workplaces towards the exclusion of nature, and in most cases a view of the exceptionalism of humans as dominating nature. Things that are most apparent in industries like construction.

Defining the Key Terms: Sustainability, Wellbeing, Biophilic Design and Productivity

Arriving at a universally agreed upon definition of 'sustainability' has been difficult. Kennedy (2015) believes the term 'sustainability' has often been misused in economic, social and environmental sectors, whilst Washington (2015) argues that the word has become so broad that it is either rhetorical or functionally meaningless. However, the most widely acknowledged definition of 'sustainability' is provided by the Brundtland Report (1987) that states, "sustainability meets the needs of the

present without compromising the ability of future generations to meet their own needs" (World Commission on Environment and Development [WCED], 1987 p. 43). The definition retains validity after almost three decades during which the environmental sustainability debate has included calls for a fundamental change in the way people think, value and act (Sterling, 2004, 2015).

Part of sustainability, however, is wellbeing, conceptualised here as dynamic, interrelated and multifaceted, rather than merely the absence of disease or infirmity (La Placa, McNaught, & Knight, 2013). In a holistic sense, wellbeing is a human dimension of sustainability including a range of systemic domains at the individual, family, community, and societal levels (La Placa et al., 2013). Wellbeing is linked to sustainability because human resources themselves must be used in ways that maintain or support human capacities if human-related systems are to be sustainable.

In this context, biophilic design is an innovative architectural movement that seeks to facilitate human wellbeing by learning from and creating human-nature encounters within the built environment; biophilic design principles, thus, derive from attention to natural environments and elements that support wellbeing. In short, biophilic design interconnects people and nature, both directly – through plants, water, and visual engagement – but also indirectly, by making built environments more like natural ones, for example, by deploying natural materials or avoiding overtly artificial elements where possible (Kellert, 2012).

In the discussion of sustainability and wellbeing, 'productivity' is a more complex consideration, as it is the ability to generate significant returns for input, not just in the short term, but also in sustainable ways that do not degrade human factors. In workplace design, the term 'productivity' can be more narrowly related to mental acuity, material output, or labour force efficiency. Within this study, however, productivity relates to enhanced outputs and functional capacity of the human capital. One of the fundamental insights of sustainability thinking, however, has been a broader understanding of 'productivity,' especially including the real costs of short term output in terms of externalities like environmental effects and human wellbeing.

Project Background

The research project on which this chapter is based was originally designed to consider economic, social, environmental, and personal 'sustainability', to see if biophilic design of office space supported improved productivity, health, staff attraction, retention, satisfaction, and workplace comfort in ways that could be measured. The recognition that office design can be demoralising is long standing; according to Sander (2015), philosopher Franz Kafka bemoaned, "time is short, my strength is limited, the office is a horror" (p. 1). Indeed, a site office worker in the construction industry may well empathise with Kafka's lament. Australia wide, thousands of temporary site office sheds can be found at various construction locations: prefabricated, uniform, and widely bemoaned. At least, they look like they are

temporary; for the workers who use them, however, they are *permanent* working spaces, albeit ones that move from site to site.

In 2014, the research team (see Gray & Birrell, 2014) in partnership with the Sustainability Manager at Brookfield Multiplex (BM), 202020 Vision, and the Nursery and Garden Industry of Australia (NGIA), developed a framework to pilot a smarter, greener workplace in demountable site offices that we thought would be more productive and conducive to wellbeing. The original research addressed the simple question: *Does biophilic design enhance office worker wellbeing, productivity and sustainability and, if so, how?* The practical steps taken to retrofit a small site office shed into a bespoke open space office with natural elements represented a new way of imagining sustainability. The long-term vision was to transform site sheds across the nation into comfortable, productive and attractive workspaces. Typical site offices were thought to have a negative effect on the desirability and human sustainability of a job; Davidson (2015) affirmed that "a third of respondents said that an office layout would affect whether or not they wanted to work somewhere" (para. 4).

The use of biophilic design in site offices is particularly dramatic given that the building industry is itself one of the most anthropocentric, where the human capacity to dominate nature is most pronounced. James Dunn (2015), in a recent story featured in the Australian Financial Review, indicates that the building industry is perceived as antithetical to environmental sustainability even offensive in its treatment of nature. The construction industry is often portrayed as guilty of environmental degradation and destruction. Progressive developers and builders, however, often make an economic case for green space: "They know why it matters, and in some cases, they are well ahead, in this understanding, of the people who are supposed to be driving planning policy" (Dunn, 2015, para. 10). On this pragmatic level, proponents of sustainable construction seek to advance an economic rationale for greening the industry, but our research revealed that biophilic design may have unintentional and more subtle influence in eroding anthropocentricity and expanding the types of entities routinely treated as social interactants.

The Research on Nature Within the Built Environment

A number of researchers have documented how nature, especially sunlight and plants, can positively influence human wellbeing (Burchett, Torpy, Brennan, & Craig, 2010; Dannenberg, Frumkin, & Jackson, 2011; Elings, 2006; Frumkin, 2001; Kaplan, 1995; Kaplan & Kaplan, 1987, 1989; Kellert, 2012; Kuo & Sullivan, 2001; Nielson & Hansen, 2007; Shoemaker, 2002; Wilson, 2001). Davidson (2015) reports, "greenery and natural light can boost workplace productivity by 6 per cent and increase employee well-being and creativity by 15 per cent" (para. 3). In spite these compelling metrics, most corporate employers still do not offer these simple amenities. As Davidson (2015) found, "47 per cent of office employees, said they

have no natural light at their workplaces, while 58 per cent have no plants in eyesight" (para. 5).

Interest in human-nature contact has increased markedly in recent years. A growing body of research documents the myriad of social, emotional, physical, and intellectual benefits. For instance, Berman, Jonides, and Kaplan (2008), Cha (2015), Dannenberg et al. (2011), Lewis (1973, 1995, 1996), Relf (1992), Ulrich, (1993, 2000a, 2000b), Ulrich and Parsons (1992) and Verderber (1986) have collectively identified the following gains: stress reduction; improved mood states; healing; attention restoration; development of perceptual and expressive skills; cognitive enhancement; and increased imagination. However, Elings (2006) emphasises that little is known about people-plant interactions or the mechanisms behind nature therapy.

Harvard biologist, E. O. Wilson (1975, 1984, 2001) argues that we are biologically drawn or 'hard-wired' towards nature. In industrialised societies people spend on average 90 % of their time indoors in built environments, and most often in cities (Kellert, 2005, 2012). These artificial settings seldom offer contact with nature or design based on natural principles. Biophilic design, in contrast, seeks to enhance human wellbeing by fostering connections with nature in the modern built environment. Featuring indoor-outdoor relations that mimic shapes and forms found in nature, biophilic design incorporates elements such as natural ventilation and building materials, plants, extensive natural lighting, views to the outdoors, restored landscapes, and natural landscaping such as courtyards (Kellert, 2005, 2013).

Seminal research conducted by Burchett and colleagues (2010) examined the effects of plant presence on negative mood states in building occupants. Their research was the first empirical study to use internationally validated psychological measures to assess the potential benefits of indoor plants. Of particular interest, Burchett et al. revealed that just one plant within the workspace can significantly enhance staff morale and simultaneously promote wellbeing and performance. The presence of plants correlates positively with worker productivity (Lohr, Pearson-Mims, & Goodwin, 1996), as well as large reductions in negative mood states and stress among building occupants (Dannenberg et al., 2011). Convincing evidence has encouraged the incorporation of green spaces in work sites.

Places can create a bond or connection between people, in what Doreen Massey (2005) calls the "thrown togetherness" of urban life (p. 140). Unfortunately for most site offices, biophilic design principles are not simply disregarded; humanist needs are also largely ignored. That is, site offices historically have been constructed in a uniform and mechanistic fashion out of habit, with little concern for how they influence the people who use them. Site offices are technologically determined: the properties of the construction materials and the demand to be demountable have determined their design, not attention to how they are inhabited or the experience of working in the space or their relationship to their sites. A closer examination of the prototype office shows how innovative design might facilitate nature-to-human interaction, the integration between office and place, and in the process, enhanced human-to-human interaction.

Methodology

A four-phase interpretative action research design was implemented to determine the benefits on workers of biophilic design within a site office. The data collection points during the first 12 months were as follows: Phase 1, pre-implementation interview with Sustainability Manager; Phase 2, qualitative data obtained from the re-cycling working bee post biophilic fit-out through interviews, observations and video analysis of site workers; Phase 3, qualitative data from in-depth interviews (n = 12) 2 weeks after introduction of plants to office; and Phase 4, qualitative data of human-plant interactions from in-depth interviews with nine participants 12 months following the introduction of plants to office.

Phases 1–3 were discussed in an earlier paper by Gray and Birrell (2014), but for the purposes of this chapter, Phase 4 will be described in further detail (for further background and photos of the pilot site offices, see the former paper).

Phase 4: Site Office Interviews 12 Months After Introduction of Plants

One year after the working bee, researchers conducted onsite interviews with the same ten workers to ascertain the medium-term impact of the biophilic design upon the workspace. Two workers had moved to another site location, so they were not included in Phase 4 data collection, and an additional question was added to explore human-nature relationships that had developed over the 12-month period since site office occupancy:

- Do you still have your 'desk-buddy' plant? If so, what can you tell us about it?

The name 'desk-buddy' is the plant chosen by the site-office worker as their desktop companion, the term chosen by the planner of the retrofit within the construction company. Each site office worker was solely responsible for maintaining their 'desk-buddy'; Fig. 14.1 depicts various examples scattered throughout the site office.

Discussion

The qualitative data identified several evolving themes: the distinctive and positive nature of the biophilic site office; the transfer of sustainable learning practices from workplace to home; the impact of external surroundings within the site office; and the role and impact of 'green space' in the workplace. Two themes will be addressed in this chapter: *high performance workplaces* and *the role of plants in the workplace*.

Fig. 14.1 Examples of 'desk-buddies' scattered throughout the site office (Author's photograph)

High Performance Workplaces

Most respondents noted an overwhelming positive difference between previous site sheds and the present one: "For me this is the best office that I've ever worked in, so an 8 or a 9 [rating out of 10]"; "…my last site, I didn't want to go to the office. So out of 10, it [the previous office] would probably be 3".

The new design was rated by users as superior to previous site offices; previous offices averaged a 5.5/10 rating whereas the new design averaged 8.5/10. Interestingly, these workers have transitioned together from one site to the next, and

they all agreed regarding the enhanced office space. The noticeable improvement represents a significant gain in worker satisfaction as a direct result of the retrofitted site office design. This was reinforced by workers' comments that their previous site offices were 'aggressive', 'stark surroundings', 'sterile environments' and 'stale kind of environments'. As one worker told us:

If you look at most site offices, they're fairly cold, harsh, walled sort of environments, and that's not the sort of environment that's conducive to really collaborating well.

In contrast, many viewed the retrofitted site office as increasing social capability and projected quite different emotional tenor to the space. Several workers referred to a 'softer feel' of the place, and one also linked this change to 'softening interactions' that now took place in the site shed. These interactions included improved communication between younger and older workers, between the more and the less experienced members of the team:

> [It] gives me an opportunity to speak to different people. I'll just walk past someone, and I'll think to myself, 'maybe I can ask this person'. You know, because you get an opportunity to see people in their open area … kind of feels as though everyone's on the same level in that sense.

The subjects we interviewed asserted that spontaneous collaborations occurred more in the redesigned office site than in traditional site offices. The prevailing view was that the social interactions expedited problem solving across teams:

> …to have that opportunity here in the office where they can grab someone, ask a questions,… the problem can be solved in five minutes rather than let the problem be ongoing for a couple of days before they bring it to the attention of the design team.

Quite clearly, the open space design plan heightened social interactions and acted upon the office inhabitants whilst the range of smaller "break-out" meeting places assisted teamwork and collaboration. Rather than simply an inert space, the site office exerted its own influence upon those working in it, changing the way they interacted with each other.

> There was more room – that was definitely a bonus. I came from a previous site where our site shed was quite limited, and there wasn't really a lot of room to kind of set up and have an area to work with… We also didn't have a lot of meeting rooms, … we would walk outside to talk on the phone.

From natural lighting, furniture made with natural materials, white painted walls, and carpet, to open windows and hearing bird sounds, all of the interviewees indicated different positive attributes of the unusual biophilic retrofit to the workspace. Early accounts from the qualitative interviews also suggest that this space increases social capacity and collaboration, and may lead to gains in productivity that are explored in the longer research project. The material space influences inhabitants and this relationship subtly biases the way that they interact with each other.

The Impact of 'Green' in Workplaces

From the perspective of feminist philosopher Karen Barad (2008), a posthumanist account:

> …calls into question the givenness of the differential categories of 'human' and 'nonhuman,' examining the practices through which these differential boundaries are stabilized and destabilized (Barad, 2008, p. 808).

A focus on performativity explores how categories that may appear distinct in representation actually are tightly linked or even unstable in practice, such as in the day-to-day interactions of people and plants in a site office. These relations seem especially emotionally charged, exercising influence, not so much on self-representations, but upon individual's moods, satisfaction with their work, and the tenor of their interactions. From this particular case study, the dominant effects fell into three categories: (1) aesthetic appeal of the green office space, (2) emotional bonding with nature, and (3) a change in the social dynamics of the space. In the most dramatic examples, we find evidence of an almost animist imagination that attributed dimensions of social personhood to plants, hinting at the possibility that biophilic design might even catalyse incipient attitudes of nature stewardship and cross-species connection. Although it would be easy to dismiss this imputation of animist agency to plants as merely a figure of speech or metaphor, the very fact that green offices *do* have empirically measureable effects on workers' wellbeing and productivity highlights the need to take seriously nonhuman agency.

Aesthetic Appeal

A common and recurring theme to emerge from the study was the aesthetic appeal of the green office space and its emotional effect on workers and visitors:

> As you walk into our office from the front gate, you notice something different because it's got that vibe … you're kind of secluded away … you don't really know what to expect, and then you walk in, and I think it looks a lot more, I don't know, modern and relaxing. I'm not sure what words to use, but it's different in a very positive way.

A similar observation was made by a fellow worker:

> When I walk to my desk and you see plants, you know it's just different. You don't feel as though you're indoors the whole day if that makes sense. You can look outside, even windows make a huge difference to what I experienced in the past.

Subcontractors, also known as 'subbies', described the office was an 'oasis' or a beautiful jungle:

> What did I think? I thought, wow, there's plenty of plants in here – very different for a site office. I thought it looked really good.… our subbies come in and have a meeting with us, and they go, 'geez, where did you get all the plants? It looks amazing'.

Fig. 14.2 Greening of the site office (Author's photograph)

In all of these cases, workers responded to the material differences of the office space with a range of emotions: surprise, relaxation, a sense of freedom, and aesthetic appreciation.

One irony is that construction workers, tuned by their trades to appreciate skill in construction, are typically housed in ugly, utilitarian site offices. Their own need for healthy work spaces is disregarded even as they construct other people's future workspaces. Our interviews suggest that they strongly appreciate the aesthetic dimensions of biophilic design and feel engaged emotionally by the space (see Fig. 14.2 Greening of site office).

Emotional Bonding

The pattern of emotional caring and connection to nature is articulated by writers such as Barrett and Wuetherick (2012) and Birrell (2006). In particular, Birrell (2006) remarks:

> …what begins as a brief encounter, the first rudimentary beginnings of a relationship, then proceeds to develop into a deeper relationship, characterised by increased levels of intimacy (Birrell, 2006, p. 288).

Over the first 12 months of the study, the affective relationship triggered in site office occupants in various ways began to build into individualised relationships: workers especially expressed an evolving intimacy, familiarity, and closeness with their plant 'desk-buddy'.

To enhance 'human-plant' interaction, at the beginning of the study, each site worker was designated a plant as a "desk-buddy" (See Fig. 14.3: Plant "desk-buddy"). The sustainability manager thought that a plant for each workers' desk

Fig. 14.3 Plant “desk-buddy” (Author’s photograph)

would be a pleasant addition to the space and gave the name humorously, not realising the degree to which it would become an emotional reality.

This novel supplement to the bespoke green office space design was remarkably well received by the workers. The individualized plant, for many workers, took pride of place in their personal workspace:

> I was pleasantly surprised in what the little desk mates, the little desk plant, I didn’t think we were getting those. I thought we were getting just a few big plants scattered around the place … so it was much more than I was expecting.

In the most examples, the human-nature interaction with the ‘desk-buddy’ led workers to assign names and personalities to their plants:

> The guys onsite started naming their plants. There was ‘Battler’ who didn’t get watered very often by his very busy foreman owner.… The plant was affectionately referred to as the tenacious fighter who was often revived with a little TLC.

Other identities or personas where bestowed to their ‘desk-buddies’ (see Fig. 14.4):

> “Ellen” was the talk of the office for her amazing height and beauty. Many threatened to hijack Ellen, and her owner thought the others were jealous as their plants weren’t quite so green and lush.

The greenery from the biophilic office can be seen to have agential powers that flow around and through humans, described by Bennett (2004) as ‘thing power’. This concept led us to notice how the presence of plants has transformed inhabitants’ relationship to the space. The fact that some of the workers were elaborating upon

Fig. 14.4 Ellen the tall and willowy "desk-buddy" (Author's photograph)

the anthropomorphising suggested by the concept of 'plant buddies' shows the degree to which they intuitively made sense of the implication that they had an individualised relationship with at least some of the plants in their space. Additionally, some office cadets decided to 'play' with the plants' 'thing-power' and include cut-out paper animals in the planter boxes. In their view, from their human-plant interactions, the new elements suggested a 'tropical jungle' feeling created by the greenery, suggesting that they were aiding or endorsing the way that the plants were redefining the nature of the space.

Another respondent remarked on his high stress levels in his previous job in contrast to the mood altering aspects of the site office plants. The same worker identifies his own personal sustainability need for natural surroundings in the workplace:

> But I do enjoy having them [the plants] now; I think it's really nice. I'm not super-stressed at the moment.… I think natural light is really important; it's one of my favourite aspects whenever we're working on a job and designing a job. I think it's important.… I really like the plants as well. I actually like the deck. I like there's just a bit of a garden bit out the front; when you're out there on the front, it's nice. It's nicer than what I'm used to.

Others were a little more measured in their response about whether it was the greenery or the office space design that influenced them:

> To be honest, I'm not sure about the plants themselves, in terms of helping stress levels. But definitely windows and sunlight. Even like my desk, it is next to a window, and just opening the window and hearing the outside noise helps, hearing the birds … it lowers my stress levels.

When questioned about the meaning of the 'vibe' in the office, this worker explained:

> I'd say 'energetic' would be one word: relaxed, calm, enjoyable. You know, this is probably the best, yeah, probably the best office I've worked in.

A fellow worker offered the following three-word summation of the 'vibe': "Upbeat, positive, enjoyable".

Similarly, the extent to which the plants contribute to worker experiences is not entirely apparent. From other interviews, the workers undoubtedly thought that the plants were having an impact, whether overt or covert; rather than simply trying to measure that effect, exploring it qualitatively, listening to the implications of their statements, helps us to see the more subtle ways that the design transformation facilitated imagining new relationships with plants by the workers.

Change in Social Dynamics

The third theme to emerge from our study was that the innovative design facilitated or enriched human-to-human interaction:

> I think there's a good vibe in the office, everyone likes working here… So whether that's because everyone's collaborating well so they feel comfortable coming back to the office, or they want to come back to the office because it's a good space. I've certainly noticed on some other jobs, the foremen in particular, they will eat their lunch away from the office.

Invariably, green workplaces matter to workers who inhabit them, perhaps more so to those who dwell in temporary spaces such as site offices. The retrofitted site office and the plants themselves contributed to a changed working environment:

> When you look up and see a bit of greenery around, it kind of reminds you you're in a kind of living environment … We're working long hours though; I'm sure it does help though, just not being such a stale kind of environment … Anything that's natural, anything natural that's I suppose growing and changing every day.

And another observed:

> It definitely takes away that sort of sterile environment that you sort of get in a lot of offices … you walk in and it doesn't feel like your standard office.

As another observer remarked, the degree of transformation brought about by the biophilic design elements and plants is particularly dramatic given that many of these elements were so inexpensive or constructed from up-cycled refuse on the building site itself. That is, the effect was not being achieved by substantially increasing the cost of the space, but by the reorientation of design principles and presence of natural elements.

Conclusion

People live and work in environments alienated from the natural world, contributing to disaffection and disrespect for other species and inability to perceive the important interconnections within our ecosystem. Our estrangement from nature has ramifications for environmental health as well as human wellbeing (Frumkin, 2001). Consequently, re-thinking sustainability in corporate Australia during these precarious times is a major challenge. Organizational change, particularly the attempt to transform sustainability perspectives into changed practices, represents an urgent call to action. Unsustainable workplaces cost corporations, not only in economic terms, but also by wearing down or insufficiently improving their social and human capital. These costs are borne by the company, as well as by the broader society in terms of wellbeing and health. According to Kennedy (2015), there is a "move internationally towards conscious capitalism, which asks businesses to focus on the totality of their activities and the impact of those activities" (p. 1).

This study has attempted to explore, on a small scale, how humans can be moved towards living with plants as stewards and shared residents of space, rather than being so dominant as to exclude all other species, a pattern found in many workplaces. In a limited set of cases, this research shows how human-plant relations has shaped workplaces, insinuating in their users the recognition that humans are but one of the many species co-inhabiting this space. In this "thrown togetherness" of urban life (Massey, 2005, p. 140), I believe that these types of human-nonhuman relationships are a small but important step towards recognising our interdependence, an intervention in the construction of human environments that can nurture greater ecological awareness.

In part, this study disrupts the dominant anthropocentric approaches to economic, social and personal 'sustainability' to include more holistic aspects of human interaction with nature in workplaces. In the past, workers in this study have been housed in provisional 'match-box-sized' site offices for the duration of construction projects that reinforced their alienation, from each other and from nature. In this case study, aspects of open plan design and green interior spaces were purposely infused into the newly devised bespoke office site. Earlier research has indicated companies who nurture human capital through biophilic office design are ultimately more appealing than ones that focus exclusively on short-term financial gains. This research shows that occupants clearly support the newly introduced green design elements; they could enhance the workers connection to nature, support collaboration, improve morale, and mitigate against stress. In short, because natural elements act on workers' moods and forms of interaction, biophilic-designed site offices are linked to social benefits, including cooperation and collaboration, and to positive psychological effects, such as improved workplace satisfaction and higher morale.

But this chapter also specifically revealed a surprising theme from the qualitative data, a suggestion of more subtle forms of human-plant interaction, including individualised plant-human relationships and their emotive effects. These effects show that, with only a slight suggestion, workers were encouraged in some cases to

construct relationships with individual plants that support forms of animism or emotional connectedness to plants. These new forms of human-nature relations, expressed through a desire to connect plants, although still anthropomorphic in nature, could be viewed as steps towards a disruption of dominant views in construction industries that focus on the exceptionalism of humans. These human-plant relations are also especially intriguing because they may lead to shifts in the relationship of workers to the natural world beyond the office, a necessary shift in awareness for sustainability.

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Chapter 15
Deep Mapping Towards an Intercultural Sustainability Discourse

Angela V. Foley

Introduction

Four turning points led the development of today's sustainability discourse. Firstly, Thomas Malthus expressed concern about population and resources in 1826. Secondly, in 1962 Rachel Carson worried about environmental impacts in *Silent Spring* (Carson, 1962). Then, on 26 April 1986 when a nuclear reactor accident in Chernobyl was shown to have global distribution of its radioactive fallout, bans were adopted that affected sheep farms in England's Cumbria by 20 June 1986 (Wynne, 1989). An epistemological shift was now clear; the risky undertakings in one place were unpredictably volatile and the negative effects could spread regardless of age, income, or political and geographical boundaries. Later, the United Nations' incorporation of sustainability into the international environmental legal structure as Agenda 21 in 1992 ensured that the shared environmental precariousness of our times could not be ignored.

Gradually, sustainability narratives of global proportion became familiar, even commonplace in the rhetoric of modernity. We live in interconnected risk societies (Beck, 1992) whose sustainability discourses often describe these times as precarious and unsustainable. There is an industry to do the necessary calculations: measuring overpopulation, ecological footprints, the carrying capacity of land, the relationship between air pollution and human health, the rate of species extinction.

Sustainability discourses call for due but cautious attention from educators and educational researchers; after all, the term 'sustainability' itself has come to have hundreds of definitions (Dobson, 2000 as cited in Bonevac, 2010, p. 84) and has been criticised as being a "plastic word" capable of meaning just about anything (Porksen, 1989 as cited in Mitcham, 1995, p. 322). Sustainability narratives press

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upon educators to attend, not just to the slogans, policies, quantifications, and apocalyptic messages but to deeper situated meanings such as the politics of language, difference and complexity (Gough, 1998; Gough & Gough, 2003; Tuck & Yang, 2012) and the need to disrupt colonialist epistemologies (Whitehouse, Watkin Lui, Sellwood, Barrett, & Chigeza, 2014).

Sustainability discourses are the situated by-product of our times, and like all discourses, they all contain representations and systems of meanings (Howarth, 2009, p. 311). In this chapter I engage with the loaded sustainability concept from a position at the edge of post-qualitative research (Lather & St Pierre, 2013 as cited in Somerville, Chap. 2). This chapter re-imagines sustainability in precarious times by focussing on the undercurrent that exists in all sustainability discourses and the back-stories of particular places. The discussion that follows concerns questions expressed elsewhere about colonising discourses (Gough, 2000; Gough & Gough, 2003; Rose, 2004) and blind spots in environmental education research and policy (Gough, 2002, p. 22; Hursch, Henderson, & Greenwood 2015; Madden, Higgins, & Korteweg 2013; McKenzie, Bieler, & McNeil, 2015; Tuck, McKenzie, & McCoy 2014).

In this case, I am concerned with how the environmental sustainability discourse's embedded representations and systems of meanings work in Australian 'postcolonial' times in Australia's urban places. The aim here is to consider three compelling contemporary urban concerns, namely decolonisation, biodiversity, and urban development and their place within the Australian sustainability discourse. It is an attempt to step towards an urban intercultural sustainability discourse.

Does the Sustainability Discourse Connect with the Decolonising Australian Discourse?

The largest scale of the sustainability discourse is generally presented at the 'world' level (Folke et al., 2002) and increasingly, through the global concept of the Anthropocene (see Greenwood, 2014; Nordic Environmental Social Science Conference, 2013). For this chapter the 'nation' scale of Australia takes precedence over larger scale world views to consider how sustainability discourses connect with Australia's decolonisation discourses. While these decolonisation discourses are related to important international discourses (e.g. United Nations Declaration on the Rights of Indigenous Peoples and the 2011 Third International Decade for the Eradication of Colonialism) and I am mindful of critical work which shows how readily decolonisation is misused to privilege whiteness, attempt to reconcile settler guilt and complicity, and rescue settler futurity (Tuck & Yang, 2012, p. 3), I am looking for Australian decolonisation discourses as they can be encountered in Australia's second largest city, in everyday urban Melbourne. I mainly looked for performances of reconciliation and education and in environmental sustainability contexts. However, whatever the form of these discourses, they are not easy to find.

In Australia, the most conspicuous expression of connection between decolonisation and sustainability discourses is found mainly in reference to remote areas in relation to resource management and tourism (see Altman, 2003; Department of Industry, Tourism and Resources, 2007; Howitt, 2001; Langton & Longbottom, 2012; Preuss & Dixon, 2012).

Indeed, Australia's post-contact relationship with nature is still evident in today's Melbourne. Our long history of attempted erasure of indigenous (local) biodiversity in the state of Victoria was established at contact[1] (Dunlap, 1997) and now emerges in contemporary sustainability discourse in recognition of the multiplicity of threats to Australia's biodiversity (National Biodiversity Strategy Review Task Group [NBSRTG], 2010). I understood the impact of European settlement on local (indigenous) biodiversity in ecological terms related to genetic diversity (plants, animals, and micro-organisms), species diversity (the variety of species) and ecosystem diversity (variety of habitats, ecological communities and ecological processes) until I needed to learn how to acknowledge Melbourne's traditional owners through my role with a small environmental organisation in Melbourne's north, Merri Creek Management Committee. While I had some acceptance of the unfortunate impact on biodiversity as part of the early European struggle to acclimatise to Australian conditions (Anderson, 2002) the difficulty to accept the ongoing Australian preference for introduced species as a social norm became complicated. It is not difficult to conceive of Australia's pervasive cultural commitment to introduced species as political and determined.

I did not link my environmental knowledge as a geographer, environmental campaigner and educator with decolonising ideas from anthropological, archaeological and historical sources until I began to connect with local Aboriginal people in my working life and reconsidered the Australian history of suppressed Indigenous stories (Reynolds, 1981, 2000, 2013; Stanner, 1968).

As a non-Indigenous author I note here my departure from others' research to relate decolonisation to sustainability (see Ens, Finlayson, Preuss, Jackson, & Holcombe, 2012; Howitt, 2001) not only through my inclusion of an experimental research strategy using arts-based inquiry (Finley, 2008; McNiff, 2008; Somerville, 2007, 2010, 2013) but on my urban focus in Melbourne. This arts-based approach was essential to help me to muddle up biodiversity knowledge with Aboriginal presence in Melbourne and deep map the possibilities for an intercultural sustainability, that is, accept layers of knowledge and tease out connections between two relatively separated spheres of my knowledge: local Wurundjeri stories, past and present, and indigenous biodiversity. This next section attempts some synthesis using several sources of visual material to explain and present a re-knowing of urban landscapes in urban Melbourne.

[1] Edward Wilson (1813–1878) formed the Acclimatisation Society of Victoria (ASV) in 1861 ignoring Australian biodiversity and introducing into Australia large numbers of plants and animals to remind migrants of their home country.

Seeing More to Know More: The Powerful Role of Visual Images

I came to decolonised sustainability questions through biodiversity conservation projects in landscapes around Merri Creek in Melbourne's north. Initially I had no appreciation that I was on Wurundjeri Country and placed myself and my work in relation to the water catchment of the Merri Creek. There was little to go on to ask what the contemporary socio-cultural and Aboriginal connection to indigenous flora and fauna was. This meant being prepared to work towards this question from the margins of my knowledge and available sources. From this distant research place I was provoked by Victorian Wathaurung artist Bindi Cole's photograph, *Am I black enough for you?* (Cole, 2007). The image shows Bindi Cole with six family members, formally facing the camera for a portrait in a typical suburban lounge room wearing casual clothes, plus blackened faces and red headbands (Cole, 2008). *Am I black enough for you?* overtly plays with more grounded ongoing talk about Aboriginal status, identity, and belonging in relation to all other Australians. Its place in the racial controversy at the time[2] connected to the highest levels of legal discourse (Soutphommasane, 2015) but remains highly significant, especially as a statement of troubled coexistence in the contact zone of contemporary suburban Australia where over 70 % of Aboriginal and Torres Strait Islanders live in urban locations (Australian Bureau of Statistics [ABS], 2010).

Asking, 'What does *Am I black enough for you?* bring to sustainability discourses?' is a question from the contact zone (Pratt, 1992; Somerville & Perkins, 2003), the place where Aboriginal and Torres Strait Islander people meet the rest of Australia.

Am I black enough for you? demands recognition of urban Aboriginality and, since there were so many nineteenth and twentieth century restrictions affecting cultural continuance for Aboriginal Victorians (Boyce, 2012; Broome, 2005), it is understandable that along the way and into today's suburban lives, any 'traditional' knowledge of Country[3] has barely survived. In light of the ongoing weak state of contact between Melbourne's Aboriginal people and the mainstream society and the widespread love affair with introduced species, it is difficult to encounter Wurundjeri Country. It is also not surprising that when those (mainly) non-Indigenous people who are protective advocates of indigenous biodiversity meet traditional owners in the contact zone, today's Wurundjeri thank them for looking after Wurundjeri Country (Merri Creek Management Committee, 2010).

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[2] "Bindi Cole … was one of several prominent Aboriginal people who sued columnist Andrew Bolt for racial discrimination in 2011. The Federal Court found that Bolt breached section 18C of the Racial Discrimination Act in two articles that implied fair-skinned people who identified as Aboriginal did so for personal gain" (Moodie, 2014, para. 2).

[3] 'Country' refers to the Aboriginal and Torres Strait Islander concept of belonging (see Rose, 1996). It is used here to acknowledge Australia as Aboriginal Country; Australian places such as Wurundjeri Country which locate traditional owners; and to encompass associations between plants, animals, soil, air and people and their place in forming identity.

Arts-Based Inquiry: Confluence of Places and Knowledge

As Bindi Cole's work demonstrates, images (which are after all mute actors) can be very helpful in disturbing enduring and legendary silences in the Australian contact zone (see Auty, 2005; Stanner, 1968). The development of my own visual material in Wurundjeri Country has been critical to support conversations in shared places of connection and contact with the Wurundjeri community. The development of art prints reanimated 'known' places in new ways for me, added data, raised questions, and required learning about how emergent knowledge in non-Indigenous research needed consideration of Aboriginal cultural protocols. Making prints helped me to localise and contemporise links between cultural and natural worlds and accept different forms of knowledge without the need to resolve them. Even volatile places could just be.

When I created *Confluence* (2011) I made an image showing the confluence of the Yarra River and Merri Creek just outside Melbourne's CBD which I had initially understood in recreational and ecological ways. Through the making of *Confluence* I integrated my developing intercultural knowledge in recognition of the Wurundjeri community and the contemporary social reality in that part of Wurundjeri country (Fig. 15.1).

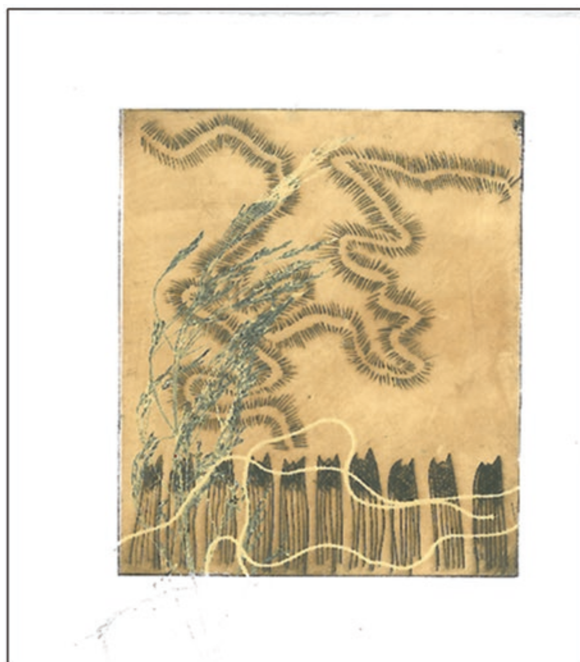

Fig. 15.1 *Confluence* Drypoint etching with chine colle and embossing (November, 2011). Source: Angela Foley. Australian Print Workshop, Fitzroy, VIC)

When I first came to visit this confluence area it was known to me only as Dights Falls, a wonderful bushy place four kilometres from Melbourne's central business district. It is popular for picnics and walking and an important refuge for birds in drought affected times to enjoy where the Merri meets the Yarra River. However, this confluence area also has an array of embedded pre- and post-contact histories. Some of this background was captured in nineteenth century sketches of boats and busy, early commercial Melbourne. Wurundjeri readings of early times here are tightly held in painful stories of settlement encounters.

I am not occupied with that story in *Confluence*. Instead, the embossed plant symbolises the colonisation of early indigenous grasslands and the effects on valley flora and waterways. Traces of this ecological story, of ecosystem change through the introduction of foreign species are suggested through the plant's impression and green stain.

The fine creamy waves are embossed from commercially made string and laid low in the image against the etched tips of Lomandra leaves which refer to Wurundjeri use of these particular indigenous plants for twining which is still practised today. The print's construction of the winding etched waterways and confluence used burnt umber colouration and recalls early stylistic cartography. The whole image is in fact, an integration of place knowledge using waterways, plants, and cultural references to form a coded production of deep mapping (Lee, 2010; Somerville, 2013).

In the re-imagining of sustainability in precarious ecological, cultural, and urban development terms, deep mapping in this pictorial way is a useful and expressive tool. *Confluence* is not simply information synthesis and interpretation. It is also a departure from solely text-based research that typically dominates inquiry and is suited to this twenty first century global era of visual communication. *Confluence* is a social, spatial, temporal product of place in Wurundjeri Country.

Now I turn to Melbourne's future and the idea of 'ecosystem services', which forms a different confluence of thinking and knowing and is an important recent addition to global and local sustainability discourses.

Other Confluences: Rapid Urban Development in Melbourne and Expectations of Biodiversity

On a hot evening in early 2014 I joined a packed public sustainability presentation from visiting Professor Thomas Elmqvist from the Stockholm Resilience Centre promoting *Urbanization, Biodiversity and Ecosystem Services: Opportunities and Challenges* (Elmqvist, Redman, Barthel, & Costanza, 2013) and a scientific report linked to the centre's research recommendations outlined in their *Cities and Biodiversity Outlook – Action and Policy* (Secretariat of the Convention on Biological Diversity, 2012). The presentation comprised a compelling set of data to predict and model a tsunami of immense and rapid worldwide urban expansion over

the next three decades. Afterwards, on checking their website, I saw their own mapping directly into Melbourne's local areas. I learnt more about the ecosystem services concept for the first time – how nature services people. The website described how trees and plants were producers of oxygen, capable of providing a cooling effect beyond just shade. It noted that in cities, green expanses like parks can ameliorate the albedo effect where heat is trapped in materials like concrete and bitumen. It did not acknowledge indigenous biodiversity. This presented questions: To what extent would the global modelling framework ride roughshod over local initiatives that tried to protect *indigenous* biodiversity? How could global perspectives appreciate local nuances? Might a globally oriented sustainability initiative focus on a particular construct of ecological values and miss other values?

I reconsidered the UN's ecosystem services scenarios related to urban development pressures and food. Without intact indigenous biodiversity the ecosystems essential to all food production are jeopardised. Consider current extreme biodiversity threats associated with the animal kingdom in *Eight Animal Plagues Wreaking Havoc Right Now* (World Science Festival, 2014) and the implications upon food chains.

With relief, I recall one positive local urban biodiversity site amongst the Merri Creek catchment's renowned indigenous biodiversity which hosts bees and enables honey making in a time of bee colony collapse. This signals the connectivity between our human and more-than human partnerships: bees, indigenous flora and fauna, waterways, food, people. Undoubtedly, few honey producers can say that they are producing honey on Wurundjeri Country or appreciate that intercultural eco-social reality. Where that recognition of Country is growing though, it is in very piecemeal ways and any benefits of integrating intercultural knowledge into the Merri Creek sustainability discourse is yet to emerge.

I argue that the *Confluence* print contributes to imagining that conversation and articulating further scenarios. While other writers explore urban imaginings for a decolonised approach to sustainability (Ens et al., 2012; Howitt, 2001) my arts-based data contributes differently. As an experimental research strategy (Finley, 2008; Somerville, 2007, 2010, 2013) *Confluence* helps to envisage what is lacking in dominant sustainability discourses and consider how new imaginative interdisciplinary efforts can support recognition of our differentiated cultural and landscape places.

In making another art print, *Writing from the Wings*, I came to appreciate the complex human and more than human presence in remnant grasslands in the once vast bioregion of the Victorian Volcanic Plain near Melbourne's Merri Creek (Fig. 15.2).

In *Writing from the Wings*, the critically endangered Golden Sun Moth reappears depicted as a part of a necklace that floats over the tiny grassland refuge close to Merri Creek in the recently renamed Galgi ngarrk, (Wurundjeri's Woiwurrung language meaning 'mother's backbone'). Galgi ngarrk is innately of Wurundjeri Country, its grassland and creature's survival dependant on caring community-based environmental advocacy and related planning interventions.

Fig. 15.2 Author at work producing *Writing from the Wings* (2014) (Source: Angela Foley. Australian Print Workshop, Fitzroy, VIC)

My images occupy lesser known everyday spaces and are intended to reveal an intercultural urban Australian tale of place. They are part of our shared racialised relations which materially occupy an imagined 'divide' between 'urban aboriginal and traditional Australian Aboriginals' (Fredericks, 2013, p. 4–5) and function as Howard Morphy (2008) explained in *Becoming art: Exploring cross-cultural categories*:

> …material culture – however it enters the discourse of art – is an important source of evidence … to better understand the social conditions and historical interactions of the time of their production (Morphy, 2008, p. 177).

The third image, *Writing from the ground up* was made after nearly 2 years involvement in the Wurundjeri Tribe Land Compensation and Cultural Heritage Council's koorong (canoe) project. I entered the print studio to think through Country and reflect on the "inseparable connection between body and place" (Somerville, 2013, p. 59). The new print is a 'deep mapping' (Heat-Moon, 1991; Lee, 2010; Somerville, 2010) of that koorong-making experience. The print's embossing with weeds, shabby torn permit excerpt, blue shape replicating the scar on the eucalypt after the bark was taken and the Plenty River's path through all this brought together elements which none of the hours of video footage or thousands of photos taken on the making day contained. It is a work of integration and sense making producing unity out of complexity in my intercultural experience of the contact zone (Fig. 15.3).

Considering how sustainability discourses work as images or written stories of place, sharing and volatility, what is the position of Aboriginal meta-narratives in sustainability discourses? D'harawal Elder Aunty Fran Bodkin's stories of cycles and seasons (see Bodkin in this publication's Preface) is a culturally specific understanding of one's *relationship* to the land and cannot be wholly represented through the western terms that dominate sustainability discourses: climate, land, place, resource, region, etc. Australian Aboriginal views of belonging to landscape and

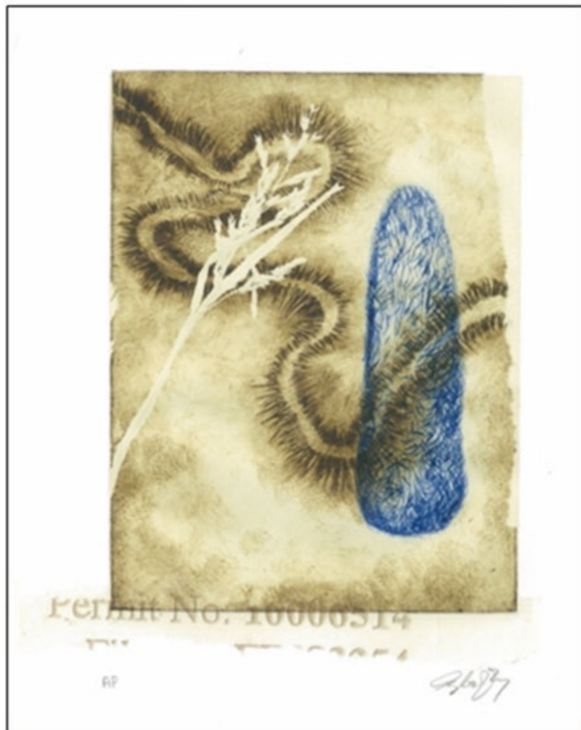

Fig. 15.3 Dry point etching with chine colle (Source: *Writing from the ground up* (2012). Angela Foley. Australian Print Workshop, Fitzroy, VIC)

wilderness have ancient and distinctly different lineage when compared to other linked Australian concepts (Rose, 1996). Is Aunty Fran Bodkin's story of land, water, and fire both a story of Country and Greater Western Sydney? How does her story of place, sharing and volatility inform other distinctly mainstream and western sustainability discourses such as those wed to the ecosystem services concept which may increasingly underpin Australia's urban development?

Aunty Fran's story and its potential contribution to sustainability discourse reflects the important budding shift of the sustainability discourse, and the new ways of being, thinking, and acting in recognition of the human entanglement in the fate of the planet (Somerville, Chap. 2). Korteweg and Oakley (p. 141, 2014) point out that "it is these Indigenous peoples who are the eco-heroes in their land, and non-Indigenous people have never been in a place where we needed their stories, good relations and land education more than right now".

Turning further south now, the question of how decolonisation connects to sustainability discourses is examined further in Australia's second largest city of Melbourne with a population of around four million people. The goal is to explore how nature is being constructed in the sustainability discourse and how this sits with the Aboriginal and Torres Strait Islander idea of 'Country'/caring for Country in local and urban terms.

Country in the Contact Zone

Cooperative understandings between Indigenous Australians and mainstream others in the sustainability literature is set largely in the realm of environmental and economic management and most of that discussion refers to remote areas in the Top End and Central Australia (see Altman, 1987, 2003; Jackson & Morrison, 2007; Memmott & Long, 2002). This trend for remote sustainability practice reflects a form of sharing Country through initiatives such as sustainable economic development through tourism, the recognition of traditional ecological knowledge (TEK) and 'two way' exchanges of knowledge about river systems, wildlife, and resource and land management.

Acknowledging Country in new sustainability contexts introduces the necessary ethical considerations for all decolonisation aspects of inquiry when we might otherwise not recognise the important epistemological and intercultural work needed to link ideas and build new knowledge. Indeed today's paucity of intercultural work in the urban sustainability context is built on post-contact, postcolonial understanding of colonial narratives, which preserve the severe interruptions to Aboriginal and Torres Strait Islander culture that occurred at and since contact. This is work that most of us, including sustainability educators, have not been trained to do and for which there is little established specific literature. This problem alone is what finds Australians in a specific quandary and is central to understanding what it means to live in precarious times. In Australia we are at a juncture of unravelling, albeit ad hoc decolonisation as well as on a trajectory of immense global escalation of urban development. In Pratt's (1992) terms, Australians find themselves doing place business as usual, working in a contact zone where we may or may not meet in social, geographic, and cultural spaces, where our Aboriginal and Torres Strait Islander and mainstream divisions are preserved or interrogated with difficulty. But now the terms are changing and the stakes are much higher.

Since Australia's Indigenous people are always linked with unique bonds to certain areas and specific places (Jackson & Palmer, 2015; Rose, 1996), the advantage of a decolonised approach to sustainability would be to orient the discourse towards both environmental and social justice interests. How can we get there? Is it helpful for Australians to acknowledge traditional owners, be able to name the Aboriginal or Torres Strait Islander Country we're on? What does sustainability mean in the Australian urban contact zone? I consider these questions by exploring how intercultural sustainability can be imagined in urban Australia and argue again for the valuable role of local, visual material amongst the written, word-based sustainability discourse.

Local Urban Places

The importance of place is linked in universal ways within environmental sustainability discourse (Gruenewald, 2003; Somerville, 2013). However, the consideration of place in sustainability discourse in Australia is of special importance when

made in intercultural terms. In particular, the intercultural idea of Australian place is distinct from, and unlike that for Canada, Africa, New Zealand and other places with colonised pasts because Aboriginal Australia consists of over 400 different language groups. These language groups were somewhat crudely but usefully mapped by research entomologist, David Horton (1996), to reveal 400 distinct 'countries' in Australia.

This means that, to some inviolable extent, the considerations that inform any Australian sustainability discourse are unique according to their position across so many different traditional owner language groups that make up Australia's First Peoples. There is no single traditional owner group to invite into mainstream sustainability conversations. To know whose Country that a newly planned development is in requires relationships, networks and a form of engagement that is inclusive. Can mixed methods of exchange support local sustainability decisions in the contact zone by combining text-based, story-based and image-based information?

Questions about sustainable urban futures become complicated when Australia's traditional owners are factored in. Which traditional owners do artefacts belong to when they are discovered during urban developments for freeways and housing estates? What Indigenous protocols and related laws affect urban development? What compensations are agreed to for Indigenous people for incurred losses? Most people are unaware of the cultural undercurrent of many developments in Melbourne and the related legal, archaeological, and cultural heritage requirements; the extent of compensation payments and Aboriginal observance of cultural protocols in urban places (see Wurundjeri Tribe Land & Compensation Cultural Heritage Council, 2012).

Sustainability Storylines in Summer 2014

I continue by localising and storying through two personal experiences in Melbourne 2014, summer stories with a possum, a heatwave, dust and maps. These summer stories and the connections between them marked a turning point in my concern about sustainability discourses. I wondered afresh about sustainability, our urban lives, and the tools being brought to imagine the future.

Story 1: Heatwaves

In Melbourne during January 2014 something unprecedented happened. For four consecutive days temperatures sat at the high end of 40 degrees Celsius. I was working at La Trobe University in Melbourne's suburbs, its campus spread out through hectares of bushland. I walked between the car park and the library across stretches of wooded open parkland with the dreadful hot winds swirling up dust and leaves. Passing the eucalypts and heading towards the concrete path and the brick wall, there on the edge of a dry public water tap sat a small possum. The creature didn't scamper, flinch, or shy away. Heat brought us face to face, together in place, in

cross-species connection and, I reckoned, in struggle about what another stinking hot day might bring. I emptied my bag to find a container, filled it with water, and placed it away among the parched earth beneath the trees. The creature moved towards the water and drank and I moved on to the air conditioned library.

Story 2: Greening Narratives and Impacts on Cities

A few weeks later, a study from Monash University described the 4 day heatwave and its effect on human health by mapping ambulance callouts (Tapper, 2014). The resulting 'human vulnerability index' showed the distribution of human risk to be higher around the least green urban areas and lower in the greener parts of Melbourne. I feared the onslaught of proposals that would recommend indiscriminate planting of introduced species. Some other initiatives that support Australian urban greening such as 202020 Vision (Bun, Jones, Lorimer, Pitman, & Thorpe, 2015) which aims to achieve 20 % more urban green space by 2020, promote the use of introduced species. Could some generic, industrialised greening be sold as part of the ecosystems services solution to address the human vulnerability index? As it stands, Australia already spends about four billion dollars per year on weed (introduced species) control activities and lost agricultural production. When does a well-intended 'environmental' initiative such as 202020 Vision connect its narrative to major threatening and costly biodiversity narratives such as that from the Australian Government on weeds? Where is the defence of and advocacy for indigenous biodiversity in leading sustainability discourses?

The Value of Story to Think into Country

What else might be jeopardised in a contemporary think-global-act-local sustainability campaign? Does Australia's hit and miss efforts towards decolonisation impact on these ecosystem services and 202020 Vision sustainability scenarios? With so much new scholarly work and ground breaking publications revising and presenting Aboriginal and Torres Strait Islander worlds of experience afresh; new commitments to educating our educators to provide Aboriginal and Torres Strait Islander perspectives at school; and general trends to acknowledge traditional owners across Australia, how might this all connect with sustainability discourse? Are the heatwaves, dust, biodiversity and urban greening storylines improperly disconnected from decolonising work across Australian education systems, health and conservation initiatives, economic development strategies and revisionist histories? The local storylines are intended to open up and imagine a world to interrupt that disconnect.

Although these few personal encounters of shared vulnerabilities in an urban heatwave help map some parameters to demonstrate the reality of precarious times,

they come from just one setting where the struggle to decolonise is highly variable. Sometimes Melbourne's traditional owners, the Wurundjeri people, are in high profile at public events like the football or leading Melbourne's celebrated Moomba Parade. But in the literature there is very scant material to understand or acknowledge the contemporary existence of Wurundjeri in Wurundjeri Country today. The storylines themselves bring to light a few of the multiple sustainability discourses, which are related undercurrents of decolonisation in urban Australia even if they sit queerly with other's stories that testify to contemporary forms of decolonising work across various disciplines (Fredericks, 2013; Jacobs, 2012; James, 2012; Nakata, 2013; Potter, 2012).

The question remains: how can there be an urban Australian sustainability discourse without a meaningful engagement with traditional owners? Illuminating this issue by referring to "natural *and cultural* resource management (NCRM) in northern and central Australia" (Ens et al., 2012, p. 100) enters into an intercultural sustainability imaginary concerned with knowledge, acknowledgement and voice that highlights broader issues about sovereignty and justice (Howitt, 2001). But it is far from our precarious metropolitan concerns.

Ecosystem Services: Values and Assumptions

What is the Australian sustainability agenda and what is the place of First Peoples in that construct? This is a question that helped me put together the table below (See Table 15.1) drawing on one contemporary sustainable development concept

Table 15.1 Comparing values in two sustainability narratives

Natural Resource Management (NRM)/ecosystem services/postcolonial narratives	Caring for country/decolonised/Indigenous narratives
Essentialised, undifferentiated places	Differentiated places
Modern/changing	Traditional
Universal	Local
Rational	Emotional
Technological	Spiritual
Culturally neutral	Culturally specific
Human needs dominate	Recognises agency of living beings other than humans
Ecosystem services (nature as service provider, e.g. oceans, grasslands, forests as stock)	Social-cultural relations between people and nature as the valued stock
Economic, market, payment for ecosystem services	Eco-social, relational and affective
Biophysical basis for value	Socio-natures
Objective and instrumental nature	Nature as a sentient and relational space of care

Jackson and Palmer (2015), Plumwood (1993) and Weir (2008)

known as ecological services to ask how a globally significant conceptual framework that grapples with the massive escalations in urban areas is attentive to local and cultural values.

The United Nations Global Framework on Urban Biodiversity

The current sustainability response from the United Nations global framework on urban biodiversity was published as the Cities and Biodiversity Outlook project (Secretariat of the Convention on Biological Diversity, 2012). It is the first global analysis of urban land expansion from the UN Convention on Biological Diversity coming from Nagoya, Japan 2010, the Stockholm Resilience Centre (SRC) and Local Governments for Sustainability (ICLEI). Their adoption of the concept of 'ecosystem services' in relation to cities and biodiversity is written in urgent terms to conclude that over 60 % of the land projected to become urban by 2030 has yet to be built. They emphasise this as a major opportunity to greatly improve global sustainability by promoting low carbon, resource-efficient urban development to reduce the adverse effects on biodiversity and improve quality of life. The United Nations defend the ecosystem services response to sustainable futures describing pressures:

> Roughly 70 % of the world's population is expected to be urban by 2050 and pressure is mounting as recent studies suggest that the global food supply will need to roughly double in the next 50 years to meet the dietary needs of expanding populations. Global energy demand may increase up to 80 % and global water demand is expected to increase by 55 % between 2000 and 2050. (Secretariat of the Convention on Biological Diversity, 2012).

The Stockholm Resilience Centre's global overview of ecosystem services features on-line case studies including from Melbourne where I ask: "What does sustainability discourse mean in the urban contact zone?" Consider how two sustainability discourses incorporate different sets of values and can perpetuate implicit and explicit colonial or de-colonial binaries (Table 15.1).

The 'Caring for Country/decolonised/Indigenous narratives' column has some of its underpinning concepts and assumptions shown juxtaposed against those in the 'Natural resource management (NRM)/ecosystem services/postcolonial narratives' column. Most importantly, the purportedly culturally neutral worlds associated with ecosystem services sit at odds with the reality of actual cultural worlds. Referring to Norgaard (2010), Jackson and Palmer noted that:

> In fact, in the landmark Millenium Assessment, for example, scientists found the world's landscapes to be so differentiated through socialisation that they were confounded in their attempts to value and compare ecosystem services (Jackson & Palmer, 2015, p. 137).

The idea of undifferentiated landscapes and cultures, places that are the same wherever they are, cannot work ecologically and is uniquely difficult in the Australian context where highly differentiated landscapes and cultures are complicated by the fact that Indigenous knowledge of Country is variously owned, private or not

considered by Indigenous people to be suitable for sharing with mainstream communities (Jackson & Palmer, 2015; Rose, 1996 p. 138). Australian geographers, Sue Jackson and Lisa Palmer argue comprehensively for a reconceptualision of ecosystem services and lean towards alternative ways of being and knowing the world to orient urban attention on principles of relatedness capable of fostering a public culture of care (2015, p. 135). How will we get there? What way is there to re-imagine the urban intercultural world and practise a sustainability discourse that values nature as sentient and privileges the agency of living beings other than humans?

Conclusion: Deep Mapping for Sustainability

When I first presented this material at a conference in 2014 I acknowledged where I was in Eora country in the land of the D'harawal people, our Sydney meeting place. Later, this chapter was developed from the homeland of the Toorernomairremener Aborigines in Tasmania and afterwards, from Wurundjeri Country in Melbourne. In Australia, recognising Country is to acknowledge Aboriginal and Torres Strait Islanders whose idea of Country goes beyond western ideas of nation, landscape, or nature. It is a relational concept that forefronts all creatures and systems and forefronts links to Aboriginal and Torres Strait Islander family language groups.

In mainstream Australia, acknowledging Country may be done to abide by cultural protocols, to act respectful or parroted for political correctness. Recognition of Country is very uneven in Australia, but is central to the decolonising work of our times (Kowal, 2015). The relatively simple act of acknowledging Country stitches threads towards a patchwork of imagining Australian sustainability today.

Printmaking became central to exploring my own place ontology and created a relational space in which to perceive the importance of an intercultural urban sustainability discourse from a non-Indigenous perspective. The prints work amongst layers of meanings and frame a place between sustainability and decolonisation's potentially isolated epistemological arcs with little need for words.

In this chapter I presented a short history of sustainability discourses and outlined the ecosystems services concept being rolled out globally. By comparing two constructs, namely the Caring for Country/decolonised/Indigenous narrative and the Natural resource management/ecosystem services/postcolonial narrative, I identified differing values embedded in these two distinct sustainability discourses within the Australian context. Two recent summer storylines localised the discussion about sustainability discourses in Melbourne's precarious times. My contribution is to promote cross-disciplinary and imaginative pathways by interrogating new sustainability discourses, adopting deep mapping techniques that embrace arts-based research, recognise traditional owners, connect through Country, interrogate local areas, and cross examine new sustainability discourses.

Knowing the connection between Australia's traditional owners and urban places sets the stage to value the longest living culture on Earth. From that space

re-imagining sustainability narratives could aid our preparations for the predicted tsunami of global urban development. Already the ecosystems services construct draws criticism (Jackson & Palmer, 2015; Norgaard, 2010). The alternate idea of Country goes beyond the idea of landscape or nature. It is a relational concept that forefronts all creatures and systems to optimise the possibility for safe food, good health, and resilience for the risky times to come. When we deep map Country we need not just imagine Country, but we can begin to practise an intercultural sustainability discourse discourse is one word - please remove space

Acknowledgement I am indebted to those I work with through Wurundjeri Tribe Land Compensation and Cultural Heritage Council especially Wurundjeri Elders Uncle Bill Nicholson, Uncle David Wandin and Aunty Di Kerr for their forthright contributions; colleagues at Merri Creek Management Committee and to Professor Margaret Somerville, Western Sydney University for her vigilance and integrity in relation to my doctoral research. However this paper is my own work and I take responsibility for the discussion and representations herein.

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Part IV
Re-presenting and Re-presencing

Chapter 16
Expanding Curriculum Pathways Between Education for Sustainability (EfS) and Health and Physical Education (HPE)

Son Truong

Introduction

Over the past several years the Australian Curriculum, Assessment and Reporting Authority (ACARA) has developed and published a new Australian Curriculum based on eight learning areas (including Health and Physical Education [HPE]), seven general capabilities, and three cross-curriculum priorities (including sustainability). This period of consultation and implementation has reinvigorated dialogue amongst HPE researchers, educators, and practitioners on the discourses and interests of the HPE curriculum. Indeed, it still continues to be a 'defining time' for HPE in Australia with considerable contestation from multiple parties (Penney, 2010). While there is scope within HPE to address the cross-curriculum priority area of Sustainability, the connection may be tenuous, particularly with curricular and disciplinary boundaries that influence conceptions of HPE. For example, Welch and Wright (2011) observe that the contemporary discourses of childhood overweight and obesity have become increasingly influential. The prominence of these particular health discourses is evident in the strong focus on school policies and programs that promote physical activity and nutritional practices towards the prevention of childhood obesity (Davidson, 2007; Tinning & Glasby, 2002; Welch & Wright, 2011).

Penney and Jess (2004) have previously drawn attention to the expanding expectations for HPE curriculum to address a range of topics, including obesity and physical inactivity, as well as drug education, mental health, safety, and sexuality education. More than a decade later, there remains a need to reflect on these multiple agendas and whether or not there is sufficient clarity and impetus to integrate sustainability across the curriculum. Of particular note, the new Australian HPE

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Curriculum articulates ten different focus areas (ACARA, 2014a), but environmental health is not explicitly outlined in this list. The case for sustainability is made within the HPE cross-curricular priorities overview, where ACARA (2014b) outlines content where sustainability may be addressed, such as by: focusing on connection and interaction with natural, managed, and built environments, and how these systems may impact wellbeing; providing opportunities to develop a sense of connection in and with environments; and exploring interdependent relationships and sustainable living patterns. This suggests that there is clearly scope within the Australian HPE Curriculum to embed education for sustainability (EfS) alongside its content, and particularly in the *Personal, social and community health* strand of the curriculum, but it remains to be seen how this cross-curricular priority will be interpreted more broadly and the extent to which it will be put into practice. Given that ACARA (2014b) notes "…these priorities will have a strong but varying presence across the strands and sub-strands" (para. 1), I believe there are grounds for concerns on the degree in which current HPE discourses may shift to become more inclusive of EfS discourses (and practices) without further reflection and action on HPE curriculum, pedagogy, teacher education, professional development, and research.

In this chapter I argue that there is a need to strengthen and re-focus on the parallels between health and sustainability frameworks in order to integrate EfS and the HPE Curriculum in a way that fosters deeper connections with the human and more-than-human world. ACARA (n.d.) defines EfS as a process that "…develops the knowledge, skills, values and world view necessary for people to act in ways that contribute to more sustainable patterns of living" (para. 3). This involves a futures-orientation and understanding of environmental, social, cultural, and economic systems and their interdependence. Newer waves of research in the fields of public health and health promotion highlight the health impacts of pressing issues of the twenty first Century, such as poverty, urbanisation, and globalisation. The adverse effects of each of these are often viewed as obstacles to sustainability, which is a part of the reason that environmental sustainability is now firmly a contemporary challenge for health researchers (McMichael, 2006; Patrick, Capetola, & Noy, 2011). However, I echo the concern voiced by Gray and Martin (2012) that without a renewed focus on alternative discourses and approaches, such as outdoor education, the HPE Curriculum in its current conception "…will fail to recognise the importance of relationships with nature and outdoor engagement" (p. 42). As such, I find the following water metaphor articulated by Patrick et al. (2011), to be especially poignant:

> As health promotion practitioners adapt and improve their skills and knowledge to address the new challenges posed by environmental change, a new water metaphor may be needed to give meaning to the work we do. Like the water cycle – in constant change, renewal and harmony, and inextricably connected to life – so too the work of the health practitioner, within sustainability imperatives, will be characterised by these features. As the necessity and wisdom of this momentum grows perhaps this period of 'great transition' will also be remembered as the era of adaptability and connection (p. 5).

Extending this call for change, renewal, and harmony to HPE curriculum considerations, my aim in this chapter is neither prescriptive nor absolute. I recognise that despite the progress that has been made, both HPE and EfS are learning areas that in many instances have been low priorities in the school curriculum (see Hill, 2013; Jenkinson & Benson, 2010; Morgan & Hansen, 2007). Therefore, while the introduction of the Australian Curriculum presents rekindled opportunities, it is still unclear if more integrative cross-curricular approaches will be formulated and implemented. In voicing a different orientation towards HPE, I acknowledge the current amalgam of interests and agendas within HPE and across a crowded curriculum. My aim is to extend the dialogue by envisioning pathways for integrating EfS and HPE.

Theoretical Approaches

In the following discussion, I seek to reconsider visual data collected with students in Australian primary schools through engaging with posthumanist (Snaza, 2013; Snaza & Weaver, 2015) and relational materialist (Hultman & Lenz-Taguchi, 2010; Rautio, 2013) perspectives. The research was grounded in a participatory paradigm to gain insight into children's experiences of active play in school settings and use of outdoor school spaces. In the following section, I draw upon the photographs and narratives generated by the students to re-read the data based on my emerging (and still messy) ideas and understandings of posthumanist and relational materialist theories. Rather than offer specific outcomes of what HPE might look like, I draw on two examples of the primary students' visual data to envision possibilities for reconsidering our relationships with the world in relation to HPE, as the curriculum space with an explicit focus on young people's current and future health and wellbeing.

The first example centres on a photograph of a school's *Friendship Garden*. By exploring the children's sense of place *in* and *with* the Friendship Garden, I seek to explore the possibility to broaden understandings of health and wellbeing, particularly within school curriculum, to engage with the interconnectedness and interdependence of the human and more-than-human world. The second example focuses on recognising the significance of outdoor school spaces and its relationship with children's wellbeing through embodied play. The discussion develops from children's photographs of their school gardens. Their narratives suggest the potentiality of these spaces to facilitate outdoor learning that crosses curricular divides.

While there is considerable variation in posthumanist engagements, Snaza and Weaver (2015) suggest that posthumanist thinking responds to the question, "What if the human doesn't have to be the measure?" (p. 3). This position recognises that the 'human' is not a stable, biological, and ontological given. Drawing from the work of Haraway (1991), Snaza (2013) explains that posthumanism disrupts the separation between binary oppositions, such as mind/body, animal/human, organism/machine, public/private, nature/culture, and primitive/civilised. This approach

challenges anthropocentric ways of seeing, by rejecting the authorial relationship between humans and nonhumans. For educational research, a posthumanist approach recognises that there are human and more-than-human interactions occurring all of the time at schools. "There are always interactions between humans and nonhuman sentient beings and humans and nonsentient objects, such as computers, doors, playgrounds, hallways, utensils, trays, balls, windows, desks, and so on" (Snaza, 2013, p. 9). Therefore, posthumanism perhaps offers not only a more ethical research approach that acknowledges the interconnectedness of the human and more-than-human world, but also draws our awareness towards students' interactions and attachments with certain environments and objects.

Correspondingly, Hultman and Lenz-Taguchi (2010) contend that a turn to relational materialism, where things and matter are viewed as active and agentic might increase the attentiveness of educational researchers towards students' strong relations to things, artefacts, and spaces in school settings. Informed by the work of philosophers and theorists associated with the material and posthumanist 'turn' (including Donna Haraway, Karen Barad, Elisabeth Grosz, Bruno Latour, Gilles Deleuze, and Félix Guattari), Hultman and Lenz Taguchi (2010) articulate a relational materialist approach that challenges anthropocentric analysis of visual data. Using the example of a photograph taken in a Swedish preschool of a *girl in a sandbox dropping sand into a bucket*, they argue that a habitual anthropocentric reading of this data relies upon a subject/object binary divide where the girl is the active subject and the sand is the passive object. A relational materialist approach grants agency not only to humans, but also nonhumans and matter. Therefore, through Barad's (1999, 2007) concept of intra-activity, new possibilities for mutual relations and engagement between the girl and the sand can be questioned and understood. In this relational materialist understanding, the sand is playing with the girl, as much as the girl is playing with the sand. Hultman and Lenz-Taguchi (2010) articulate this *diffractive way of seeing* by looking for the events and encounters in-between the performative agents:

> In diffractive 'readings', you need to activate all of your bodily affective perceptions when intra-acting with the photographic image…A diffractive 'reading' is thus not a reading *of* a photograph as in the taken-for-granted understanding, but a reading *with* the photograph in your encounter with it (Hultman & Lenz-Taguchi, 2010, p. 537).

Drawing from this relational materialist methodological approach, I will now consider two examples of photographs taken by students in their primary school settings that represent their favourite outdoor spaces. The visual data was produced from case study research with three suburban Australian primary school classes. The students and teachers were engaged in a variety of data collection activities, including drawings, auto-driven photo-elicitation, and research conversations focused on the children's use of the school grounds and their outdoor play and physical education experiences. The students were asked to select their favourite photographs and most significant spaces to write about while creating individual photo stories.

Fig. 16.1 The friendship garden (Sophia, 10 years old)

The Friendship Garden: Bringing Interconnectedness with Nature into Consideration

While the use of photography in research is not a new development, there has been a recent swell, particularly in the past decade, of research involving young people and the use of photographic methods. Largely influenced by the new sociology of childhood, which positions childhood as socially constructed and children as competent social actors (Corsaro, 2015; James, Jenks, & Prout, 1998), this theoretical framework has given rise to a growing body of participatory-oriented research where photography has been used to examine a wide range of childhood concerns and environments (Barker & Smith, 2012). While this approach has been effective in bringing children's voices to the forefront in research concerning their lives, it may also result in anthropocentric ways of seeing and reading the data that maintain a subject/object binary divide, and do not give rise to the ways that nonhuman forces come into play in children's learning and becoming. Hultman and Lenz-Taguchi (2010) propose an alternative approach whereby the data itself is viewed as a constitutive force. Therefore, in this first example, I attempt to engage with a relational materialist approach to consider the force of the material environment in the photograph.

This first example (Fig. 16.1) centres on a photograph of the *Friendship Garden*, described as an area at the end of the grass field, where there's a large tree and benches for sitting:

> My picture is the Friendship Garden because that is my most favourite space to play in, chat, sit, and eat in. I love this place because I like how people call it the 'friendship' garden. Whenever I go in, I feel very calm and quiet and it's like no one else can annoy you at all (Sophia, 10 years old).

> In the friendship garden I play with my friends. I like to play there because it has a big space and when we're tired we sit under the shady tree…It makes me feel happy like I'm releasing all my stress and thoughts and just have fun (Krystal, 10 years old).

> The photo I am talking about is the friendship garden. At the friendship garden I play with my friends. When we are there we talk to each other and play lots of games there. We play there when we are bored. I like to play there because it is a pretty place. My friend and I enjoy playing there. It makes me feel safe and happy (Alex, 9 years old).

Through these narratives the children share not only what they *do* in the Friendship Garden, but also how it makes them *feel*. They allude to affective physicality in relation to their encounters *in* and *with* the Friendship Garden. These narratives seem to suggest an *aesthetic-affective openness* (Bennett, 2010 as cited in Rautio, 2013) the children apply towards their material surroundings that assumes an enchantment of calm, happiness, and safety. However, this analysis also illustrates how language and discourse may limit our understanding of the nonhuman forces at play. As Rautio (2013) explains:

> A new materialist approach to children's geographies would direct attention to the ways in which children constitute their material – human and nonhuman – surroundings *and vice versa.* Agency would be allocated space *in between* children and their environments, arising in complex encounters rather than located only in the human individuals (Rautio, 2013, p. 396).

Corresponding to Rautio's (2013) example of a human wandering in a forest, an abundance of agential entities surface when reconsidering the children's mutual engagements in the Friendship Garden: the dirt, the stones, the benches, the shrubs, the tree, the leaves, the insects, the birds, the plastic wrapper, the human "…all contributing to the unfolding of the event, all constitutive of each other" (p. 397). It is this notion of interconnectedness that I would like to focus on. Hultman and Lenz-Taguchi (2010) suggest that exploring the potential intra-action between these entities results in new problems to be solved through their mutual engagement. One possibility that emerges from this example is the interconnectedness with nature and subjective human wellbeing.

The term *wellbeing* appears frequently throughout the HPE curriculum, and is defined as relating to "…a sense of satisfaction, happiness, effective social functioning and spiritual health, and the dispositions of optimism, openness, curiosity and resilience" (ACARA, 2014c, glossary). Within recent years there has also been an increase in research that demonstrates how interaction with the natural environment is beneficial, particularly, in relation to psychological wellbeing (Brymer, Cuddihy, & Sharma-Brymer, 2010; Patrick et al., 2011; Zhang, Howell, & Iyer, 2014). While these studies are not grounded in relational materialist or posthumanist approaches, they recognise that the health of human populations is integrally linked with the more-than-human world. In educational contexts, this creates possibilities to not only be more deliberate in broadening understandings of health and wellbeing

beyond its dominant discourses, such as overweight and obesity, but to explore the interconnectedness and interdependence of the human and more-than-human world.

Rautio (2013) calls us to "take seriously the idea of interdependence of all life on Earth. This is to say not only between individuals of various species or inorganic and organic entities but also intra-species interdependence" (p. 403). Therefore, alongside a renewed focus on environmental sustainability there is a need to reconsider broader dimensions, including social sustainability and the relationship between social inclusion (across all diversities) and societal wellbeing (see Dillard, Dujon, & Brennan, 2013). Similarly, Rock, Degeling, and Blue (2014) call for an approach that brings into consideration alternative understandings of health that are focused more broadly than solely on human concern, and may bring about more ethical and effective practices that are attuned to people's connections with each other and nonhuman beings. Such a posthumanist ethic may be a synchronous pathway between EfS and HPE, and across the school curriculum in general. This approach also encourages a renewed attentiveness to children's relations and feelings of connection with the more-than human world and how this may expand pedagogical horizons in school settings.

'It Is a Beautiful Place': Increasing Attentiveness to the *Enchanted* Towards Expanding Curriculum Possibilities

Children's affinity to natural environments and preference for playing in natural spaces has been researched across multiple disciplines, including human geography, environmental psychology, and education (Burke, 2005; Chawla, 2007; Tranter & Malone, 2004). Tranter and Malone emphasise the potential of school grounds as sites for EfS; stating:

> …if educators recognised school grounds as increasingly important sites for environmental learning, then no matter how limited the potential of the school grounds, they would make decisions that recognise their value as an integral dimension of children's learning (Tranter & Malone, 2004, pp. 153–154).

This stance may require the reconsideration of natural or *wild* areas of the school grounds that remain off-limits for reasons sometimes unknown to both students and teachers. Such is the case in James' photograph below, where during a walk around the school he identified an area he considered beautiful and where he would like to spend more time; however, we were not able to discover the reason it remained out of bounds (Fig. 16.2).

This is a simple and singular example; however, it resonates with me as I contemplate my own missed opportunity to understand the enchantment of the moment. In the students' pictures of their favourite outdoor school spaces, there were stories of free play on the open green spaces and equipment, as well as narratives of how the garden spaces were quiet and peaceful, and further, a fascination or curiosity to the grass, a particular tree, or plants. Through their photographs, the students began

Fig. 16.2 'This is at the front of the school. It is a beautiful place. I'm not allowed to play here' (James, 9 years old)

to express their stories of place making with their school grounds. The experience was a reminder of the importance of giving attention to children's engagements, connections, and relations with environments and objects.

Drawing from the work of Bennett (2001), Hultman and Lenz-Taguchi (2010) explain that to become *enchanted* is to come to know the world in new ways:

> Enchantment entails an interest for what a child, a teacher, a school or preschool, and a learning event might *become* in its intra-activity with the surrounding world (Hultman & Lenz-Taguchi, 2010, p. 540).

In this sense, enchantment also calls for a sense of openness and responsiveness to the lived moment in time and space. However, becoming responsive to enchantment in formal educational settings, where there is increasing emphasis on accountability, documentation, and assessment of outcomes, may be a challenging task for teachers, teacher educators, and educational researchers. Rautio (2013) suggests there may be a way forward by paying attention to the informal education that children undergo on their own. In response, rather than attempt to limit or control these experiences, she asks "…whether bridging the nature-culture divide can be attempted by exploring practices through which children themselves seem to do this" (p. 403). This leads to the second example I would like to consider in relation to creating pathways with EfS and HPE by expanding curriculum possibilities. Many of the children identified the school gardens as their favourite outdoor play spaces and their narratives suggest the potential of these places as children bridge the nature/culture divide (Fig. 16.3).

Fig. 16.3 The school gardens (Clockwise from *top left* corner)

> This is my favourite photo because I get to water the garden (Asif, 9 years old).
>
> This is in the front garden where I usually look at the fountain. This is my favourite photo because it's quiet and creative (Jenny, 10 years old).
>
> The photograph was taken in the garden. Me and my best friend sit down on the seat and play with our toys and chat. This is my favourite place to play because it is a nice calm place (Mariam, 10 years old).
>
> This photo has been taken in my favourite garden in the whole school. People have fun and play. This is my favourite picture because it has a lot of nature (Jeremy, 9 years old).

In the above photographic narratives and through conversations with the children, there is an emergent notion that the children are not 'merely playing'. These are the spaces they feel drawn to and there are further elements to their engagement, play, and movement with the material environment in the garden. Their play is embodied. According to Harker (2005), all playing performances are embodied, as they engage all of the senses to varying degrees. Moreover, Harker argues that when considering children's play, we must recognise "…there are a great many more bodies playing than just the young people involved" (p. 59). In the images above, there are the physical bodies, such as the trees, plants, flowers, soil, wood, stones, tools, and even a car. All of these are dynamic in that the bodies are never stable, and are relational in that they cannot be separated from other bodies. Furthermore, Deleuze (1988 as cited in Harker, 2005) argues, "…a body, however small it may be, is composed of an infinite number of particles [other bodies]" (p. 57). Therefore, school gardens may create a number of possibilities for exploring practices, including free play, where children bridge the nature/culture divide by themselves.

Correspondingly, Snaza and Weaver (2015) use the example of the school garden to illustrate possibilities for posthumanist education. They argue that a posthumanist approach requires a rethinking of disciplinary divisions that firstly, reflect a separation of the 'human sciences' from the 'natural sciences' and secondly, presuppose particular notions of what it means to be human. The challenge, however, is the increasing number of disciplinary divisions that have emerged in recent decades at all levels of formal education. These distinct disciplinary divisions may bring 'alternative' approaches, such as those stemming from the work of John Dewey, Maria Montessori, Rudolf Steiner, and others, including the forest school movement, into reconsideration for developing more integrative curricula and pedagogies.

In addition to the learning opportunities that emerge through children's own (self-directed) embodied play, the school garden creates links that span more formal classroom subjects. A garden may become a learning site beyond nutrition or leisure, which traditionally fall within the realm of HPE, to include topics, such as land use, animal studies, agriculture, food production, sustainable consumption, and hunger and under-consumption, to create educational opportunities across learning areas, including science, social studies and human environments, mathematics, economics, geography, and biology. This bridging of disciplines requires rethinking of current formal educational policies and practices. Snaza and Weaver (2015) explain that gardening creates an opportunity to undertake a potentially posthumanist viewpoint:

> While there are no doubt such curricula that are radically humanist, offering students a dominion- or stewardship- based way of understanding the human's relations to plants, soil, animals, wood, water supplies, tools, and so on, these curricula could also produce the awareness of the fundamentally *interconnected*, non-dissociable nature of these relations… "Humans" *are* not without all these Others: These nonhuman Others are not here for us to "use"; they are the condition of possibility for our existence (Snaza & Weaver, 2015, p. 8).

The example of the school garden is helpful as it provides a more concrete illustration of how posthumanist ethics can influence educational practices; however, the role of education in discussions on posthumanism is not straightforward (Pedersen, 2010). Therefore, future research could examine the ways in which the human is conceived in pedagogies and approaches to posthumanist environmental education; for example, as agentic, voice-giving, stewards, carers, or as also intertwined complex relations.

Conclusion

In this chapter I have argued that there is a continued need to build the parallels between health and sustainability frameworks in order to integrate education for sustainability (EfS) and the HPE Curriculum in a way that fosters deeper connections with the human and more-than-human world. While there is scope within the HPE Curriculum to address the cross-curricular priority area of Sustainability by providing students with meaningful opportunities to connect and interact with natural, managed and built environments, addressing this aim necessitates a renewed

focus on alternative approaches and discourses that may not be explicitly associated with HPE in its current conceptions. Within an increasingly crowded curriculum, innovative ways forward will require a re-imagining of pedagogy and practice; however, rather than suggesting we try to *do more*, the intent of my discussion is to play with idea of *doing differently*.

The methodology employed in the study facilitated a process whereby the students were asked to move throughout their outdoor school environment in order to photograph and talk about their experiences and connection to these spaces. My intention through re-reading the data was not necessarily to move their *human* narratives to the back and the images of the *more-than-human* to the fore, but rather to consider them in relation to one another. As I moved in and out of these spaces with the students, I was able to gain insight into their embodied experiences of place – how for some the open field called them to race and run, and for others to lie on the grass to photograph the clouds. It is, imaginably, these moments that may lead to mysterious and meaningful encounters with the more-than-human world. Alternatively, from a formal learning perspective, these could be the sites for further investigation with students about the interrelatedness of wellbeing and sustainability. Through this writing, these wonderings and wanderings continue to influence my research and have made me more attuned during fieldwork to observing those in-between moments that may become significant learning experiences – the placement of the garden bed; the hand sifting through soil; the selection and placement of seeds; and the on-going reciprocal nurturing from one to the other, over time.

At this potentially (re)defining time for HPE, an integrative approach with EfS principles may expand curriculum possibilities by positioning environmental sustainability as integral to health and wellbeing, and ensuring that it is not marginalised in the primary school curriculum. In my discussion, I attempted to engage with posthumanist and relational materialist perspectives, and drew upon two examples of visual data to envision possibilities for reconsidering our relationships with the world in connection with HPE and its focus on young people's current and future health and wellbeing. Firstly, *The Friendship Garden* is used to illustrate how the health of human populations is integrally linked with the more-than-human world. Secondly, *The School Gardens* focuses on recognising the significance of children's embodied play and highlights outdoor learning opportunities, such as the example of gardening, to promote a potentially posthumanist viewpoint that crosses curricular divides. That is, a viewpoint that draws awareness to explore the interconnectedness and interdependence of the human and more-than-human world.

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Chapter 17
Watery Configurations of Animals, Children, Pedagogies and Politics in a Suburban Wetland

Susanne Gannon

Introduction

This chapter argues that, beyond knowledge, skills and understandings, learning for sustainability requires the mobilisation of affect, matter and imagination in pedagogical spaces that open to difference and transformation. This requires recognition of the co-implication, interdependence and necessary entanglement of what have been conventionally separated as "human" and "non-human" worlds. This chapter does not provide a comprehensive case study of the project we called Love Your Lagoons (Somerville et al., 2015), but, rather, it follows moments of immersion in the lives and deaths of wetland creatures. I will argue that these affectively potent pedagogical encounters between young people and animals opened students to new configurations of learning about themselves and others in the world.

My use of "watery" in the title – as well as referencing the lagoon and its creatures – suggests the instability and fluidity that I want to draw attention to in pedagogy. I'm interested in flows, movement, blurring and mergings, rather than in the solidity and separation of subjects, objects and knowledge projects. With "configurations" I mean to suggest the ways that things come together to form patterns and arrangements. The dictionary stresses that a configuration entails the creation of some*thing*: "1. the arrangement of the parts of something; 2. the external form or outline achieved by such an arrangement" (The Free Dictionary, 2015). In Chemistry, this might be an atom, compound or molecule; in Education, this might be something we recognise as learning, teaching or pedagogy – conventionally, a "lesson",

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a "unit of work", a "subject", or a "class". By thinking pedagogy as a "watery configuration", I want to emphasise that while things come together to enable learning, this need not mean that they settle into rigid forms. Thus in this chapter I follow three pedagogical moments – involving swamphens, turtles, and eels – that suggest mobility rather than stability; unpredictability rather than repetition.

Love Your Lagoons

Love Your Lagoons was a participatory action research project than ran for a year across six primary and secondary schools located in the catchment areas of the Upper Nepean, Wollondilly and Georges Rivers in south-western Sydney. Each school developed a sustainability project where students and teachers interacted with the wetland that was closest to their school grounds. Some sites were within or bordering on school grounds, however for the school discussed here, the local wetland was a highly regulated and managed site in the middle of a new housing estate, about 3.5 kms (50 min walk) away. The schools worked with researchers and a range of community organisations at an initial project day on the university campus, and again at the end of the project year at the MacArthur Sustainable Schools Expo where students shared their work with other school groups. Project based learning, interdisciplinarity and multiple ways of knowing were emphasised from the beginning. At the inaugural project day, students worked with D'harawal Elder, Aunty Fran Bodkin, and my notes from our first planning meeting suggest how her insights helped the teachers think through how they might configure learning at the lagoon:

We discussed the five ways of knowing that Aunty Fran Bodkin introduced at the wetlands day, and their compatibility with elements of the scientific method:

1. What you see, hear and feel – observe
2. What others see hear and feel
3. What is – must talk to others, discover, hypothesis and inference
4. Pathways to other truths – investigation, experimenting, alternative answers – wondering
5. Every truth has an end or a consequence, every truth has a history

An English and a Science teacher worked together to plan a Year 9 unit that incorporated both disciplines and ran their classes together as often as possible. Principles of co-created and inquiry learning enabled students to develop critical questions about the lagoon and to design collaborative projects across a range of modes (Somerville et al., 2015). They worked closely with the local city council and presented many of their ideas about better management of the wetland to council at the culmination of the unit. Students from the school continue to work collaboratively with council on the redesign of neglected public spaces in the area.

The lagoon that was the focus of this project, Park Central Wetlands, sits at the centre of a medium density housing development, and is circled by townhouses, restaurants and a hospital precinct. Its largest pond has a central fountain and is

rimmed with concrete. Though the chain of wetlands running through Park Central is not a “natural” formation as it sits at the heart of a planned urban development and features concrete, rose gardens, pergolas, playgrounds and benches, neither is it “unnatural”. The wetlands provide habitats for many water birds, reptiles, and amphibians, and the upper reaches of the site contain remnant Cumberland Forest woodland. As students discovered through their investigations of the site, the wetland pools are part of a series of detention basins extending through the Campbelltown area for stormwater drainage and flood mitigation.

My interest in this chapter is not to represent the full scope of student learning, but to follow through the unexpected moments when children and animals came together at the lagoon. Early in the unit, encounters with animals in distress at the wetland became pivot points that increased student commitment to the project. It was as though the stakes were raised for the students as they became deeply engaged in the commonworlds within which they live with animals and other things. These pedagogical encounters are detailed in the final section of the chapter, however in the next section I will outline the frameworks that help me think through these encounters in what might be called “posthuman” ways.

Thinking Pedagogy Through the Posthuman

In this section I consider four ways of thinking about pedagogy that are oriented towards what might be called “the posthuman”. Broadly conceived, “posthumanism” is informed by actor network theory, affect and animal studies, poststructuralism and material feminism. Its emerging theoretical pantheon includes Barad (2007), Bennett (2010), Braidotti (2013), Deleuze and Guattari (1987) and Haraway (2008), amongst others, and in varying configurations. Rejecting the separation of human/nature and human/animal – where the former is ascendant – is the key move. For Snaza and Weaver (2015), a “posthumanist turn” in education suggests any scholar who uses “posthumanist conceptualisations of human/animal/ machine/ thing relations to diagnose how humanism ignores, obscures, and disavows the *real* relations among beings and things that make up the stuff of the world” (p. 1). Meanwhile, away from the particular domain of education, philosophers continue to explore what it might mean to be or claim “posthuman” in the era of the Anthropocene. Colebrook (2014) suggests that “the very definition of the ‘properly human’ constitutes a chauvinistic exceptionalism of the species and enables an ongoing hegemony in which the label of ‘human’ smuggles in historical, cultural, sexual, racial and class norms” (p. 9). In education, posthumanism is an emerging “terrain” of thought, where “Man” is no longer the “measure of all things” (Snaza & Weaver, 2015, p. 2). Few studies so far have applied posthumanism to pedagogy, and it may be impossible to “outline the contours of a posthumanist pedagogy” (Snaza & Weaver, 2015, p. 3). Nevertheless, I will outline four approaches to posthuman pedagogies that help me think through the meetings of children and animals in the lagoon.

First, I turn to the notion of "pedagogical encounters" (Davies & Gannon, 2009). By encounters, I mean to evoke the many orders of things – human and nonhuman, animate and inanimate – that come together in potent pedagogical moments and to note their transience and unpredictability. Despite persistent systemic attempts to describe learning in predictable ways (e.g. outcomes articulated in Syllabus documents), there is always much more going on. The concept of "pedagogical encounter" is one of many ways to think through this. Influenced by the immanent philosophies of Deleuze and Guattari (1987), and some of the principles of Reggio Emilia education, we drew upon this concept to move beyond the "striations" of curriculum-as-usual. We wanted to think towards emergent pedagogies that are more open to the multiple ways that students, teachers and animate and inanimate others co-create spaces and places of learning (Davies & Gannon, 2009). Learning, thought in this way, is a movement of relations, affects and intensities. It is heterogeneous and unpredictable, entailing ethical encounters of particular people and things in particular places and times, forming "particular spatial and temporal plane[s] of possibility" (Gannon, 2009, p. 86). It suggests Deleuze and Guattari's (1987) "assemblages" and "lines of flight" that momentarily open to new ways of thinking, being and doing beyond the individual, and beyond the repetition of the already known. As assemblages, pedagogical encounters are oriented "towards movement rather than stasis, requiring cartographies of bodies, things and ideas as they assemble, disassemble and reassemble in fragmented and creative ways" (Gannon, 2016, p. 132). Affect is central to pedagogical encounters, provoking "lines of flight" or "becomings" that open to new potential futures, and emphasizing the dissolution of subjects in encounter rather than their solidification. Rather than emotion, "affect" draws attention to flows of feeling between bodies, things, and institutions; feelings that do not belong to any individual and are not contained by any body but that swirl amongst and between multiple bodies. Affect "marks a body's *belonging* to a world of encounters" (Seigworth & Gregg, 2010, p. 2). "Becoming", in Braidotti's (2006) reading of Deleuze, is "to do with emptying out the self, opening it to possible encounters with the 'outside'" (p. 145). Pedagogical encounters do not privilege the human over all those other elements that create possibilities for the interwoven practices we call teaching and learning. The child-animal meetings in this chapter are pedagogical encounters – affective assemblages enabling lines of flight towards the new, towards becomings – that are located outside the classroom, where encounters with the "outside" are quite literal, and where there are even more things than usual "outside" the control of the teachers.

Commonworlding pedagogies are my second framework. These are not necessarily dramatic but, like the pedagogical encounters that I have just discussed, they occur in particular places and moments and between particular bodies and are simultaneously prosaic and powerful. Emerging from early childhood education, and particularly influenced by Haraway, common worlds pedagogies focus on the "enmeshed relations" of children "with others in their worlds" while acknowledging "relations of difference", "heterogeneity", and the "responsibilities that come with being implicated within such asymmetrical relations of power" (Taylor, 2013, pp. 121–122). They require "collective inquiry into the connective threads that

constitute these nature-culture worlds" (Taylor, 2013, p. 123). Research into "commonworlding" draws on postcolonial theories and settler histories and maps everyday intimate encounters in the present in the lives of children and animals via "multispecies" ethnographies (Pacini-Ketchabaw & Nxumalo, 2015; Pacini-Ketchabaw & Taylor, 2015; Pacini-Ketchabaw, Taylor, & Blaise, 2016; Taylor & Hughes, 2016; Taylor & Pacini-Ketchabaw, 2015). Humanist hierarchies are undone by commonworlding pedagogies that foreground how children are embedded and entangled in the world with "a whole host of others – human and more-than-human" (Taylor, 2013, p. 115). This work emphasises bodies, and close encounters between them, but it also demands examination of the political contexts of learning as nothing is ever innocent. For Love Your Lagoons, these include the politics of which knowledge systems are prioritised over others: Aboriginal knowledges, western scientific knowledges, community knowledges, children's knowledges, and more. They include urban "planning", which requires the continual conversion of outer suburban "greenfields" to medium density housing to meet the demands of Sydney's growing population. They also include the funding source for Love Your Lagoons, which came from an Enforceable Order (Environmental Protection Authority [EPA], 2013) issued against a major energy company by the NSW Environmental Protection Authority for providing false and misleading information about breaches of air quality emissions at a coal seam gas project in the region. It extends into the future as continuing collaborations between the school and the local city council mean that young people are coopted into planning processes that will domesticate other open spaces.

The increasing influence of animal studies also has to be acknowledged as an emerging area of interest in environmental education (Oakley et al., 2010). Metaphorically and literally, thinking with animals invokes openings that might help educators think about - as Fawcett puts it as she learns to "climb, eat, fall and learn" from porcupines - how to "complexify and adorn the world" as pedagogical imperatives (2005). The "feral salmon" farm escapees who spawn near her home help her think towards environmental citizenship and nomadic ethics (Fawcett, 2009). In her work with animals, Lloro-Bidart (2015) brings disability studies and ecofeminism into her account of a rescued kitten. While some of this work calls for the revival of local natural history or for empathic imagination or praxis within environmental education, other work radically challenges its conventions. Pedersen (2010) suggests that "in-depth critical inquiry into human-animal relations" cannot proceed in institutions that are co-opted by capitalism and continually reinscribe exclusionary categories (pp. 241–242). Interspecies entanglements are inevitably overlooked in posthumanist paradigms that merely decentre the human, while remaining mired in humanist ontologies (p. 242). Pedersen argues elsewhere that it is mortality, the "inescapable embodied *finitude*" of animals and humans that is a "pivotal… node of inquiry" and convergence of humanist and posthumanist inquiries into animal and human relationships (2011, p. 66). Critical animal studies intervenes into "ostensibly posthuman technoscientific agendas" (p. 71) of animal breeding, meat production and consumption, aspiring to a "vegan impulse" as "one among other transformative moves in a posthumanist era" (p. 75). An example from

education of the implications of this stance is the research experiment where, inspired in part by primatologist Jane Goodall, a student proposed cohabiting with animals for a month, choosing farmed swine intended for slaughter rather than wild chimpanzees (Pedersen, 2012). The experiment was disallowed by the university, but it suggests the radical potential of inquiries into affective-material dimensions of human-animal entanglement.

Finally, I turn to those educational researchers who put "posthuman" and "pedagogy" together in Snaza and Weaver's (2015) recent collection *Posthumanism and educational research*. Posthumanists in education want to "reconfigure… [t]he whole thing: not just pedagogy, not just curricular design, not just educational research, and not just disciplines or even institutions such as schools at different levels (from preschool through doctoral programs)" (Snaza & Weaver, 2015, p. 1). However their "open definition" means that posthumanist means "any thinking" that responds to the question "What if the human didn't have to be the measure?" (p. 3). They argue that in schools and conventional curriculum the "most important "learning outcome" is that students become "humans", and participants "in the global economy as productive workers and consumers" (p. 4). In the service of capital, humans can only be anthropocentric exploiters of the earth's resources and earth's Others can only be understood as subject to our use, or our stewardship. When it comes to pedagogy, in contrast to the detailed outcome-based educational programs that teachers are accustomed to, they suggest that teachers "give up on planning" and aim instead to "actualise potentials" (p. 4). This would mean that teachers learn to "revel in potential drifts" rather than rushing in to "control the form" that the world takes (p. 3). Rather than transmit knowledge, we should seek to deterritorialise what seemed "solid" and knowable, so that "things blur together; everything gets mixed up and moved around" (p. 3). Curiously, apart from Rotas (2015) chapter on "ecologies of praxis" which references school gardens and includes a short vignette of an "ugly class" (p. 95), schools are almost absent from this book. However their reminders that schools are modernist – and therefore humanist – institutions par excellence, their reinforcement of the importance of affect and desire in education, and their provocations about planning are helpful in thinking through the child animal encounters in the lagoon and how they became pedagogical.

Through the Love Your Lagoons project students had many encounters with the wetland creatures, beginning with the tiny fish they scooped up in nets on their first visit. Some of their Science work required them to think about relationships between animals, such as the food chains they drew of the wetland. However, these conventional approaches maintain the separation of humans from the animal world and position humans as external observers of the animal world. The moments that are discussed in the following section were qualitatively different. Curriculum was no longer the driver and impetus of student learning, but "pedagogical encounters" that were momentary and transient and could not have been planned or anticipated became significant in stimulating and sustaining student interest in the project. Their inquiries suggest students' deep learning about the enmeshment of human and non-human worlds and their collective inquiries were characteristic of

commonworlding pedagogies. Students' attempts to understand the wetlands from the points of view of animals suggest a posthuman perspective that challenges the colonising gaze of science.

Encountering Animals

In this section I follow pedagogical encounters between particular groups of students and a purple swamphen (*Porphyrio porphyria)*, named "Squawk" by the students; short-finned eel (*Anguilla australis)* named "Eric" by the students; and Eastern long-necked turtle (*Chelodina longicollis)*, who was not given a name, although the students worked hard to imagine and embody the experiences and feelings of the turtle. Each of these encounters provoked students into "commonworld" imaginings and creative responses. These descriptions of their interactions echo some of the ways that Ingold (2011) says humans tend to think of animals. They "anthropomorphise" and, in so doing, "subjugate" the animal, for example giving it a name like Squawk or Eric. Or they classify it according to "certain attributes and characteristics," for example the scientific classifications of *Porphyrio porphyria* and *Anguilla australis* that are usually accompanied by generalisations about habitats and species behaviours, but this is "the way of science and the State" and their "colonial projects of control" (Ingold, 2011, p. 174). Rather than these modes, drawing on Deleuze and Guattari's concepts of becoming, Ingold (2011) suggests that instead, we should consider the animal "as a manifestation of its processes of continually coming into existence and acting" (p. 203). Glimpses of this too become apparent, here and there, in the children's accounts.

Swamphen

We met the swamphen on the first day at the lagoon, when I accompanied the class on their excursion on a very hot day – though I was co-opted to take equipment and refreshments down to Park Central in my car rather than to walk with the rest of them. The heat, air, sun, and the long walk during a school day began to constitute students and their learning differently, but the teachers turned to conventional means as they distributed worksheets and equipment for recording scientific information. The Science teacher explained later that her intention had been on this first visit that students would learn about abiotic and biotic factors. The students were to take measurements of pH, temperature and turbidity of the water in each of the ponds. Ensuing conversations about why the water was dirty would open questions about how it would be cleaned. Students were also to identify the relationships they saw between animals in the park in terms of food webs, and life cycles. In Snaza and Weaver's (2015) terms, student learning might have been impeded by detailed teacher planning. Although students were compliant, the day turned suddenly when

Fig. 17.1 Bird rescue (Modified from author's photo)

a small group of students who had wandered higher up in the wetland found a heat-distressed juvenile swamphen lying amongst the reeds along the edge of the water (See Fig. 17.1).

At the moment of the bird "rescue" a surge of affect – that visceral more than individual flow of feeling – moved amongst and through the kids, and demanded that they act. One of them ran for the teacher. They mobilised all the resources that came to hand, including the teacher's mobile phone, me and my car, the cardboard box that had carried measuring equipment, what they knew of WIRES, the Animal Wildlife Rescue Service, and some abandoned clothing they found nearby, as they undertook this wildlife recue. The bird "Squawk" in its box, with its guardian students, was taken back to the school in my car and later to a vet. Traces of how the bird galvanised students into a different mode of thinking, being and learning are evident in an interview several months later:

Susanne: Did it change the day for you?
Adam (pseudonym): Yeh.
Brianna (pseudonym): Completely. At first we thought we're just going there to do paperwork and they took the nets out and stuff. We were just originally trying to get bigger fish because everyone was getting the really little ones so we went to that back lake and we found him. It was just so much more interesting when we found him and Miss explained to us who WIRES was and what they did, and like, other hotlines for animals and stuff.

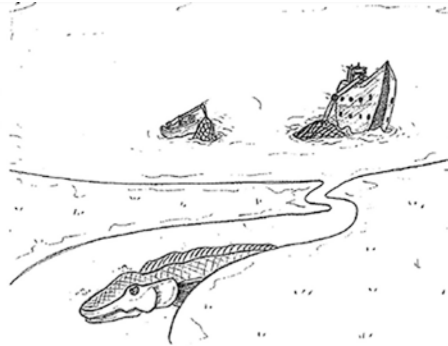
Susanne:	And how did it make you feel? That bird business?
Adam:	Well it was pretty interesting on the day, like, when we found him.
Brianna:	It was upsetting to see that he was, you could see that he was in pain, like when someone's in pain and we could see that he was so much in pain, he was struggling and we felt bad and when we didn't have Miss we didn't know what to do, whether to pick him up or just leave him and walk away and it was upsetting, but then we realised, like, it was us that saved him.
Susanne:	You couldn't have walked away and left him.
Brianna:	If we walked away he would have died…

Later Adam created a rap based on the rescue of the swamphen. The lyrics and transcript show how students anthropomorphise the bird – "he was in pain like when someone's in pain", and domesticate it by naming him Squawk. They take up a position of responsibility for its welfare in a way that locates agency entirely on the side of the human – as they explain that "If we'd walked away he would have died". The bird may have fallen from one of the shallow platform nests that swamphens tend to build in reeds, but the students didn't know this yet. Nor did they notice the further ambivalence prompted by the human "nest" hidden in vegetation near the rescue site. An old mattress and pile of dirty clothes nearby suggested that a human also dwelled, at least some of the time, amongst the animals. To the students, all that mattered was its instrumental value – the convenience of an old jumper lying on the ground that helped them pick up the bird more easily. A posthuman perspective allows us to think in more troubling ways about relations between humans, animals, feelings that are ascribed to others, actions and their motivations, and materials including the mattress and clothing and how they, in turn, speak about the complexities of the social-material-ethical spaces of Park Central wetlands.

Eel

The first eel appeared as a corpse floating beside a dead duck in a photograph I took on my initial reconnaissance trip to the site. The photograph was shared with the teachers and, along with other photographs, became part of our project image archive. The council worker who was organising their removal explained council's commitment to timely removal of dead creatures that might upset park users. As the project developed, the school began a relationship with Council's Environmental Education Officer who visited the school on multiple occasions, came with the class on their wetland visits, answered their emails and supported their inquiries. He explained the design of the GPT – the Gross Pollution Trap – and its role in keeping the water clean, and it was he who told the students of the long migration of eels from New Caledonia to the Georges River and Park Central. While one group of students redesigned the GPT, another group brought the GPT and the eel together in

Fig. 17.2 Excerpt from *Eric the Eel* [picture book]



Eric had a couple of narrow misses with massive fishing nets. After two months of swimming he swam into Botany Bay and made his way down the Georges River.

a children's picture book – *Eric the Eel*.[1] As the images below demonstrate, the picture book carefully documents the journey of the eel, and the human-and-animal obstacles that he faces on the journey of (apparently) 2182 kms (Fig. 17.2).

The students adopt the picture book conventions of giving human names to animals and ascribing human-like emotions to them, including sadness, excitement, happiness, friendship and nostalgia. However, from a posthuman perspective, students draw and write a wetland that challenges separations of nature from culture, of animals from the built environment, of salt and freshwater habitats. Their work even challenges what might be seen as environmental "nationalism" where some species are called "native" while others are "introduced". In the picture book world of *Eric the Eel* everything is porous, and all elements of the ecosystem are interdependent. While their picture book is obviously mobilised by imagination and empathy for the eel, the narrative twists and turns and details of setting are informed by research and observation. What is not represented in the picture book is awareness of the fact that eels also die in the Park Central wetlands, and that they are quickly cleaned away in a wetland that is sanitised to maintain its recreational amenity and appeal for its human users.

The teacher confirmed that students saw quite a few eels during their subsequent visits to the lagoon, particularly after they learned to identify the little bubbles on the surface that indicated their presence below. The council education officer also later described how the eels sometimes come up and eat the little ducklings, however "people get a bit concerned about it because it's quite … I suppose traumatic.

[1] Excerpts in this section are from the research project version of the picture book. Later revisions of the text simplified the language and added colour to the images. Campbelltown City Council funded the publication of the final version of *Eric the Eel* which can be downloaded as a e-book from http://www.campbelltown.nsw.gov.au/Assets/15663/1/ErictheEeel.pdf

And they think that eels are nasty looking and ducks are cute". The children's picture book *Eric the Eel* sanitises the eel's life story, and disregards the unpleasant elements of eel nature. It borrows the tropes of children's picture books and travel narratives to frame Eric's great big adventure, where the ducks become Eric's friends and his diet seems to be entirely vegetarian. Though on Eric's arrival in the lagoon the text says "He surfaced and spotted small ducks paddling and thought to himself that there would be plenty of food", on the following page we are told that "Eric went to the ducklings and found some corn and bread. He made friends with the ducks and they gave him enough food". Unlike real life at the lagoon, the ducks are friends rather than potential food, provisioners rather than prey.

In posthuman terms, *Eric the Eel* could be interpreted as quite limited. However humans are not central to this imagined world. One drawing shows a child feeding bread to ducks, and the text tells us on another page that Eric "spotted children playing in the park and purple swamphens parading on the edge of the lagoon" but otherwise humans are absent. The world that Eric lives in, as we are led to see it, flattens human-created and natural objects onto the same plane of visibility and impact for the eel and thus the story emphasises the interconnectedness of all things. Although Eric is somewhat domesticated, and the messier details of his life are omitted, the authors and illustrator of the picture book have tried to see the world from an animal's point of view and to empathise with the problems and dilemmas of an eel's life. Further, they have carefully designed their picture book so that it will appeal to younger children and invite them to feel into the worlds of eels as they turn its pages.

Turtle

The third instance of entanglement of animals and humans occurred when a student exploring the wetland on a weekend found a dead turtle caught behind chicken wire on an embankment that was part of the storm water drainage system. She mobilised her friends and their concerns were expressed in various forms including letters to authorities, including the Federal Minister for the Environment. However here I want to look at another of the turtle-related outcomes, a dance created by a small group of girls to reflect their shock about the pointless human-induced death of a turtle. This moment suggests the affective force that emerges in the pedagogical encounter. The students are moved to act, collectively, to express their feelings and to make an audience feel as well. They draw upon the particular modalities of expression at hand – persuasive writing and dance. The inquiry design of the unit enabled them to make these choices. These students were in the dance stream of a school with a performing arts specialization, but they struggled to convey what might have happened to the turtle, from its perspective, as it became trapped and struggled to escape. They decided to represent emotions rather than the literal entrapment of the turtle behind the wire, in order to convey an embodied and affective sense of the event (Fig. 17.3).

Fig. 17.3 Turtle dance (Modified from video still recorded by author)

Susanne: And how does seeing a turtle turn into a dance?

Caitlyn (pseudonym): I think it‘s the emotion and how you feel when you see it.

Donna (pseudonym): The emotion, yes. Like if you put yourself in its position, stressing out and then everything’s changing.

Caitlyn: And then the wire. Getting caught in it/[2]

Donna: This wire was never here/

Caitlyn: And not even understanding it.

Donna: And they’re probably programmed to do the same trip every time and then suddenly/

Susanne: There’s an obstacle/

Caitlyn: Yes an obstacle they’ve never had before.

Donna: It was actually a struggle for us coming up with choreography for it but I guess at the end of the day, at the end of the day we were trying to like…

Caitlyn: I kept yelling at them turtles don’t have long legs like kicking and stuff but in the end it was more about the emotions and stuff.

Donna: It wasn’t about the shape/

Caitlyn: Not physical. The start of the dance is about calmness and slow and that’s how they would have felt before they faced the obstacle then everything becomes really rushed and panicked and really like coming up and coming back down to the floor and backfiring all the time.

Susanne: And how did you decide how to end it?

[2] /shows overlapping voices.

Donna: We just showed that if we don't do something about the maintenance if we don't fix it then that's just what's going to happen.
Susanne: There'll be more turtle deaths.

In the interview the students' voices spill across each other as they build on each other's explanations in order to express the inexpressible. Towards the end of the interview they provide a rational explanation as their dance is positioned as a warning against council neglect, but they also take a position of collective responsibility by using "we" rather than simply blaming the authorities. They slip from the singular turtle of the tragedy, to plural turtles as they explain how habit or custom might "program" turtles into certain behaviours and expectations. Like the other groups of students, they try to feel with the animal, but they do not anthropomorphise or domesticate it. Through most of the interview it is their struggle to occupy the subject position, sensibility and emotion of trapped turtles, and to do justice to this with their own creative capacities, that is most important to them. In this they are beginning the work of following the threads of entanglement of humans-turtles-lagoon.

Conclusion

Through tracking these three unanticipated pedagogical encounters between children and animals, this chapter suggests that in thinking about learning we should look beyond taken-for-granted rational, cognitive, curriculum contexts and also attend to surprising and constantly shifting configurations of bodies, things, affect, desire, matter, imagination and pedagogy. It is within these moments that new possibilities emerge. The examples that I have followed in this chapter are not exemplary of posthuman pedagogies, which Snaza and Weaver (2015) might suggest would be impossible within the institution of schooling, however they do provide some resources to think through how the wetlands encounters with animals provoked and inspired the students' learning and affective engagement. Rather than shutting down possibilities, as Snaza and Weaver might warn, teacher planning seemed to be crucial in opening spaces for students to think through their experiences. Being at the lagoon with time and support to follow the multiple lines of inquiry that emerged for students as they observed, hypothesised and felt their ways into the lagoon, its habitats and inhabitants was crucial. Moments occurred when things get blurry and mixed around, particularly as students were called into a sense of ethical responsibility for the others that they encountered. This sense of stewardship and responsibility might be dismissed from a posthuman perspective, as a reification of the human/nature or human/animal binary, but – in the precarious times that are the focus of this book – what else are we to do?

The wetland itself is a sign of the precarity of the worlds we live in, in the present – tenuous, degraded and domesticated, circled by encroaching "suburbification". However, through this project students and teachers came to recognise the

deep interconnectedness of the site with natural waterways, the animals that move through them, and themselves. These are their commonworlds. Students' awareness that more turtles will die if they don't do something about it, that the bird would have expired if they had just walked away, that stormwater drains, roadways and the GPT are obstacles for eels and other creatures – might imply an all too human ontology, but they also entail recognition of mutual interconnection and interdependence.

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Chapter 18
The Ecological Curriculum: Teaching, Learning, Understanding

David Wright

Introduction

The term ‘ecological understanding’ applies a practical reading of the constructivist notion (Poerksen, 2004) that ‘the ecological’ is a perception that can be explained rather than a fact realised through discovery. In this regard this chapter addresses learning rather than teaching. It addresses insight arrived at through sensing and interpreting personal experience of participation in the ecological (which Somerville, Chap. 2, refers to more pointedly as ‘the Anthropocene’), something which Lloro-Bidart (2015) laments the lack of in Education. By describing the ecological in this way priority is given to individual experience of ecological systems and relationships (Capra, 2014) rather than any strict delineation of that which is an ecological system. It identifies us humans, and our systems of knowledge, as subject to shifting parameters of learning. It acknowledges that as circumstances change and as new evidence becomes available understanding also changes. This occurs not because earlier formulations were incorrect but because constructions change as individual and collective ways of thinking are extended.

The recognition that it is ways of thinking rather than ‘truth’ that defines an ecological system admits a critical perspective (O’Sullivan, 1999) that ensures the assumptions that inform such understanding are to the fore in any discussion. In ‘precarious times’ this is important to recognise. It means that environmental ‘sceptics’, ‘deniers’, ‘advocates’ and all other such commentators need to do more than assert a point of view. They need to articulate the thinking that informs that point of view. Any assessment is therefore an assessment of argument rather than an assessment of fact and discussion of ecological understanding becomes an opportunity to reflect upon how students think about ecological issues and how teachers set up

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opportunities for such thinking: the depth and integrity of those opportunities, and the assumptions that inform them. In this regard I am interested in considerations upon what ecological understanding is and how it is arrived at. I am interested in how educators deal with ecological understanding, how we recognise ecological understanding in our own learning and how we perceive it in the learning of others.

With this in mind in 2012 I initiated an inquiry into the ecological understanding of schoolteachers in alternative or non-systemic schools in Australia and North America. The research was constructed through interviews that began through reference to a quote from one of the great polymaths of recent history, anthropologist, cognitive scientist, and systems theorist Gregory Bateson:

> *The pattern which connects:* Why do schools teach almost nothing of the pattern which connects? … What's wrong with them? What pattern connects the crab to the lobster and the orchid to the primrose and all four of them to me? And me to you? And all six of us to the amoeba in one direction and to the back-ward schizophrenic in another? (Bateson, 1979, p. 8, emphasis in original)

This was followed by a series of open-ended questions that asked interviewees to expand on their practice in their school, to discuss how their school facilitated such practice and to give their thoughts on the responsibilities of schools in relation to 'ecological understanding'. Several memorable quotes emerged from these interviews. One of these came to dictate the form of this discussion through the way it pointed to a central issue. In relation to the issue of 'ecological understanding and education' new teacher Rob said:

> In the scope of everything we learned, what we call ecological literacy, which is what I think this is about… we had about a week or two in the whole (of my teacher training) course. So I feel I'm not trained in finding connections… I'm not confident in doing it.

Posthumanist scholars suggest that this inquiry is conducted ontologically (Lather & St. Pierre, 2013): that we humans are elements within a system of ecological relationships that is not subordinate to human needs, that is encountered before it is comprehended. 'Languaging' (Maturana & Varela, 1992) follows and story is one of the communicative forms that can be employed. That we can experience ourselves as reflective participants in that system, invites me to tell my own 'story' of my relationship to 'ecological understanding'.

Background

Since 1995 I have had an association with the Social Ecology group at the University of Western Sydney. In its 1998 postgraduate coursework handbook the group responded to the question 'what is Social Ecology?' with the following:

> Social Ecology explores the nexus between the personal, social and environmental. It is premised on the view that everything we do as individuals impacts to a greater or lesser extent on our environments and on other people and their environments.

The Social Ecology group saw its role as to teach these principles and to function, as an educational unit, with these principles in mind (Wright & Hill 2011). Our starting point was that you cannot teach social ecology without enacting it. If social ecology is a focus on the relationships that sustain life then relationships are, necessarily, central to its pedagogy. Subject matter is negotiated with respect for learning relationships and educational outcomes arise in the context of those relationships.

In Social Ecology we argued that this understanding places the participant within the network of relationships that sustain the inquiry. Further, it requires participants to ponder their own contribution to the development of this experience through their own education in 'the ecological'. And while this starting point may be critiqued for being insufficiently nuanced (Clarke & Mcphie, 2014), its function as an entry point into what is already a challenging form of understanding can be helpful to many students.

This understanding requires me to tell the story of my learning, or more accurately 'a story of my learning' through reference to ecological understanding, for there is no irrevocable version of that story.

My Story

Perhaps it started with political activism in the 1970s. This was a period when environmental issues began to arise in Australia. Environmental issues were not my main concern but I was aware of them and the ways in which they influenced the conversation. My activism culminated in a period in Goulburn Gaol for offences under the National Service Act. Here I encountered a society constructed by the mainstream as apart from 'our' community: a society nonetheless, comprising individuals, relationships and considerations upon the future. This society, for which 'we' assumed responsibility, was also something we locked away. Paradoxically I, who always assumed myself one of 'us' not 'them', found myself in their midst. My sustainability required my understanding, at the very least my learning, that gaol constructs remarkably unfamiliar relationships for 'us'. I needed to adjust the lens I saw the world through or isolate myself in rapidly compounding terror.

In the years that followed I encountered around 15 years of what could be described as confusion. It was a period of isolation and poverty. I found myself alive in the experience of the underclass, amidst relationships governed by assumptions fundamentally different to those of the mainstream. I found myself an associate of people large sectors of society have written off: the homeless, addicted, mentally ill, and a less easily categorised group struggling with problems ranging from presentable clothes to basic literacy, effective conversation, and self-respect. The larger concerns I encountered here were the ways in which such sectors of society are, or feel they are, denied legitimacy. I discovered that within myself. For a considerable time I did not belong, or know how to belong: the underclass was my habitat, by default. I discovered it, and its conflicts, as a way of life. I remember being yelled at as I left the company of a group of metho-drinkers: "Ya think you're too good for

us!" I came to learn that the ways in which the world is encountered construct profoundly different ways of knowing. From this experience, and the moderating influence of time, emerged a conscious awareness of, and a preparedness to work with insights and terminologies drawn from ecology, under the influence of contributors like Bateson (1979), Maturana and Varela (1992), Capra (2014) and O'Sullivan (1999). I worked my way into a PhD program and embarked on a thesis on embodied learning. This work was motivated by a desire to understand how incorporeal ways of knowing and being are formed and how participation unfolds consistent with that knowing. This elemental inquiry into future conversations is consistent with the challenge to find voice in a post human environment (Lather & St. Pierre, 2013). While involved with this I encountered the work of Aaron Williamson.

Aaron Williamson

Williamson is a performance poet. He is also profoundly deaf. While deaf, he writes about sound:

> 'The limits of language are the limits of our world.'
> No. The limits of language are the limits of language.
> For here is the person before language,
> Not able, finally,
> To disappear, Capable of human form (Williamson, 1993, p. 67)

Encountering his work, I found myself absorbed to a point where learning of his deafness came almost as a relief. It released me from the exuberant chaos of his writing and the disquiet in my identification with his suffering. It led me to reflect further on my own impairments: to consider what it was that I want to understand and can never fully realise, as Williamson does sound. To ponder my version of Williamson's ear.

Latterly the crucial thing became for me Williamson's understanding of the distinctions he creates as a consequence of the experience he identifies as 'sound'. This is crucial to the world he participates in. It is the basis for further questioning around how meaning is made from encounters with self, the social world, the physical world, and/or the cultural world of ideas and belief systems. Williamson posted me video and audio recordings of his work. In these he makes few concessions to the sensibilities of a hearing audience. His conflicted, guttural sounds, which combine rhythm and silence with vocalisation that calls to mind bird and animal as much as it does human is Williamson's evocation of the body of deafness: his timpani, his mallet. This complex post-human channeling of inter-relationship can be seen as both artful and confounding: identity from the depths of 'otherness'.

Please note, in this discussion of 'ecological understanding' there has been no discussion of formal education. My own learning in this area – through Williamson and other experiences of immersion in the incorporeal – has been informal. It has however been crystallised by my research thesis and my work in Social Ecology. Yet still I find myself questioning how learning of this kind can be formalised and

facilitated: how insightful and appropriately learned educators can assist others to arrive at understanding with some equivalence.

The principal reason I did not attend classes that facilitated such learning was I did not know what it was possible to know and was not therefore drawn to such opportunities. A second issue may have been that there were limited opportunities. Subsequently of course I have come to appreciate that it is not the subject matter – the learning – of a program that is of most importance, but the ways in which that learning is made available. This recognition arrives also with greater appreciation of the underpinnings of ecological understanding: the relationship base of knowledge and the implications of this for social-ecological awareness. As an educator I decided to pursue insights into if and how others were working with ecological understanding in their classrooms.

The Project

Interviews were conducted with teachers in five schools: one in Canada, one in the USA, and three in Australia (Wright, 2013).[1] Both Maple School (Canada) and Oak School (USA) were founded under the influence of a significant holistic education theorist: John P. Miller for Maple School, and Ron Miller (no relation), Oak School. In their writings both construct correlations between the holistic and the ecological. Ron Miller (2011) argues that holism is also known as 'green', 'ecological', or 'integral' thinking. He describes 'holistic education', which is central to the philosophy that governs Oak, as the cultivation of "helping individuals live more consciously within their communities and natural ecosystems" (Miller, 2005, para. 3). John P. Miller (1996) points to the wholeness of the planet and the ecological interdependence that marks its functioning. He compares the 'predatory conscience' of mechanistic models of education to the 'ecological conscience' of holistic education. These schools were chosen therefore for their theoretical base and the practice this determines.

Of the three Australian schools, two were founded under the influence of one individual (Gary Richardson: Wollemi, and John Marsden: Bloodwood). The third (Casuarina) owes its genesis to a group of parents and educators, none of whom are named on the school website. None of these three schools promote their practice as 'holistic' or 'ecological' but all use similar terminologies to identify their underpinnings. Casuarina describes its approach as 'child-centred' and 'democratic'; Wollemi as 'human centred', 'human scale', 'sustainable', 'integrated', and 'independent'. Bloodwood claims 'take care; take risks' as its credo.

All the Australian schools, like Oak, could be described as independent, non-systemic schools. None are part of a government or a religious system. None rely on systems of zoning or religious affiliation to attract students. Maple is slightly different. It is an 'alternative' government school. It works with a provincial curriculum

[1] All names of schools and teachers in this article are pseudonyms.

but, as a clearly identified alternative school, it is permitted to approach curriculum through its own methodologies.

Emerging Patterns

It is ironic that while it is reasonable to expect that in the near future social-ecological understanding will be an accepted part of social analysis in education – in the way gender and race are now – it is not as easy to predict how this will occur. In this respect, while all interviewees agreed that 'ecological understanding' is a responsibility of school education most demonstrated only a limited appreciation of ecological ways of thinking, and the learning that is required. Fewer still had a lot to say about how it might be approached educationally. Several of those who did have an appreciation were quick to point to this obvious problem.

Lara said:

> Yes, but it is what teachers need to be taught as well. You can't just tell teachers you must teach eco-consciousness… 'cause a lot of teachers do not know what that is.

Ian argued: "…the difficult thing is… it's like trying to teach meditation if you haven't meditated before." Ian's inference is that while this is a form of understanding that influences all dimensions of thought and action, it cannot be reduced to curriculum content: issues of capacity precede issues of responsibility.

The teachers who responded to the issue with a depth of consideration could be categorised in several ways:

1. Newish teachers who, recognising the limitations of their teacher training, sought further education to overcome this. Beth said she "went back to [university] because she felt [her previously learned approach to teaching] wasn't right for me". Her Masters in Education for Sustainability led her to employment at Oak. Ian spoke of a Masters in Transpersonal Psychology that helped him to learn how to work with the limitations encountered in school education. He said, while working in traditional and alternative schools he is always trying "to help (students) see their capabilities… to tell them that school isn't all there is".
2. Mature, reflective educators who work with a learned commitment to ecological issues. Lara and Irene, the most experienced of the teachers interviewed, at Wollemi and Casuarina respectively, both spoke coherently through an ecological perspective. Their experience as educators and their involvement in issues of social concern, gave them the wherewithal to ponder the relationship between ecological understanding and education and to allow this to permeate their practice. (The comparison is with Rob, who argued, "I feel I'm not trained in finding connections … I'm not confident in doing it".).
3. Those teachers employed in a school with an agreed vision around ecological understanding. Such agreement encourages group action and collective responsibility and supports individual staff members struggling to understand and

implement such thinking. Kate, for example, spoke of her involvement in the establishment of Maple:

> I think we… created this school because we want a more connected life. It seems to me that the families who have come together at this school are looking for that. They are seeking something deeper and richer for their kids to experience and for them to experience as well… in community, together.

Ruth, also a teacher at Maple, spoke of it as a challenge:

> Well, I am still figuring out how to do [it]… but I know, at this school, story telling is a huge part… It engages children and captures their imagination and stays with them longer than dry teaching.

Key considerations upon the facilitation of ecological understanding can also be broken down into patterns. These patterns can be seen to overlap, suggesting three identifiable themes in the information provided by teachers: individual understanding, social meaning and environmental action. Here I rely on the words of the teacher interviewees.

Individual Understanding

> Ian (Oak): It has to start with ourselves… [At Oak] we look at our relationship to each other in the classroom … to understanding different perspectives, understanding how we're all connected through that to … natural systems… [So I think that] we see these things as a part of ourselves and when we see these things as part of ourselves we feel whole and we treat [the world] differently to when we feel separate.
>
> Ruth (Maple): I feel like they [students] need to know they are … able to take care of themselves… in terms of the emotional insecurity they [may be] going through… I try to have open community circles where we can discuss…anything that is on their mind … I try to use it as an opportunity for them to reflect upon how their actions can affect others and how being positive and respectful and polite can uplift the energies of others. I've been finding … the more circles we have the easier it is to teach.
>
> Rob (Bloodwood): Another attitude that is important is that of student ownership and student autonomy. [Here]… the teachers … are focused on getting kids to do things for themselves, becoming more aware of their own learning… They make their own food and … [when] I came in on my first day… [I saw] six and seven year olds banging away with hammers making things with wood, I think kids are entrusted a lot more… expected to … do things kids in other schools would not be allowed to do. And [the principal] has given us the freedom to accept some 'blood on the playground', as he calls it.

Social Meaning

> Beth (Oak): We look at each child and how each connects to themselves and how they connect to other kids in the classroom and then how we as a classroom connect to the whole school…

Lara (Wollemi): Our school rules are: We look after ourselves, and we look after each other. We look after our property and each other's property. We look after the environment and we're kind.

Lara (Wollemi): Anything that happens at home affects a child's experience in the classroom, which affects all other class members, everything is interconnected, which is why it is so important for the school to engage not just with individual learners but the community as a whole…, and Wollemi is in a unique position to do this because of its size… it is small enough to sustain awareness of the relationship we have with each other… teacher's children are in soccer teams with other kids… parents and kids know each other in other contexts … my public and private life overlap in weird and wonderful ways.

Kate (Maple): Coming up with ideas about relationships, socially, environmentally, with the self … is a process of discovery… especially in the city. (We try) to find ways to actually connect so we are doing it authentically and it's not just another synthesis of what should be connected.

Irene (Casuarina): The physical environment [here] is home-like, backyard like… The kids tend to use every corner possible and make it their own by building cubbies and little spaces that work for them.

Kate (Maple): We have just finished celebrating the day of the dead. We wrote biographies of someone who had passed, one of our ancestors, and this gave the kids a chance to reflect on something that is not of the here and now… and this time of the year [Halloween] becomes a broader event than dressing up and running around… It becomes something deeper that connects students… helps them be in a state of reverence for their family, and… it … enlivens the whole family system. And then we relate that across curriculum to the organ systems, so they are studying the body…. And I find that is a step in a right direction.

Environmental Action

Rob (Bloodwood): The natural environment has a subtle effect upon you… upon me certainly… it's much better than a cemented up city school, so there is that sense of freedom and space.

John (Bloodwood): Yes, and it's quite dirty and muddy here. You won't find kids wearing flash clothes, and that's a real leveler. There is a hill out there that's a big slide and when it rains they'll all run out there and… We used to ask them all have a second set of clothes, but now we just use the lost property.

Beth (Oak): I like that we have a large portion of our day outside. We have a great space with wetlands. We can bring our indoor [class] time out. The classroom has a porch … so a lot of times the door is open so they can go out there … it's a great space for learning.

Jane (Wollemi): As a physical environment… this, it's just beautiful… it's just gorgeous. It's got that mix of northern hemisphere evergreens and Australian trees. It's a lovely space. And the buildings, as you come up the driveway, the older buildings are really lovely… wide, open spaces, lots of green, not too much concrete.

Kate (Maple): We're trying actually to root [our teaching] in the natural rhythms around… We get to glimpse the eco-system around us when we go to an urban river and watch the salmon flow … and there's this amazing effervescence that happens [when we] see that happening in October… but I think we've plateaued… there is this cycle where we take the kids into experience then we have to go deeper to search [for] further connections. It almost seems like we are so human … so outside of the eco-system but everything

else is in it. We are, or we think we [have] such a complicated [intelligence]… it's like we are studying it and its quaint and interesting but … what's the need here. What do we need? How do you present that [need] to kids?

Ian (Oak): One thing recently, we did a hike to the top of Mt Mansfield, which is… over 4000 feet. We did … a pretty rugged trail. We got about halfway up and the wind was just howling but … the sky was clear, you could see all the way to Montreal, gorgeous, and the kids … stayed positive, they urged each other on. Some … ended up getting to the top, some didn't but they got about 4/5ths of the way up and they felt OK about [the decision to turn] around … they understood themselves and it made sense… It made it such a wonderful trip… The kids were so excited about being up in the mountain… the sense of freedom… and challenging themselves… And I think part of it was the class felt very connected to one another, they were willing to take risks because of that, willing to challenge themselves because of that, but also they love being outside, they love being in nature.

Mostly, these quotes indicate attitude as much as action. These attitudes are a consequence of ecological understanding. They are derived implicitly or explicitly from the assumption that learning is an experience we are constantly pursuing. And part of the process involves questioning qualities of that pursuit. The dimensions of this understanding are appreciated only through participation. There is an incremental quality to this. It is a consequence of absorption and sensitivity: of immersion and response. In 'precarious times' there are questions to be asked about 'what is of our making' and what is not; what is our responsibility and what do we need to learn? What do we need to do, when and how?

Conclusion

Given the ecological change that has already been observed and the change that is foreshadowed for the future, ecological understanding is a necessary part of the design of future teaching and learning. In this regard, the acquisition and transferability of ecological understanding is an issue of consequence. How therefore, can individual educators and the education systems they work in establish and extend ecological understanding? This was the concern that initiated this inquiry. It was a concern also of many of those interviewed in this project.

Firstly, it is necessary to recognise that systemic change starts with public demand. This drives political forces and leads to changes in teacher education. However, as individual teachers in schools and universities we also need to take responsibility for our own learning. We need to integrate it and articulate it and not fulminate as we wait for others to do so. In this respect ecological understanding needs to be appreciated as more than a discipline, as within all disciplines. Specific practices within specific subjects require staff with appropriate understanding and appropriate skills. We need to ensure we understand and take responsibility for our understanding: we need to communicate and exemplify. In this respect ecological understanding is not discussed here as a study of something that can be taught, examined and judged as learnt by teachers who have not thought deeply about the issue. It is considered here as a process within which students and teachers find

themselves drawn to question their own practice and their own ways of thinking, in relation to ecological experience. As a dynamic form of unfolding awareness, it may ever be thus. Alternately these ideas may simply be the outcome of an unfortunate or precarious point in time when ecological understanding is frustrated by social and political inertia. In the English-speaking world most particularly, the voice of science has been muted by the power of vested interests (Monbiot, 2006, Spratt & Sutton, 2008). This does not deny the commitment that the appropriate level of understanding constructs. In the words of Maturana,

> Becoming aware of one's awareness and understanding one's understanding gives rise to a feeling of responsibility for what one is doing, for what one is creating through one's own operations of distinction. … once this has been understood, one cannot pretend any longer to be unaware of one's understanding … it is not understanding that entails responsibility but the knowledge of knowledge (Maturana & Poerksen, 2004, p. 52).

This sense of responsibility is reflected in the words of some of the teachers:

Ian (Oak): This way of teaching is extraordinarily important but it is difficult to do cause once you start doing it, it [challenges] what we thought we were and that can be scary for a lot of people. But when you dive into it your whole pattern of understanding is changed…

Kate (Maple): To me it's an existential need. I see in the future we need to create a more sustainable way of being but how do you teach this way? … I think we are trying to figure out how we are connected while we are teaching curriculum that is not connected.

Ruth (Maple): It's important not just for the kids to be outside. It's important for me to be outside.

As for my own connection to this learning, given that I commenced this discussion through reference to 'my story' of ecological understanding. I see myself as one of those 'mature, reflective educators who work with a learned commitment to ecological issues'. I see my practice as relatively isolated, within an environment full of others who see themselves in similar ways. This collection, as Malone and Truong say in Chap. 1, is in part a response to that sensed isolation. I see my attitude and action as political. While current Australian political considerations do not capture the concerns of many, for many others the transition to acknowledgement is underway. It involves a critical form of questioning that challenges powerful assumptions, hence the emphasis upon 'understanding'. Systems of education are involved in this. Learning is a particular sort of experience. Understanding is more.

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Chapter 19
Nurturing Female Outdoor Educators: A Call for Increased Diversity in Outdoor Education in Precarious Times

Terri-Anne Philpott

Introduction

This chapter examines the need to nurture female outdoor educators so that they too can contribute to new imagining of education for sustainability in these precarious times. Various researchers such as Cochran-Smith (2005), Futrell (2008), Gale (2006) and Westheimer (2008) have espoused a globalised view of best teacher preparation practice and in particular, the need to attract a variety of individuals with diverse backgrounds to the teaching profession. In this chapter, I draw from a cultural nature theoretical foundation (Rogoff, 2003) and am informed by queer theory, contemporary feminist theory, and post-millennial feminist theory (Alaimo & Hekman, 2008; McNeil, 2010; Rustom Jagose, 1996). With these theoretical lenses I aim to scrutinise current complexities of practice in the outdoor education profession. A contemporary analysis of the study involves a "reorientation of feminist thinking and a strikingly affirmative phase in feminist theory" (McNeil, 2010, p. 428), in an attempt to provide ways forward for the outdoor education profession (Rasmussen, 2009). The outdoor education profession faces challenges like retaining a diverse teacher population while also trying to implement a complex new curriculum. Presently in Australia, all states are implementing a national curriculum for the first time. The new Australian Curriculum, Assessment and Reporting Authority (ACARA, n.d.) require teachers to implement sustainability outcomes as a cross-curricular priority. In the following discussion, I argue that it may be difficult to achieve the cross-curriculum sustainability outcomes with the predominance of the current dominant discourses in outdoor education. I suggest that teachers with diverse backgrounds may be driven away from the field because they may have different perspectives and ideas than those that are guiding the profession. In particular

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for this discussion I now focus on the reason female teachers may drop out of the profession. Research by Allin and Humberstone (2006), Humberstone (1996), and Lugg (2003) acknowledges that there have been notable impacts from the domination of males in the outdoor education profession on female colleagues.

Current research suggests that the outdoor education profession is male dominated and that this impacts on female outdoor educators in various negative ways. One of those negative ways is to conform or leave. For example, Lugg (2003) found that females felt they had to conform in order to survive in the 'male dominated' profession. Similarly, Allin and Humberstone (2006) argue that women in their study who failed to adapt to the male dominated culture were left out of academic debates and isolated, so they often organised to 'change field' and exit out of teaching outdoor education. Recent research by Wright and Gray (2013) also suggests that female outdoor educators have faced "distinctive challenges and roadblocks" (p. 12) in the outdoor education profession. Thus highly capable females drop out of the profession and this has a lasting effect on development of future outdoor education curriculum and programs.

A second negative impact on females was the hidden ramification suggested by Wright and Gray (2013) that female outdoor leaders feel that in order to survive the culture dominant discourse they must face "any challenge" with great success or suffer the consequence because "any failure is taken to indicate that women do not belong in the outdoor learning field" (p. 19) and thus placing immense pressure on women to perform with superhuman abilities. Females espoused that "unrelenting scrutiny and judgment" and being "held to a higher standard" and "if left unrestrained, eventually lead to exhaustion" when they taught outdoor education (Wright & Gray, 2013, p. 19).

Another example of an issue that negatively affects female outdoor educators is when they are bombarded by media and cultural messages from society that "outdoor activities are…Testosterone driven" and are more socially accepted activities for males (Wright & Gray, 2013, p. 12) thus favouring the male dominant discourse. Another research study by Riley (2014) was based on the findings from her study of Year 10 Outdoor and Environmental Studies students. Riley explored feminine and masculine identity in relation to activities. She observed that the students perceived the curriculum based around hiking activities as masculine and the meditative ones as feminine. Therefore offering another reason to incorporate femininity to the outdoor and environmental programs, and calls for "rebalancing of gender-ideologies" and that "femininity" can provide another way to interrelate and engage with the outdoors (p. 81). We must acknowledge that this extra pressure on women "to defy gender-role stereotypes" becomes "burdensome" for female outdoor educators (Wright & Gray, 2013, p. 19). Thus, there is a need to find ways to incorporate diverse perspectives to inform the field, and support notions of femininity to subsequently make changes to the current discourse.

There are flashes of change however in this situation. One paradigm shift that has been positive for female outdoor leaders is the move away from outdoor activities focused on "quest" or "conquering" outcomes… to activities that include "journey" or "empowerment" outcomes (Wright & Gray, 2013, p. 13). Curriculum changes

stated by Riley (2014) show a shift in outcomes has occurred: "the fundamental components within this discipline shifted from a practical recreation focus" back in 1982 "towards a more reflective education for an environmentally sustainable future" in some outdoor programs in 2014 (p. 53). The sustainability cross-curriculum outcomes (ACARA, n.d.) require teachers to defy gender-role stereotype based learning and incorporate more gender-balanced activities. Furthermore, there is a need for recognition within the curriculum and outdoor education more broadly that gender is a social construction. Therefore, there is a need for a more diverse and inclusive outdoor education discourse for today's young people. These changes to the curriculum also provide an opportunity to encourage a variety of individuals from other fields of education to teach in the outdoors. With the inclusion of sustainability-focused activities, a shift has been created from just teaching adventure-based activities, to also involve teaching activities that focus on sustainability, like creating a school vegetable garden.

Denise Mitten (Chap. 12) also acknowledges gender issues that arise from the discourse in the outdoor education profession, and she shares her perspective on how it affects sustainability education in ways that it affects outdoor education. Mitten also provides a contemporary and robust argument for the important role outdoor leaders and outdoor educators play especially in teaching the moral responsibility of nurturing sustainable practices that care for the health of the planet. Thus providing us with another example of using a gender natural philosophy to teach all students about caring for the planet.

The final part of this chapter will focus on ways to nurture and retain capable female outdoor educators. If we retain capable females in the profession they can challenge the uneven political and narrow social dominant discourse that exists when one gender is over represented in the decision making on curriculum content and outcomes. Another positive to retaining expert female outdoor educators is that they can help the outdoor education profession change practices in order to meet the complex pedagogical and sustainability curriculum issues that face the profession. The next section considers teaching practices from a global view of educational research and then progresses towards an argument to retain female outdoor educators.

A Global View of Teacher Education

In this section, a global view of teacher education and preparation unfolds with a discussion of the implications to outdoor educators. Teacher education research calls for the need to support quality novice teachers grappling with the fears of learning to teach in the outdoors. There is a need to openly dialogue ways to support quality teachers because as Sanders and Rivers (1996) stated "Teacher quality is the most important factor influencing educational success" (p. 5). Various researchers of teacher preparation programs highlight the issue of limited literature to inform teacher educators' practice, and request for more studies into successful ways to

teach individuals how to teach effectively (Cochran-Smith, 2005; Cochran-Smith & Lytle, 2001; Dewey, 2008: Gale, 2006; Loughran, 2007; Marsh, 2008; Nuttall, Murray, Seddon, & Mitchell, 2006; Quay & Seaman, 2013). Furthermore according to Futrell (2008):

> Schools (Faculties) of education pre-service teacher programs must maintain and improve ongoing efforts to re-design the teaching and learning paradigm to more effectively ensure that citizens are well educated and well prepared for our global society (Futrell, 2008, p. 537).

This research suggests the need to re-design the teaching and learning paradigm, similarly argued by Tania Ferfolja and Jacqueline Ullman in Chap. 13, through educating teachers and preparing them to effectively teach a more diverse range of students. The classroom of the future will have a mixture of students from more diverse cultures and backgrounds, and therefore teachers need to be prepared to meet this complex challenge (Futrell, 2008). According to the literature, in order to prepare for future changes in teaching and learning paradigms there is a need for more research on the practices of teacher educators (Cochran-Smith, 2005; Futrell, 2008; Loughran, 2007). Teacher educators are prompted to do more research concerning the effectiveness of teachers with diverse backgrounds (Johnson & Kardos, 2008; Westheimer, 2008). There are many complex issues in teacher preparation research literature. Therefore I researched the effectiveness of a teacher preparation program on the development of pedagogical practices in pre-service outdoor education teachers. The research captured the effects of a program that was specifically designed to develop the pedagogical practices of pre-service outdoor educators, in an attempt to devise a program in the future that nurtures quality outdoor teachers (Philpott, 2014). In this chapter I will draw from study and not specifically report on it. I wish to reflect on a particular finding from the study that rouses a call for increased diversity in the profession.

Outdoor Education and Sustainability Definitions

This chapter was written at a time when outdoor education curriculum content was described by Knapp (1997):

> As a handful of terms: … school camping, conservation education, nature study, nature recreation, and outdoor recreation… earth education, ecological education, energy education, expeditionary learning, environmental and environment education, adventure and challenge education, outdoor ethics education, bioregional education, science technology-society education, global environmental change education, and sustainable development education (as cited in Quay & Seaman, 2013, p. 3).

In the study that this chapter is based upon, outdoor education definitions were described through the type of activity or via the goal the program aimed to achieve. This built on an earlier definition of outdoor education by Ford (1986) that emphasised education in, about, and for the outdoors which is still relevant today as well.

Past outdoor education outcomes can be found in the present Australian Curriculum (ACARA, n.d.) under the banner of cross curriculum priority of sustainability as well as the usual place in physical education outcomes. The cross curriculum sustainability priority has outcomes that encourage education for sustainability (EfS) and aims to "develop the knowledge, skills, values and worldviews necessary for people to act in ways that contribute to more sustainable patterns of living" (ACARA, n.d., p. 1). Also this priority highlights that "Sustainability education is futures-oriented, focusing on protecting environments and creating a more ecologically and socially just world through informed action" (ACARA, n.d.). Significantly more outdoor education-oriented outcomes can now be found in the cross-curriculum priority area, which address the sustainability of the environment and protection (ACARA, n.d.). Perhaps the term outdoor educator needs to also incorporate a role as Educators of Sustainability (EoS). Thus think of the POETs in my past study as potentially the new future teachers capable of teaching EfS.

Background of the Research Setting

The cultural nature research setting of the study entailed videoing the POETs as they taught real outdoor activities in the outdoors (Philpott, 2014). The footage became a tool that allowed the participants to critically analyse their teaching. They could view their images as many times as needed, which then allowed them to effectively perform an in depth critique of their teaching. The POETs' lecturer simultaneously provided constructive feedback that was also timely in their phase of pedagogy development, especially when clarifying meaning of feedback as technique improvements were easily pointed out when reviewing the footage. The POETs were very appreciative of the feedback for their teaching and it allowed them enough time to devise ways to improve their outdoor pedagogy before their next session. In summary this research process captured a rich view of the effects of educating POETs using an experiential education approach (Philpott, 2014). The research setting was examined stringently using data analysis techniques devised by the author from recommendations of Lankshear and Knobel (2004), Rogoff (2003), and Yin (2003a, 2003b). Rogoff conceived that four lenses of analysis were needed to unpack the data collected from a learning environment, so that education researchers could develop a richer view of the scenarios taking place in all types of learning environments. This study also had four lenses to the analysis phase to capture the effect the experience had on their pedagogy development: the participants' views of their teaching, peers' feedback of POETs teaching, lecturer/tutors' feedback of the POETs teaching, and the effects of the outdoor learning environment on their pedagogy.

The study aimed to provide ways to improve teacher quality. The data helped develop ways to provide an effective teacher preparation program that successfully helped a variety of POETs become quality teachers. This is based on the premise that quality teachers are more capable of transforming their pedagogy practices that

enable them to effectively deliver a new curriculum (Cochran-Smith, 2005; Futrell, 2008). POETs and teachers are currently expected to change their approach to education and learning, and consider ways to incorporate new imaginings in the sustainability priority, due to the implementation of the new Australian Curriculum (ACARA, n.d.). POETs will be amongst a number of teachers expected to become leaders of change in their schools and implement EfS in these precarious times. They will be challenged to find ways to engage with more than the human world, in new ways, in order to educate for sustainability differently.

Alternative Perspectives to Challenge the Dominant Discourses in Outdoor Education

In order to educate differently and meet educational needs of the future, Futrell (2008) stated we need "diverse individuals who can teach" (p. 537). The domination of males in this area of teaching is opposite to the rest of the teacher population, which is dominated by women of various cultures (Allin, 2000; Futrell, 2008; Johnson & Kardos, 2008; Westheimer, 2008). Thus, in this chapter I am arguing for increased diversification in the outdoor field in order to balance the current domination of homogenous male outdoor education teachers in the profession, and offer that by retaining females in the profession aids the diversification of teachers. The domination of males in the outdoor education field has been attributed to female outdoor educators leaving the outdoor education profession (Philpott, 2014). During my study I noted that talented effective female POETs conveyed many reasons that led them to believe they needed to drop out. If females leave then it leaves a majority of male POET teachers in the program and thus repeating the cycle of males in the outdoors teaching adventure-based activities.

Predicated on this stance, the retention of effective outdoor education or EfS teachers is important in the process of transforming a current dominant discourse that involves a majority of male teachers planning adventure based curriculum outcomes (Futrell, 2008). Retaining quality teachers that are capable of challenging the dominant discourses of past curriculum ideas in outdoor education is ideal. This will challenge those educators that continue to believe outdoors lessons should be based solely on adventure-based activities. I believe the new curriculum has a more balanced approach to outcomes, so that students with diverse interests can equally enjoy outdoor education and sustainability lessons. Another consideration of the sustainability EfS curriculum is that it does not require teachers to teach adventure-based activities that involve risk, which could lead to better retention of excellent teachers who would have otherwise dropped out or left the profession due to fear of teaching activities that involved risks. Also acknowledge that this situation has the potential to start to change the skills and knowledge that is required to teach new EfS outcomes and challenge the existing dominant discourse (ACARA, n.d.), thus rebalancing the outdoor education profession.

Ecofeminism Perspective to Nurture Change and Retain Quality Teachers

This following vignette provides a clear explanation of a female POETs thoughts and conversation with her lecturer about leaving the outdoor education teacher program. According to the findings many of the females in particular expressed that they feared teaching outdoor education so much that they wanted to quit. The journal entries from other participants in the study expressed thoughts that they too felt uneasy about teaching with inherent risk in their outdoor lesson. The vignette provides an example of the candid conversation between the lecturer and Betty in a real teaching scenario.

Vignette

> Betty arrived at the IT room ready to view her first outdoor teaching session on the computer. The lecturer handed her a copy of her teaching DVD and she sat down at a computer and proceeded to watch herself teach. After watching the footage Betty stated to the lecturer that she was uneasy about teaching year 8's on the ropes course. She stated, "I don't know how to tie knots properly, I haven't done anything like this before" (her face was serious and exhibiting stress in her voice). Betty went on to say "I don't want anyone to get hurt while I'm running my challenge course activity, (pause), in fact I feel so scared, I want to quit the program" (after only three weeks of the 13 week experiential education program). The lecturer reacted to Betty's comments and said in a reassuring voice, "its ok that you are feeling scared at the moment… you are teaching a risky activity" and, "this demonstrates that you have identified the risks, Betty, and you have demonstrated to me that you acknowledge the risks to others" (as this identification of risk is an important part of risk analysis). The lecturer continued to chat to Betty, and went on to say "instead of quitting you should give yourself a chance to learn, what is scaring you at the moment?" Betty responded "the ropes activities", and the lecturer replied, "you should take up the offer of extra time to practice and master the new rope skills" that would in turn help her address most of the risks involved in the challenge course high ropes activities. The lecturer also stated to Betty "your skill of identifying the risks was immensely important to keeping students safe and is an important part of being a great outdoor teacher. The lecturer also stated to the class "it's not good teaching practice to take on a 'she will be right mate' attitude and ignore the risks, or pretend to be more competent than you are, because failing to identify risks can lead to harm of your students".

Betty later stated in her teaching journal that the time to practice the ropes skills in particular was an important factor that helped her overcome her fear of teaching the new ropes course activities. She completed at least 30 h of practice before teaching real Year 8 students.

This is an important finding for any teacher preparation program trying to retain a variety of effective teachers in its cohort of pre-service teachers (Futrell, 2008; Loughran, 2007; Shulman, 1986; Westheimer, 2008). This situation needs to be taken seriously and dealt with effectively to stop future female and other good POETs experiencing high levels of fear that can cause them to quit the profession.

The lecturer of the program provided effective teaching approaches to nurture all of her POETs that also retained a variety of great teachers in the program. Retaining a variety of individuals who can teach effectively means retaining individuals with the knowledge and skills to make appropriate education based changes to the curriculum (Futrell, 2008).

A Way to Nurture POETs and Classroom EfS Teachers in the Future

The vignette highlights that you can enact processes to alleviate fears of teaching. Essentially this situation means putting in time to practice (rehearse) and acquire new outdoor pedagogy and as stated by Betty it did help alleviate her fears of teaching in the outdoors. Allocate time to practice the subject-matter (or curriculum) and teaching approach before the new content is taught to students, this process can be adopted in a classroom setting or anywhere one experiences a fear of teaching. Eventually when enough time is spent on practicing new pedagogy a feeling of competence will help alleviate the fears of teaching new content. This process should allow for growth in confidence in teaching and in turn this lowers apprehension and feelings of distress about teaching. This type of approach to handling stress is a thinking process that was designed to help pre-service teachers gain confidence in what they are teaching and how they teach it (Burtom, 2009; Craske & Barlow, 2007; and National Institute of Mental Health [NIMH], 2009). The notion of adequate time to practice your teaching skills is so you are able to teach and acquire information effectively (Hansen, 2008). The amount of time dedicated to development of new pedagogy is dependent on how long it takes to feel confident with the curriculum and the various ways to teach it in the outdoors. Hence, acquisition of a teaching approach could take a day if not too complex, but if the teaching situation is very complex it could take years to become competent in a variety of pedagogical approaches.

The vignette depicts the POETs fear of teaching a lesson that has elements of risk and explains some of the steps taken to address the POETs fears. The lecturer also took further steps to address the POET's fear and those will be explained in the following sections of the chapter. Also note that the steps taken by the lecturer in the experiential education program can be transferred into a classroom or school based environment where classroom teachers also experience a fear of teaching too. In addition acknowledge that teaching can be stressful at any stage of your career because it is multifaceted and requires constant adaption to curriculum changes, working with students that have different needs and abilities, building a rapport with their parents and various colleagues and communities (Loughran, 2007).

A Way to Face Fear

In this section, I discuss ways that female teachers can develop more resilience to the negative dominant discourse they face in the outdoor education profession. When faced with moments of fear, anxiety, and stress during teaching in the outdoors implement these strategies to face them. This is also example of how to retain good teachers in the profession.

One way to debunk fear is to understand what it is. Fear and anxiety can cause physical and mental stress that can lead to novice teachers in particular leaving the teaching profession. To manage and eventually overcome these challenges, Craske and Barlow (2007) encourage the development of skills to be able to calm ourselves when we experience feelings of fear. Burtom (2009), Craske and Barlow (2007), and NIMH (2009) recommend techniques such as 'thinking skills' and 'breathing skills' to help deal with the triggers of anxiety or feelings of stress in the everyday setting. So to adapt this approach to teaching a 'thinking skill' would be something that makes you concentrate on what you are teaching. So when think through teaching a lesson it is good practice to identify learning tasks that make you feel fear or stressed. The points that raise your level of fear or stress should be addressed. For example if feelings of stress or fear arise from thinking about teaching students on a ropes course because it puts the students in a perceived risky situation, then the stress points ought be addressed. For the POETs the stress point was at not being capable of tying effective knots. So they found that the extra time spent on correctly tying knots helped them face the fears of teaching the lesson. The key here is to identify the issue or point in the lesson that is stressing and devise whether the fear is rational (real risk) or irrational (perceived risk) (Priest & Gass, 2005). Also acknowledge that when learning to teach there can be many situations that cause fear, so it is of benefit to take the time to face our fears. If we face our fear of failure enough times the feeling will eventually subsides when you have a growth in competence of teaching. Then becoming a more competent teacher can become a more enjoyable experience.

Once the stressors have been identified the next challenge is to find a way to address the stress, fear or anxiety when preparing to teach. Aptly Craske and Barlow (2007) suggested different types of 'thinking skills' or strategies to overcome anxiety attacks. Another example in a teaching scenario would be, before teaching the lesson, take steps like: think through the teaching plan, identify the risks to student from environment or the learning experience, and manage the risk by removing the risk or change the activity to eliminate the risk (Priest & Gass, 2005). This process will minimise the risks and also help face the fear of teaching that lesson. This could also apply to other 'thinking' strategies that are designed to improve our understanding and abilities to teach complex content. Therefore to reduce our fears of teaching and help reduce stress caused by "unrelenting scrutiny and judgement" that is caused by the hidden discourse of the outdoor profession (Wright & Gray, 2013). Wright and Gray research findings offer suggestions to help females stay in the profession, if teaching in the outdoors becomes more enjoyable and fun, then

there is more chance that quality female teachers will continue to be outdoor educators. Thus adding vital diversity to the outdoor teaching profession.

Conclusion

The post-millennial feminist theory or contemporary feminist theories inform my critique of teacher education programs. In particular the need to devise programs that encourage a culturally vibrant population of teachers who can provide various pedagogical approaches in the outdoors, in order to explore other ways to experience nature and encourage new ways to connect to nature. We need to avoid scaring off excellent teachers who drop out if they perceive the risks to their students are too high. For far to long POET's have been told you must climb this mountain if you want an A in my class.

Contemporary feminist theory suggests that if we want a more sustainable future we need to think of ways to address the issues of disconnection from nature (Alaimo & Hekman, 2008). The classrooms of the future will contain more culturally diverse student populations so teacher education programs are asked to produce teachers with capabilities to address this deficit (Futrell, 2008, Westheimer, 2008). Maybe in the future, we could aim to retain quality teachers who are able to improve teaching approaches and curriculum development of EfS. Maybe a more inclusive approach to teach EfS from a variety of educators could provide in depth learning experience that support all students and help them create a strong human connection with nature and nurture this relationship in the hope that in the future they will learn to care about nature. At present the new EfS curriculum priority affords teachers with the opportunity to teach their students to care and understand the need to protect our planet. This could also lead to outcomes that encourage stronger links to sustainable practice that protect our environment. If we retain good teachers in the field then we have the potential to change the dominant discourses of the outdoor education profession to explore new and diverse ways of interacting with others and the planet.

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Chapter 20
Caretakers or Undertakers: How Can Education Support Humanity to Build a Sustainable Future?

Les Vozzo and Phil Smith

Introduction

In the film, *The Day the Earth Stood Still* (Boardman, Goodman, Stoff, & Derrickson, 2008), audiences follow Klaatu, an alien sent to eradicate humanity from the face of the Earth because the human race has endangered other life forms and Earth itself. In the crucial dialogue between Klaatu and Professor Barnhardt, the 'smartest' scientist on Earth, Professor Barnhardt tries to convince Klaatu that humanity needs a second chance:

> Every civilization reaches a crisis point eventually … so it was when your world was threatened with destruction that your world became what you are now; that is where we are … and you say that we are on the brink of destruction … and it is only at the brink that people find the will to change. It is only at the precipice that we evolve. This is our moment; don't take it from us (Boardman et al., 2008).

With this quote in mind, it is important for educators to play an active role in supporting humanity to build a sustainable future. A part of this is through the development of curricula that educate communities about environmentalism through the disciplines of science such as ecology, biology, and Earth sciences; another aspect is to help develop active citizenship and leadership capability within communities. Given the precarious nature of the Anthropocene, it is vital that educators from all sectors of the community seize the opportunity to act now and develop education programs that enable communities to collaborate in projects that improve the health of the Earth and the quality of life for all living organisms. Educators can foster a caretaker view that resists the undertaker culture that exploits and buries human and non-human life for the sake of the wealth and power of a few. Educators can help society understand how choices made in the past have led to this epoch called the

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Anthropocene; they can help society move beyond its narrow conception of what it is to be human. The curriculum developed for our children must examine ways to protect nature and not allow politicians to stifle the merits of people leading the conservation and social justice initiatives needed to make a more habitable Earth and future habitable places in the Cosmos.

Disease, weather changes, resource depletion, economic depression, and war have brought down great civilisations. Coupled with this were the mistreatment of freshwater supplies and the misuse of soils. In his book, *Collapse*, Jared Diamond (2005) identified five factors of collapse in civilisations: human environmental impact; natural changes in climate; hostile neighbour nations; loss of allies; and breakdown or short-sightedness of economic and social institutions. In the present time, humans in the industrialised world have lost connection with and understanding of nature; some have lost any appreciation of the natural processes that provide them with clean air, fresh water, and healthy soils. The number of humans is growing at rates disproportionate to nature's capacity to cope (Guillebaud, 2014). For over 150,000 years, the global human population was steady at about ten million. Humans numbered about 300 million during the Middles Ages, one billion at the beginning of the Industrial Age and two billion in the 1920s (NOVA Public Broadcasting Service, 2006). In 2015, the world population has surpassed seven billion. With such rapid growth and such large numbers, nature suffers. A short list of serious global issues includes: the loss of tens of thousands of species each year; acidification of oceans; increasing desertification; removal of rainforests for cattle, palm oil, coffee, and timber; human activity that spews more than 30 billion tons of CO2 into the atmosphere each year (Gerlich, 2011); and the use of fresh water faster than it can be replenished.

How much more precarious can it get? And that's without looking at the social trends: growing conflict and more dangerous tools of war; growing inequity within countries and around the world; growing corruption; steady losses of liberty paired with the increasing powers and use of the police; a surfeit of surveillance cameras in public and private places and more punitive, reactive laws; the continuing failure of governance models that pursue ideologies that lack vision and ignore evidence; decreases in expenditure on health and education; and the rapid privatisation of public resources, including water. Many of these trends have been depicted in science fiction novels and films. In the film *Interstellar* (Goldberg Myers & Nolan, 2014) dwindling food supplies result in an uninhabitable Earth, and the only solution proposed to this startling situation is to build a 'space ark' and take some humans to a new home in the stars.

There are tipping points and there are trends. Human policies, choices, and actions cause both. Tipping points reflect the past and hint at the future. Trends reflect current actions and spell out possible and probable futures. Being conscious of both enables conscious decisions to be made. Education can inform, build skills and, where necessary, inspire action. The trends described above are the sum of individual human actions and can influence the direction of society. They are shaped at the multiple points of choices and by the actions individuals take on matters of consumption and participation in democratic decision-making processes. Education

can help people make sustainable choices in both – consume less, participate more. These choices must require humans to understand how their choices and actions impact on planet Earth and what technologically-based solutions can be found to address planetary damage (Lloro-Bidart, 2015).

Perhaps humanity is always on a precipice. Humans have the choice to be Caretakers or Undertakers and draw on knowledge from political ecology and the political economy of education to unpack human-nature relations in educational spaces (Lloro-Bidart, 2015).

Where Does the Change Start?

What is required to meet these challenges? Humans can halt or reverse all of these trends; this is mostly not in dispute. The real disagreement is around how to take a different path. As Richard Rorty (2007) argued, the 'what' is agreed, but the 'how' is contentious. Imagine a sustainable society. New imaginings must include actions that go beyond acknowledging the impact humans have made on Earth's geology and ecosystems as described by the Anthropocene. Imagination without action is sterile, and as humans we need to decide on actions that consider new perspectives and take into account the political and cultural implications that human activities have made on planet Earth. Such actions require all citizens of the world to engage in decision-making processes and become active citizens and be alert to the present models of governance and the decisions governments are making, and their consequences; and of the needed models and decisions that will create a sustainable future. Education is the key to bringing about change and enable humans to seek solutions to problems that endanger life on Earth. In seeking solutions it is important for educators to "unpack the binaries between human/nature and human/culture" and imagine alternative ways of relating to and encountering the more-than-human world (Malone and Truong, Chap. 1).

The authors' role in education includes the design and delivery of professional learning to in-service teachers in Sydney and teaching pre-service teachers at Western Sydney University. In these roles, education programs have been developed to encourage individuals to take a more active role in preserving the planet Earth and ensure that all life can live in harmony; we've done this because we want to help protect the planet and not let the Earth disintegrate under our feet! In particular, over the past 5 years we have been active in leading projects that enable students to be prepared for a world of constant change and attain real-world skills – skills vital for the twenty-first century (Kelly, McCain, & Jukes, 2008). Our view is that there are two prime purposes for education: to help students learn to live responsibly in the world outside the classroom; and to help students develop the knowledge, skills and values to be able to improve that world. This is about understanding the context in which they are learning, and inspiring and helping them to make it better. This is our sustainability agenda (Smith & Naji, 2011).

Sustainability needs to become a main guiding purpose for education. By sustainability, we mean enabling healthy people thriving in healthy communities on a healthy planet. Schools must move beyond the notion of just integrating sustainability into curriculum and practice in schools. Education systems everywhere need to see their overarching purpose as integrating education into sustainability. Decisions about policy, training, curriculum, and implementation must be subjected to such questions as, 'To what extent will this decision contribute to a sustainable society?' and, 'To what ends are our efforts directed?' Systems must also keep asking, 'Why those ends?' (Smith & Naji, 2011).

Case Study One

The *Curriculum Integration Project* was introduced at James Busby High School (a comprehensive government school in south-west area of Sydney) for Year 7 and Year 8 students in 2012. The project developed teaching programs that were cross-curricula and assisted secondary students to learn about the conditions needed for life and how humans can create sustainable practices both on Earth and in the cosmos. The teaching programs were imaginative and involved students in the examination of the impact human activities have on the environment, and what should happen in the future on and beyond Earth. The project aligned with innovative programs developed in the United Kingdom, and other countries around the world that have adopted project-based learning as pedagogy to prepare students for the twenty-first Century (Innovations Unit, 2012). In selecting the curriculum that would be targeted, teachers at James Busby High School decided to focus on topic areas they would teach in the second half of the school year such as space science for Year 7 and alternate energy resources and recycling (environmentalism) for Year 8. Cockell (2007) argues there are strong links between environmentalism and space exploration –"creating sustainable human communities in the cosmos – whether they are on the Earth or on any other planet or moon" (p. viii). He argues that the exploration of space helps humanity to take care of the Earth and at the same time provides "an opportunity to improve the human condition" (p. ix). This view has been adopted in planning the two units developed at James Busby High School from 2012 to 2014.

The Year 7 unit, 'Life on Mars' used bioastronomy as a context to integrate Science, Mathematics Technology, English, and Visual Arts in an authentic way to engage high school students in learning about our Solar System. This authenticity was made explicit as the students were told that their learning would be exhibited to their parents and peers at the end of the unit (see Fig. 20.1). This question is the same question that motivated NASA scientists and engineers to send the Curiosity Mars rover to the surface of Mars in 2012. The teaching unit sought to answer the question: 'Are there other forms of life beyond Earth?' This context offered high level connectedness and significance to students and provided opportunities for students to engage in learning of high intellectual quality (NSW Department of Education and Training [NSWDET], 2003). The question about life beyond Earth

Fig. 20.1 One group's student work samples produced in the unit, 'Life on Mars' (Author's photograph)

encouraged the students to think about our planet and investigate the necessary conditions needed for living things to exist and survive. The development of the unit utilised the latest scientific research on Mars and was derived from recommendations made at the Fulbright 2002 Symposium: Science Education in Partnership in conjunction with the IAU 213 Bioastronomy Symposium: Life Among the Stars (De Vore, Oliver, Wilmoth, & Vozzo, 2004). In the unit, students learnt about what made something living and discussed the possibility of life on Mars. Students learnt to conduct scientific investigation and applied their knowledge to the completion of the common task in justifying what specific search areas on the Martian landscape they would investigate for the possibility of finding life or past life. Students drew on other curriculum areas to support their investigation. Students researched and built a robot in their Design and Technology class that they could remotely manoeuvre over a simulated Martian landscape made from canvas and paint, which they had created in Visual Arts. In English, students created a film documenting their journey searching for life on Mars. In 2014, the Year 7 students designed a dome structure that humans could live within and survive on Mars.

The Year 8 unit, 'Learning for Sustainability' was taught across several curriculum areas with a focus on developing the knowledge, skills, values and world views necessary for students to act in ways that contribute to more sustainable patterns of living. The key concepts students learnt were that:

- Sustainability is the key to meeting our human needs without damaging the environment;
- Students have the power to be active citizens and make decisions which address sustainability at local, national and global levels; and
- Sustainable patterns of living means being able to meet the needs of the present without compromising the ability of future generations to meet their needs.

The mandatory NSW DET Environmental Education Policy for Schools (2001) supports the cross-curriculum approach suggested in this unit: schools are expected to "integrate the teaching of environmental education topics and issues to support

outcomes in other syllabuses" (p. 12). The Australian Cross Curriculum for Sustainability will allow all young Australians to develop an appreciation of the need for more sustainable patterns of living, and to build capacities for thinking and acting that are necessary to create a more sustainable future (Australian Curriculum Assessment and Reporting Authority [ACARA], 2014).

The integrated curriculum approach allowed student learning in one task to develop meaning and build capability for learning other tasks. Students learnt about sustainable energy sources, what it means to live in a sustainable way and how to use resources to ensure a sustainable future on this planet. Students thought globally and acted locally to produce a persuasive multi-modal film about the importance of using alternative energy sources and recycling plastics and other human-made products. In 2012, the students were divided into four groups and each group proposed and created a sustainable lighting design for a public space (see Fig. 20.2) and used their multi-modal films to increase awareness and demonstrate active citizenship to take care of the environment and reduce their carbon footprint. These student products were exhibited as a culmination of their learning to an audience of parents, community members, and peers.

The project continued in 2013 and in 2014 the school adopted a strong project-based approach to curriculum implementation. At the end of 2014, the staff at James Busby High School completed the school's strategic directions, and placed Project Based Learning as an integral part of the pedagogy used by staff. Project Based Learning provides a number of benefits including positive changes in student motivation and attitude towards learning. As a result of involvement in Project Based Learning, students have demonstrated better critical thinking and problem-solving skills, and have been able to apply what they learn to real-life situations (Hixson, Ravitz, & Whisman, 2012).

The following is an extract from an email received from one of the teachers at James Busby High School, reflecting on the achievements of Year 8 students in 2014:

Fig. 20.2 Two examples of student sustainable lighting design for a public space (Author's photograph)

Fig. 20.3 Examples of student products made from recycled material (Author's photograph)

> My experience of being a teacher and working with my year 8 sustainability class. We wanted to improve what we did the previous year and include a wider variety of challenges for the students. So the idea of creating desirable products from otherwise waste materials was developed (see images below). The students felt that if the product could then be sold "in a market setting", then our sustainable project could also become financially sustainable as well. So, by making this a genuine or "authentic" experience, it then promoted good research and student-regulated production.

The project at James Busby high school was a resounding success based on student and teacher feedback. For example, the teachers that developed the two units found that the project re-ignited their passion for teaching and gave their students an opportunity to learn, explore, create, and challenge their thinking. The students involved commented how much they enjoyed learning and wanted to continue doing practical projects similar to the ones they did. The project enabled students to work on their investigation over longer periods of time than was previously possible; as they moved from their Science class to their English or Geography class the students were able to sustain their thinking across the different curricula timeslots (Fig. 20.3).

Case Study Two

Speaking 4 the Planet (S4P) was an initiative of the Sutherland Shire Environment Centre. It is a high school public speaking and drama competition that is held in conjunction with World Environment Day (WED), 5 June. S4P invites students to prepare speeches and dramatic performances on the United Nation's theme for WED. The Speaking 4 the Planet events are registered on the United Nation's website. Events include both prepared speeches and impromptu drama and speeches. Students are asked to take a 'quirky' perspective. This encourages them to think outside the box about how problems can be perceived and analysed; it invites them to think of solutions beyond those that have already been considered. In 2013, the WED theme was on food: *Think. Eat. Save.* The 2014 theme was *Small Island*

Developing States – Raise your voice, not the sea level. Both required students to consider and comment on the bigger, wider, longer contexts in which they live. Both inspired ideas about personal, national, and global actions.

In 2013, eating habits, alternative energy, food miles, soil and water quality, pollution, poverty, and local shopping were all covered. One speech proposed a National Left-Overs Program that involved the underground transport of Sydney's food left-overs to country farms. Another ironically proposed that we train animals to pick up litter and keep our streets clean. A Year 11 student from Port Hacking High School won the prepared speech section with a talk that encouraged everyone to eat less meat in order to protect our soils and climate. She suggested that we 'Veg In' rather than 'Veg out'. With the winner's permission and support, the Sutherland Shire Environment Centre is building a website and small campaign to support this innovative idea. The winner of the impromptu speaking section in that year – a student from The Jannali High School – observed that everyone has a responsibility to nurture a healthy planet. He ended his talk with a critical message: "If opportunities to save the planet don't come knocking at our doors, we must go out and make them".

For the 2014 theme about climate change, one drama team from Sylvania High School journeyed into the mind of a climate sceptic. The skit began in the present, but travelled 400 years into the future where this sceptic saw a water-logged planet and realised the power he possesses now to help shape a better future. Another team played chess: each piece lost was an island going under. A third team held a Counselling Session during which the small islands could speak their grief (Fig. 20.4).

Moving, insightful, funny! Importantly, these events stirred critical questions, including these, which were gathered from a range of speeches and performances during the course of the day:

Why don't we know where all our food comes from? Do we actually need to eat as much as we can? Where have we gone wrong that some people die of eating too much while others die of starvation? How have our governments lost control to big corporations? Will we consume the planet into extinction? Why do we keep destroying the planet and the people on it? Why are there poor people in the world? Why can't we be better at sharing? What are you going to do now to not waste food and help fix this situation?

Fig. 20.4 Students speaking at Speaking 4 the Planet, 2013 (Author's photograph)

Local councils welcomed the opportunity to be involved. S4P gives them a way of letting high school students know about their initiatives and enabling them to become involved. The winners of the prepared speech sections have been invited to address their local councillors at full council meetings. On every occasion, the students have surprised and pleased the councillors with their capacity to address issues in such articulate and well-argued ways. For schools, S4P enables the English and Creative and Performing Arts curriculum areas to make a contribution to sustainability education. This initiative is very important since many schools limit their sustainability education to the Science and Human Society and its Environment curriculum areas. Society must deal with the human aspects of sustainability (collaboration, social justice, creativity, governance, etc.) as well as the environmental aspects.

Case Study Three

Sustainability Leadership

The early sections of this chapter noted the need for change in how humans treat the planet and all its inhabitants. Many confront society on a daily basis and demand steps towards resolution. One necessary step is the need to build leadership that understands and is committed to working towards a sustainable society. Australia needs informed, collaborative, visionary, and inspiring leaders. This sustainability leadership course makes a contribution to building intelligent and courageous leaders who can inspire, innovate, and support sustainable change.

The one-day workshop builds understanding and skills in innovation, leadership and collaboration in a sustainability context; it helps students develop an understanding of sustainability from personal to global levels, it strengthens problem-solving and communication skills; it focuses on collaboration, project design, and implementation skills; and it helps students work out local initiatives they can lead in making a difference. During the session, students gather ideas and build their own understanding of sustainability and leadership (see Fig. 20.5). This short course helps students develop with others a school-based, collaborative, and sustainability initiative within their schools.

To date, workshop participants have designed and conducted short sessions on sustainability and leadership for Year 6 students during their Term 4 Orientation visits; they have run professional development sessions at staff meetings; they have revegetated areas of their schools and improved habitats for native bird species; and they have addressed local community groups on the matters that concern them most. This sustainability leadership initiative has delivered local sustainability benefits and strengthened student confidence in researching and acting on their knowledge. The course is designed for high school students. On successful completion of an assessment task, students receive a Certificate of Completion of a unit of

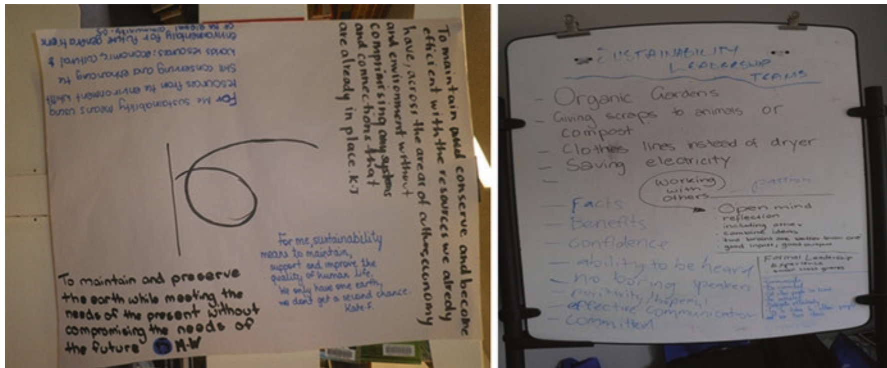

Fig. 20.5 Student notes on sustainability and leadership, 2013 (Author's photograph)

competency in a Certificate III course, BSBINN301A 'Promote innovation in a team environment'. This qualification is valid for up to 6 years.

In the course evaluations conducted by the presenter as an informal evaluation, students have written:

> Today, I have learnt in detail about what leaders do and what the qualities of a great leader are and how to be one. (Sylvia)
> I already knew the roles of a leader, but I didn't know how to be one. This program definitely showed me! I also learnt how to be innovative and confident. (Ernest)
> Leadership is better demonstrated than preached. (Brihanna)
> Leadership is a responsible role but anyone can do it. This course has taught me how to become a better and responsible leader. (Leana)
> Leadership is not overpowering others but letting others overpower in their roles. (Stefan)
> I learnt how to be a great learner and leader. (Justin)
> I've learnt that leadership isn't just being the leader. It's also about caring and understanding your teammates, along with respecting their contributions. Thank you. (Ayeshia)

Efforts are currently underway to adapt this workshop for other contexts and audiences. The comments above will help in the process of adaptation.

Conclusion

The three case studies provide examples of what can be done to build the capacity of young people to use their knowledge and skills in real-world situations, and take leadership and activist roles in shaping a more sustainable society. The case studies link to the skills for the twenty-first century, and provided opportunities where students build new perspectives on what it means to be human in a world brought to the brink by a long history of narrow Anthropocentric decisions and actions. In the above case studies, students sought support from people in the community, as well as local government and businesses, so that they could exercise their leadership capabilities and apply their learning to solve real problems. Other examples

described in this book by Truong (Chap. 16) and Gannon (Chap. 17) illustrate how real world situations have helped primary and secondary students connect with nature and recognise the deep interconnections between humans and nature.

Schooling for the future must include a rethink of the purposes of education. The world has altered significantly in the past 30 years and so too must our education. Systems and teaching are getting on top of the information technology opportunities in education, but they are ignoring the rapidly deteriorating environmental and social justice contexts in which they operate. School systems must stop looking inwards only and participating in self-congratulatory back-slapping about improvements in the quality of education delivery. Systems, teaching and teachers must look up and out and work with a sustainable future in mind. Schooling for the future must be integrated into sustainability. We are not asking educators to throw out all they know. Instead, to be explicit in what education is actually trying to do. It is an important time for educators to re-think and re-focus the curriculum and contribute to a re-energised education sector, a place where *wisdom and action* dominates the scene of education.

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Chapter 21
Educating Beyond the Cultural and the Natural: (Re)Framing the Limits of the Possible in Environmental Education

David A.G. Clarke

Becoming Rocked

"I didn't know we were at the disco" said a student down to my right hand side. He was remarking on my leg, which was drumming up and down at the knee under the odd, angled pressure I was exerting upon it. The student, ostensibly acting as a 'spotter' in case I fell, was one of 12 who had come on this trip to Fontainebleau Forest about an hour's drive south of Paris. Fontainebleau is world renowned for its sandstone boulders, which are climbed by thousands of people each year. Although I had visited 'Font' several times before, for the undergraduate students, undertaking a degree in 'Outdoor Adventurous Activities', this was their first time wandering the sometimes thick, sometimes gladed, sometimes deserted Oak, Scots Pine and Beech forest.

We had been climbing at a spot called Le Diplodocus in the Trois Pignons area of the forest all morning. I had been sitting on a bouldering mat having some lunch when some of the students had started trying to climb a short slab route off to my right. I'd seen a local ascend the route not 10 min earlier with little problem, and so was interested when these students, among them some very talented climbers, were struggling to get to the top. From where I sat it looked 'do-able'. I wandered over. I was drawn over. I could picture placing my right foot on the solid foot hold, stepping up to 'smear' my left foot wide and high, balancing, and then biting in with the rubber on my left shoe to step up to the broad 'jug' hold at the top– three simple moves. After helping spot the students for a while they offered up a slot. 'Dave?' said Tom, indicating to the rock.

To say the rocks are climbed might be something of a mistake. The rock is not inert in the process. Rather, it climbs us as much as we climb it. Years of climbers

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returning to the same famous circuits (sets of climbs of roughly the same difficulty) and routes (the individual climbs themselves) leave their mark on the rock in the form of chalked up hand holds, blackened foot holds and a gradual 'polishing' of the holds which makes each attempt at a route infinitesimally more difficult than the previous attempt. But the rock acts on the climber in very physical ways also, asking her to contort, balance, rush, be still, endure, sprag, smear, bridge, create, push, pull and above all, feel – through searching fingers and weighted toes, and the gentle pendulum of a balance nearly caught. There is none of this without the rock. If the rock is climbed, then the climber is rocked.

Pauliina Rautio (2013) is a human geographer whose research on the way children experience their material world demonstrates this 'intra-relational' existence:

> Stones have (intra-)agency: stones do things to us and with us. They have us pick them up, feel them, close them in our fist (if particularly smooth and rounded) or hold them between our thumb and forefinger (if small and edgy). They condition our walking: on a frosty morning when the roads are slippery the sight of gravel on the ground makes us pace with ease. Stones play with us if they are flat in the right way. We throw them onto water to make them bounce – just to make them bounce. And if our co-operation is optimal they bounce quite a few times (Rautio, 2013, p. 404).

The students and I spent most of the time looking, in a haptic sense, at the rock face[1]. We chatted to each other as we stroked our fingertips over the rippled sandstone, searching for nuances in the face that might hold a toe (the foothold was all important for this particular climb). So here we were, our 'matters of concern' before us (Latour, 2004), imbricating us, intra-acting upon each other (Barad, 2007), and all blurring at the edges through our intra-acting; or, more accurately, becoming more real as a result of it. In 'Font' the routes are numbered, and often named, so climbers can follow a circuit, or return year on year to a problem yet unsolved; an old friend they want to get to know better. Blue 11 at Le Diplodocus was becoming a friend, taunting me warmly, daring me to stand on my left foot. Trust the hold; trust the rubber on my shoe. Trust the students spotting me (another matter altogether). And reach the top.

The purpose of this chapter is to introduce the reader to a material approach to environmental education. In my recent work with undergraduates, along with my colleague Jamie Mcphie, I have been interested in helping students to think about their conceptions of their material existence and have found new materialist literature useful for this endeavour. This exploration of a material environmental education has arisen through critiques that Jamie and I have made of sustainability education approaches which stress human 'connectivity' to the environment through place-based education, ecological literacy, or attempts to 'connect' to 'nature' (Clarke & Mcphie, 2014, 2015; Mcphie & Clarke, 2015). Interrogating the human/culture dualism has been an important aspect of this work. This chapter, then,

[1] Haptic because, as Karen Barad (2008, p.327) notes: "Can we trust visual delineations to define bodily boundaries? Can we trust our eyes? Connectivity does not require physical contiguity. (Spatially separate particles in an entangled state do not have separate identities, but rather are part of the same phenomena.)".

introduces the reader to some of the literature we have found generative, and, it is hoped, prompts consideration for an education that moves beyond shallow, deep or dark ecological conceptions of the human/nature relationship. In doing so I hope to open up a platform from which new materialist, intra-relational, immanent and, perhaps, animistic (these terms overlap more than they can be said to 'relate' to each other) environmental education practice might spring.

The Material Turn

Sustainability education has often been conceived as responding to a 'crisis of perception'. There are certainly alternative ways of conceiving the world to dominant Western understandings, and it is reasonable to assume that our ways of conceiving have an influence on our actions. Are there, then, more 'sustainable' ways of conceiving? Ways of understanding reality that, through the manner in which the 'human' is conceived in relation to the wider world, result in change that might be productive for the 'human' and the 'nonhuman'? It is certainly an idea worth exploring. And I wonder what the concept 'Anthropocene' means for our ways of seeing and what alternative conceptions exist? Whilst there is healthy debate amongst geoscientists as to 'when' this 'new' epoch arose (Zalasiewicz et. al., 2015) there is also debate, in broader fields, as to the manner in which we might conceive of any change in geo-temporal era – i.e., who is to say when one epoch finishes and another begins? For instance, Donna Haraway (2015) recently decentred the 'anthro' in the Anthropocene, noting that "[n]o species, not even our own arrogant one pretending to be good individuals in so-called modern Western scripts, acts alone; assemblages of organic species and of abiotic actors make history, the evolutionary kind and the other kinds too" (p. 159).

Whilst some embrace the concept of the 'Anthropocene' as evidence of the damage that humanity has done, or celebrate its occurrence as an opportunity on the path of human progress (see Hamilton, 2015), the rush to label humans as the central instigator of environmental crises does not sit well theoretically with posthumanist theory that attempts to erode the dualism of humans and 'nature'. Splitting history into distinct geological phases is, after all, a very Western human thing to do, as is naming one of them after our selves. What does the 'Anthropocene' *do*? Eileen Crist (2013, p.129–130) invites us to dwell on the 'shadowy repercussions of naming an epoch after ourselves: to consider that this name is neither a useful conceptual move nor an empirical no-brainer, but instead a reflection and reinforcement of the anthropocentric actionable worldview that generated "the Anthropocene"'. Jason Moore's (2014) 'capitalocene' paints a different picture to the dominant narrative once again. Moore moves beyond the implied dualism of the Anthropocene (that humans are 'overwhelming the great forces of nature' [Steffen, Crutzen, & McNeill, 2007]) to instead depict capitalism as a *world–ecology*. This conception, Moore (2014) argues, is useful for overcoming a prevailing problem, that "[p]hilosophically, humanity is recognized as a species within the web of life; but in terms of our

methodological frames, analytical strategies, and narrative structures, human activity is treated as separate and independent" (p. 2) – our ways of seeing, then, can be likened to the volcanic action that most likely brought on the great Permian-Triassic extinction (Clarke & Mcphie, 2014; Mcphie & Clarke, 2014). And history, as they say, repeats (Pimm et al., 2014).

My story of my experience with Blue 11, and Rautio's (2013) description of our diffusion with the material world more generally, spring from an emerging and promising current of alternatives to the prevailing conception that is beginning to seep into our 'methodological frames, analytical strategies and narrative structures' (Moore, 2014, p. 2). These alternatives, variously and often enigmatically named, are united by their move past dualistic conceptions and transcendent notions of reality to re-imagine, often to blur and make 'messy' (Mcphie, 2014), the human relation to the world in order that we may productively tackle socio-ecological crises. Ivakhiv (2014) describes this entanglement of new narratives and perspectives as an:

> … ontopolitical milieu of contemporary social, cultural, and environmental theory, a milieu in which posthumanism, critical animal studies, actor-network theory, assemblage theory, critical realism, agential realism, nonrepresentational theory, enactive and embodied cognitivism, post-phenomenology, multispecies ethnography, integral ecology, and various forms of "new materialism," "geophilosophy," and "cosmopolitics" fashion themselves as intellectual responses to the predicament indicated by such terms as the ecocrisis, the climate crisis, and the Anthropocene (Ivakhiv, 2014, p. 1).

Such an array of new terminology might appear unsettling to the uninitiated. But many of these neologisms serve to demonstrate their intent by themselves. More than this, they can allow the reader to think generatively. Rather than acting as a signifier to a pre-given realm of reality the term 'geophilosophy', derived from the materialist philosophy of Gilles Deleuze and Felix Guattari (2004), is more of a process that cultivates the readers thoughts. What does it make you think to read the term? For me, sometimes, the expression implies a rupturing of any transcendent divide between the *mental abstract* and the *geophysical*. When I read the term my thoughts can become as tangible as fjords, or French boulders – no longer any chasm of categories of reality between them and the 'real' world. The challenging of modernist dualisms, such as mental/physical, is a feature common to the diverse approaches Ivakhiv (2014) lists. This is not, as Ivakhiv (2010) points out, because dualisms are inherently bad (though there may indeed be negative consequences of basing action solely on dualisms), but rather because the (often unquestioned) importance we place on them may smother other ways of thinking.

The nature/culture dualism is one such schism that may be stultifying other modes of educating for sustainability. Presently much research, theory, and academic effort supports the notion that spending time in 'nature' can inform environmental awareness, and even 'reconnect' 'us' to 'it' (Cheng & Monroe, 2012; Christie & Higgins, 2012; Frantz & Mayer, 2014; Liefländer, Fröhlich, Bogner, & Schultz, 2013; Sommerville & Williams, 2015). However, the term – 'nature' – is used variously and incongruously in the field of environmental education. For example, sometimes the term is used to refer to the 'ecological processes' of the

planet. For instance approaches that advocate 'ecological literacy' often suggest helping people better understand the 'natural ecological process' of the planet (McBride, Brewer, Berkowitz, & Borrie, 2013). Alternatively 'nature' can refer to geographically delineated places, supposedly untrammeled (or only partially trammeled) by people. For instance some authors advocate 'nature experiences', as if there is a transcendent 'nature' that is somehow apart from the everyday lives of people (e.g. Zelenski, Dopko, & Capaldi, 2015). In the first of these examples, students may be urged to consider the ecological systems that they draw from, and which they affect in their day-to-day life choices. In the second, students may spend time in supposedly 'natural' places, so as to have firsthand aesthetic experiences, gain propositional knowledge of 'wildlife' and 'natural processes' and as a result start to care for it/them. There are many variations of these approaches and 'nature' is not always essentialised in environmental education literature (see Gough, 2004, for example). However, other fields of enquiry have moved much further in their exploration of the concepts of the 'human' and the 'natural', as indicated by Ivakhiv (2014). As the term appears so central to environmental education, researchers, theorists, and practitioners could make more use of this rich world of alternatives.

In Environmental and Human Geography for instance Lorimer (2012, p. 2) tracks a profusion of conceptions of 'nature' referring, rather, to multinatural ontologies constituted by "a diverse array of non-deterministic and non-dualistic materialisms". The focus on materiality, or *new* materialisms, allows a dissolving of the essentialist barrier that is set up by the terms 'human' and 'nature' as well as the constructivist view of culturally constructed natures. Coole and Frost's (2010) edited collection, *New Materialisms*, acts as a confluence of this 'material turn' in cultural studies, demonstrating that it is a turn that has been picking up speed across fields as diverse as anthropology, archeology, feminist studies, and political studies for example, even producing its own areas of science studies, rhizome studies, and contemporary animisms as well as its own academic battles (the static Object-Orientated-Ontologists vs the fluid process-relationalists for example – see Taylor, 2016, for a recent diffractive encounter along these lines). There is also a burgeoning field of new materialist (or post-qualitative) research methodologies that aim to move beyond what is described as the discursive and dualistic limitations of representational social science (Koro-Ljungberg, 2016; Lather & St. Pierre, 2013; St. Pierre, Jackson, & Mazzei, 2016). The potential for new materialist approaches to impact research, policy and practice in environmental education is great (Clarke & Mcphie, 2015). My research focus has been on how education can help young people conceive of their material coalescence *of* (rather than 'with' or 'in') the material world (Clarke & Mcphie, 2014). The implications of this 'new' theory seem particularly significant given the emphasis environmental education discourse places on changing people's perceptions of their dependence on (or, from a new materialist perspective, coalescence *of*) the world. Indeed, commenting on this material turn in social science, Payne (2016, p.170) has recently noted that 'undoubtedly, it is an exciting (theoretical) time for environmental educators and researchers'.

Shallow, Deep, Dark and Flat Environmental Education

So what of 'nature'? New materialists might say that the term is highly anthropocentric, implying that humans have *the* 'culture'. Why is it, for instance, that the action and produce of bowerbirds are *not* conceived as culture, and everything *outside* of their dances, bower building and selection and display of colourful artifacts conceived as 'nature'? Architect, designer, choreographer, and educator Eva Perez de Vega (2014) walks us through four different conceptions of the 'nature/culture' problem. She highlights the popular *deep* ecology of Arne Naess (1973) as an attempt to move beyond the prevailing dominance of culture in our perceptions of the nature/culture relationship, an approach that Naess famously termed a *shallow* ecology. Naess' premise was that we needed to move from a shallow 'anthropocentric' conception, where human culture was the dominant concern, to a deeper 'ecocentric' conception of the world, where 'nature' was considered the home of human culture, and therefore more central to human concerns than modern society would suggest. Many authors postulate what a pedagogy influenced by Naess' work, and greater consideration for ecological process in general, might look like (e.g. Haigh, 2006; Orr, 1992; Stone & Barlow, 2005). Whilst there may be some examples of practice embracing deep ecology and ecological processes in general the absence of these approaches in mainstream education, certainly in the UK, demonstrates that a *shallow* ecological perspective is dominant in schooling in the West. Students may have separate time for 'nature study' or field trips where 'nature' is experienced as an 'other'. Deep ecology has not even greatly influenced popular adventurous forms of outdoor education, where the environment is treated staggeringly uncritically. In this practice there may be plenty of time set aside for synoptic weather charts, footpath erosion, and leave no trace principles, but seldom any for discussion of the petrochemical industries required for Gore-Tex® jackets, satellite navigation, and portable gas canisters, not to mention the socio-environmental justice issues created by the economies upon which these industries are founded (Cachelin, Rose, Dustin, & Shooter, 2011). Environmental education theory has, of course, accessed the philosophical perspective of *deep* ecology, and it has even been seen as firm conceptual ground on which to construct environmental education practice (Kopnina, 2014; Nicol, 2003). However, de Vega draws on Timothy Morton's (2010) *dark* ecology to demonstrate the lingering dualism in Naess' (1973) formation, and the romantic and perhaps limiting conception of 'nature' that *deep* ecology relies on, celebrating green 'nature' over the 'culture' of humans. Might there be a way forward beyond *deep* environmental education?

Morton's (2007, 2010) *dark* ecology, articulated in his books *The Ecological Thought* and *Ecology without Nature*, suggests that the greatest barrier to ecological thinking is the concept of 'nature' itself. This is because the notion of 'nature' sets up an aesthetic distance between 'us' and the 'world'. Morton complains that we cannot mourn for the environment because we are deeply connected to it – 'we' are it – and 'we' includes our industrial processes, urbanisation, pollution and waste; all of which are ecological events that are not 'killing nature', but producing their own

dark ecosystems. In this conception the petrochemical industries are as 'natural' as a wild flower meadow. Morton maintains that *Deep* ecology's ecocentrism, retaining modernist ideas of 'nature', is not much better than *shallow* ecology's anthropocentrism in clearing up the metaphysical puzzle. Whereas in *shallow* ecology uncivilised 'nature' is to be tamed by 'culture', de Vega demonstrates how in Naess' (1973) *deep* ecology there is a favouring of the perceived idyll of 'nature' over the presumed depravity of 'culture'; in both cases, however, a metaphysical divide remains. In contrast, a *dark* ecology allows us to cut out the romantic, picturesque, idyllic and trite from our environmental conception – an operation that is, perhaps, much needed in environmental education discourse. A *dark* environmental education would move beyond ecological principles as popularly conceived. Morton's *ecological thought* is one that acknowledges the co-existence of all things – things already coping with environmental catastrophe. According to Morton, to begin to think our way into this new world we have created we must, above all, reject 'nature'; whatever else it might be, *dark* environmental education would be an education without 'nature'.

Whilst retaining an implicit favouring of romantic ideas of 'nature', Naess' philosophical call is one that at least attempts to remove the dualism between 'nature' and 'culture'. Plumwood (2000) recalls the debates between Arne Naess and his mountaineering friend Peter Reed; where Naess stressed that an environmental ethic must spring from acceptance that 'nature' is the home of culture, thus advocating a monistic *unity* (i.e. that humans and 'nature' are of the same essence), Reed was vehemently dualist, falling back on romantic conceptions of the sublime and awe inspired by the *difference* of 'wild' places as the grounds from which environmental action would rise (a fundamentally *pluralistic* view). In contrast to these approaches a Deleuzo-Guattarian *flat* ecology places the emphasis on the continuous and immanent materiality of the world, before the formation of signifying language (i.e. 'nature' and 'culture') (Deleuze & Guattari, 2004). de Vega (2014) employs the term *flat* as it demonstrates the anti-hierarchical plane of continuity, and yet a quasi-form of difference, implied by Deleuze and Guattari's ontology. From this perspective we can become immediately skeptical of the fixity we place on the world and realise that, rather than having to fit the world into the language we use, we may instead acknowledge that our language may be limiting in all sorts of ways. Deleuze's *flat* ontology (ecology) may appear monistic in its conception of the world, but it allows for the expression of difference (pluralism) manifesting 'of' this apparent monism. Deleuze and Guattari justify this twist by rejecting the notion that the world is made up of one substance (monism), or many (pluralism). Instead, they argue that all things are produced by a process of continual *becoming* consisting of folds, speeds and intensities, rather than a static state of either monistic or pluralistic *being*. This monist-pluralist conception lays a path between the dualistic *shallow* ecology of pure *difference* on the one hand, and Naess' attempt at monistic *unity* on the other. Deleuze and Guattari (2004, p.23) refer to 'the magic formula we all seek – PLURALISM = MONISM – via all the dualisms that are the enemy, an entirely necessary enemy, the furniture we are forever rearranging'. In this way, the world is a processual and relational production:

> As we have seen, Naess' deep ecology subjectifies nature; Morton's dark ecology rejects nature; while Deleuze's flat ecology intensifies nature, treating it as a comprehensive ontology of complex material systems defined not by their identifying properties, not by whether they have natural or artificial essences, but by their process of production – their morphogenesis (de Vega, 2014, p. 7).

Instead of a world consisting of objects or subjects, there is a smooth space of univocity, or plane of immanence – a *flat* ecology. This understanding led Deleuze and Guattari (2004) to voice the *haecceity* (I will attempt to explain this concept shortly), rather than the *object*, as the fundamental property of reality; a move that puts an end to human exceptionalism and a move that has creative, exciting, and confusing implications for environmental education[2]. For instance, what would be the point of a *flat* environmental education? If all things are in a state of material flow, then, why does it matter *how* things flow? Does this new perspective offer anything to the ethics upon which we base environmental pedagogy? Karen Barad (2008) suggests that the becoming material processes that constitute her ontology of *agential realism* produce an *ethics of mattering*. Noting that knowing, being and doing are inseparable she (Barad, 2008) reasons that "ethics is not about right response to the other, but about responsibility and accountability for the lively relationalities of becoming of which 'we' are a part" (p. 333). In educational terms this has a profound significance. For, as Spuybroek (2011 as cited in Mcphie & Clarke, 2015) notes, those involved in education "are not recipients but participants" (p. 240); a *flat* environmental education is therefore a pedagogy of engagement and of participation with a world that is *already* participating.

If environmental education is really about realising that we are already participants of a participating world, then pedagogy built on process materialism could be very useful; it could demonstrate the diffusion of people and planet by attempting to erase the borders of both, and yet retain the persuasive power of difference. Action then, would spring from *both* an understanding that environmental degradation is akin to cutting off one's own arm. In fact, we would no longer perceive *an environment* or *one's own arm*, but rather immanence – *a life* (Deleuze, 2001) *and* a form of awe (what Ingold terms "astonishment" [2011, p. 75] and Morton "enchantment" [2010, p. 104]) which results from living in a world which is seen as constantly becoming, rather than static, staid, and stultifying. Perhaps, more powerfully than both of these points, a process relational pedagogy may demonstrate the eventing nature of existence to learners; comprehending the animate nature of their becoming may be inseparable from consideration for consequence. In *Deleuze and Environmental Damage*, Mark Halsey (2006) draws on Deleuze's reading of Michel Tournier to conclude that 'nature' may be the *possible*, stubbornly passing as the *real*. Halsey concludes that if this is so:

> …the object of future socio-ecological struggles should not – indeed cannot – be the 'environment' or 'humanity', but the techniques and processes which govern their image(s) and frame the limits of the possible (Halsey, 2006, p. 257).

[2] Nature and culture are of course conceived as objects in the prevailing approach – physically and temporally delineated: boulder and climber; object and subject.

As Noel Gough (2004) has articulated, educating beyond the 'natural' and the 'cultural' must therefore be about helping create educational practice that allows students to experiment with the 'real' (Clarke & Mcphie, 2015).

Mapping Haecceitical 'Selves': (Re)Framing the Limits of the Possible with Students

A year before our trip to Fontainebleau the students had undertaken a module entitled 'Concepts of Outdoor Education'. During the module we had ascended the 900-meter North Ridge of Mount Tryfan in Snowdonia, North Wales. Below us the dull grey waters of Cwm Ogwen were surrounded by farmland; fields delineated by dry stonewalls climbing high into the surrounding mountains could be glimpsed in the occasional gaps in the cloud that was moving down the valley and around the prominence on which we were perched. At this point in the module we had moved through de Vega's four ecologies and we were now questioning the received wisdom of the 'human subject' existing 'in' the 'objective world'. Earlier in the week I had introduced the idea of the haecceity to the students. The term haecceity comes from the philosophical work of Duns Scotus (1266–1308 [Vos, 2006]), though an analogous concept is present in many animistic peoples' understanding of the world, and so it is much older than the late middle ages. In general we tend to think of the world as populated by objects. The concept of haecceity works against this axiom to instead argue that processual unboundaried things, multiplicities and becomings constitute the fabric of the world. For a technical definition of haecceity the term is best contrasted with the term quiddity (also from Duns Scotus [Vos, 2006]). A quiddity is an object as we, in the West, are most used to understanding a thing. It is a thing defined by the characteristics that make it a *particular type of thing* – or the question '*what type* of thing is that?'. By contrast a haecceity is a thing defined by its *thisness*, its process of becoming, and, in contrast to the question 'what type of thing is that?' a more appropriate response might be 'look at this! What's it/they doing/producing?!' as haecceities are by definition multiplicities, each thing one *and* many, and unique in their becoming.

> There is a mode of individuation very different from that of a person, subject, thing, or substance. We reserve the name haecceity for it. A season, a winter, a summer, an hour, a date have a perfect individuality lacking nothing, even though this individuality is different from that of a thing or a subject. (Deleuze & Guattari, 2004, p. 287–288)

Essentialising the world into, on the one hand 'nature', and on the other hand 'culture', is to see the world as made of quiddities. Both shallow and deep ecology retain a quidditical view of the world. A *flat* environmental education would, by contrast, urge students to consider the material intra-relations that constitute their current *thisness* – their haecceitical self. A flat environmental education questions where bodies and environments begin and end – or even if they *can* begin and end. In this way the student is not urged to 'connect with nature', as there is no 'nature'.

Rather, they are urged to consider how they are materially manifested *of* the world. The task I had given the students while we sat on the lichen covered rocks of Mount Tryfan was a challenging one: to map their haecceitical selves; to consider how they came to be *this* currently occurring process – student-mountain-view-lecturer, all at once. This was an experiment with pedagogy to see if students might take to the idea of viewing themselves as literally becoming constituted of the world, not 'in nature', or 'the environment'. I hoped to achieve something of what Jeffrey Cohen (2015, p.16) describes in his beautiful exploration of the lithic inhuman; *Stone*. Here Cohen draws from new materialists Jane Bennet and Manual Delanda to offer the potential of stone:

> Stone's time is not ours. For many, this disjunction will never be noticed, triggering neither affect not insight. For those for whom rock's alien intimacy becomes palpable, however, its temporal noncoincidence is profoundly disorientating. A climber faces the face of the mountain, and in that interface relation unfolds, bringing each into intimacy: fraught, perilous, fleeting, familiar, suspended above the certainty of ground. Something happens in such interfacial zones: anarchic irruption…generative encounter, an erosion of secure foundation, an ethical moment of connection-forging. Lithic-induced perspective shift triggers an ontological and temporal reeling, a rocky movement of affect, cognition, horizon.

Some student took to the idea with good intentions by, for instance, talking about the physical effects of the exercise on their bodies and the resulting affects their bodies had on the 'environment' – sweat evaporating and CO_2 from their breath. Others were more interested with the philosophical nature of what I was asking. It did raise some interesting discussion and questions from some of the students – questions that did indeed seem as if they might have the potential to push at the students frame(s) of the possible – perhaps with practice from both the students, and myself, we could achieve a more productive understanding of a pedagogy that challenges the seemingly metaphysically stable. Mcphie and Clarke (2015) draw from a range of posthumanist, new materialist and process-relational theory to describe a series of encounters with students where the facilitators create opportunities for reframing the limits of the possible of students' environmental engagement. There is much theory that can be used to draw undergraduates into discussion that may challenge their preconceptions of the 'real'. By way of example, anthropologist Tim Ingold (2011) demonstrates how some cultures already perceive the world from a radically different perspective. Some animistic cultures, for instance, tend to have a processual metaphysical conception of the world. That is, they start from the premises that the world relationally constitutes them (and they the world), and is therefore moving and active, rather than from the premise that they exist, as separate entities, within a static world that is then populated with objects that they perceive and then represent in their heads – they have no 'nature'. Bird-David's (1999) study of the Nayaka of Southern India, for instance, demonstrates how the Nayaka experience their lives as eventing *with* their environments:

> Their attention is educated to dwell on events. They are attentive to the changes of things in the world in relation to changes in themselves. As they move and act in the forest, they pick up information about the relative variances in the flux of the interrelatedness between themselves and other things against relative invariances (Bird-David, 1999, p. 74).

In this way the animistic Nayaka produce their knowledge of the world, but it is a manner of producing knowledge that results in direct action/ethical consequences. Bird-David (1999) expresses this fact by comparing the dominant Western approach to the 'acquisition' of knowledge to the Nayaka relational co-production of knowledge. In the West, to gain knowledge of a tree, or any other aspect of the world, we tend to fragment what we have before us, cutting it into parts that can then be analysed to get a full understanding of what the tree 'is'. The Western approach has nothing to do with the production of action or morality, but purely with the production of a form of abstract knowledge. Bird-David demonstrates the stark contrast in the approaches:

> If "cutting trees into parts" epitomizes the modernist epistemology, "talking with trees," I argue, epitomizes Nayaka animistic epistemology. "Talking" is short-hand for a two-way responsive relatedness with a tree— rather than "speaking" one-way to it, as if it could listen and understand. "Talking with" stands for attentiveness to variances and invariances in behavior and response of things in states of relatedness and for getting to know such things as they change through the vicissitudes over time of the engagement with them. To "talk with a tree"—rather than "cut it down"—is to perceive what *it* does as one acts towards it, being aware concurrently of changes in oneself and the tree. It is expecting response and responding, growing into mutual responsiveness and, furthermore, possibly into mutual responsibility (Bird-David, 1999, p. 77).

Ingold (2011) posits that the animistic state of coming to exist with a world in perpetual becoming results in a state of 'astonishment' for the animist. This astonishment, rising from the mutual flux of the 'self' and the 'world', may produce actions of 'care, judgment, and sensitivity' (p. 75). Bird-David (1999) acknowledges that relational epistemology, although the dominant form of knowing among the Nayaka, is just one of several ways in which they learn with the world. In her work she suggests that this epistemology is, however, apparent in all cultures, including those in the West, but that it may be marginalised by other dominant ways of knowing. Nicol (2003) calls for educational practitioners to formulate their practice conceptually by grounding their teaching in epistemological diversity to overcome the dominance of dualistic ways of knowing the world. A relational epistemology, promoting new materialist or animistic ways of seeing, may compliment this approach well. What we can do then, is experiment with practice along these lines.

As some of the students looked around the stones, heather and sheep poo, valiantly trying to map their haecceitical selves on the side of Mount Tryfan, others sat, looking out across the valley and remarking on the occasional Royal Air Force fighter jet, tearing through the space between us and the ground as it roared towards the sea. The play of air on things in flight can make an excellent talking point for some of the concepts we have been considering in this chapter. Clouds, viewed from the side or from above, demonstrate that, rather than objects existing in a vacuous space, they are instead swept up in a processual flow, themselves entangled in the world's becoming. Snowfall demonstrates this same thing in wonderful fashion. It expresses that there is not space in-between the two faces of a valley, but rather a continuous play of materiality – a middle you do not see without the snow tumbling

through, and tumbled by, it. Ingold (2010a) refers to the all-encompassing nature of the processes that make up the world as the "weather-world", highlighting how the weather is "not so much what we perceive, as what we perceive in" (p. 131). Ingold (2010b) directs his students to fly kites so as to demonstrate their haecceitical becoming, describing how the kites appeared to be 'objects' when they were built inside:

> But when we carried our creations to a field outside, everything changed. They suddenly leaped into action, twirling, spinning, nose-diving, and – just occasionally – flying. So what had happened? Had some animating force magically jumped into the kites, causing them to act most often in ways we did not intend? Of course not. It was rather that the kites themselves were now immersed in the currents of the wind. The kite that had lain lifeless on the table indoors had become a kite-in-the-air. It was no longer an object, if indeed it ever was, but a thing. As the thing exists in its thinging, so the kite-in-the-air exists in its flying. Or to put it another way, at the moment it was taken out of doors, the kite ceased to figure in our perception as an object that can be set in motion, and became instead a movement that resolves itself into the form of a thing (Ingold, 2010b, p. 7).

Ingold is making two points here, partly he is poking fun at scholarly claims of the agency of 'objects' (which is different to suggesting an immanent agency *of* the world), but more importantly for our purposes, he is demonstrating an educational exercise that can be used to allow students to explore the concepts discussed in this chapter in intra-relational terms. For the students perched on the side of a Welsh mountain we made do with discussions of fighter jets and seagulls in flight, which in turn lead to less conceptually challenging questions of UK foreign policy and whether seagulls would even be on Tryfan if people didn't drop their sandwiches up there. Even though the general conversation had diverged to the more conservative 'leave no trace' questions[3], at least two students approached me with questions that I perceived to be testing the limits of the 'human' and the limits of the 'environment' as we descended the mountain that afternoon. These conversations, and many like them, demonstrate to me that students are often excited and enthusiastic to learn that you can attempt to (re)frame the limits of the possible.

The Middle

In a process-relational world of becoming there are no beginnings or ends, and certainly no conclusions. There are, however, plenty of middles, and this is where we find ourselves now. The title of this section is thus an attempt to illustrate the ontology described in the chapter, and this may be one way to help engender new materialist and animistic ways of seeing with learners, demonstrating the intra-relational

[3] And this includes one of the biggest ethical questions for students of outdoor education – 'why this place?' Can we justify the carbon emitted as a result of our drive to Fontainebleau, or up here to North Wales? What alternative practices might we create? – This is, of course, a question that all educators should ask themselves. See Tuck and McKenzie (2014) for a discussion of the politics of new materialisms and place in research.

becoming of the world with students in any way we can. In the past, for instance, I have asked students to read the illustrative prose of Deleuze and Guattari to instigate discussions of the human relationship to the world:

> You will yield nothing to haecceities unless you realize that that is what you are, and that you are nothing but that … You have the individuality of a day, a season, a year, *a life* (regardless of its duration)— a climate, a wind, a fog, a swarm, a pack (regardless of its regularity). Or at least you can have it, you can reach it' (Deleuze & Guattari, 2004 as cited in Clarke & Mcphie, 2014, pp. 211–212, emphasis in original).

There are many intriguing and generative passages in Deleuze and Guattari's writing and it is often stimulating to ask students what their individuality means to them, and if they can think of anything outside of their immediate bodies that constitutes their individuation. Often the answers are things like family, friends and material possessions, but sometimes students map larger assemblages including the fast food dinner of the previous night, the infrastructure that enabled the ingredients to arrive at the restaurant and tracts of land turned over for intensive beef farming. Students can then ask themselves 'in what ways do I become changes *of* the world?'

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