

Unsettling the Anthropocene

Experiments in dwelling
on unstable ground

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Unsettling the Anthropocene: Experiments in dwelling on unstable ground

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by

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Statement of authorship

I, Justin Westgate, declare that this thesis, submitted in fulfilment of the requirements for the award of Doctor of Philosophy, in the School of Geography and Sustainable Communities, University of Wollongong, is wholly my own work unless otherwise referenced or acknowledged. The document has not been submitted for qualifications at any other academic institution.

A handwritten signature in blue ink that reads "Justin Westgate". The signature is written in a cursive style with a long horizontal line extending from the end of the name.

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September 2018

Abstract

The Anthropocene names a proposed new geological epoch defined by significant human planetary influence. Emerging from earth and physical sciences the idea has far-ranging ramifications. Beyond its material implications, the Anthropocene provokes profound philosophical questions about the status of humans, unsettling a presumed exceptionalism, and suggesting that humans have never been separate from the 'natural' world.

Research on the Anthropocene has explored material, political, and social consequences, but much of this work neglects visceral and affective dimensions. In this thesis I argue that reason alone is insufficient and that the Anthropocene compels attention to troubling conditions and contradictions of lived experience. Powerful unsettling registers such as uncanniness, anxiety, and loss wrest the self from prosaic complacency and reveal the existential emergency of Anthropocene dwelling. The resulting disruption and disorientation of emergency effectively makes us homeless, exposing us to difference and strangeness. Such experience functions as a vital transcendental exposure to the world, offering generative insights which allow us to productively reorient and remap. Taking the Anthropocene as an existential call to 'live dangerously' thus becomes a compelling invitation for planetary dwelling, impelling humans to grapple with conditions of coexistential inter-being and an awareness of shared embroilment and vulnerability with strange others.

Following this argument I apply an autoethnographic approach investigating multiple sites of emergency. Autoethnography draws on the researcher's reflective experience of the world and, for this project, is key to interrogating visceral Anthropocene dimensions. My journey unfolds through four field chapters: following the path of a river, across a flood plain, into the ocean, and up into the air. A traumatic encounter with a river is a dissociative entry point. Events that threaten our very being can profoundly unsettle our sense of the world, and I use the experience to reexamine attachments to place and familiar ground. I next survey post-earthquake conditions in the city of Christchurch, contemplating what it means to live on deeply unsettled ground. The task of reorienting and remapping place after disruptive events opens up novel possibilities for dwelling, but jars against persistent attachments to stability. Contemplating loss, I look to oceans and the imperilled Great Barrier Reef. Both enduring and highly precarious,

the constitution of this complex biotic structure is infused with paradox, yet the fluid qualities of oceans and corals suggest useful insights for dwelling in turbulence. Concerned with a different kind of unsettledness, a final case ascends into the air, interrogating creative interventions into dwelling. Intentionally disruptive to familiar attachments with firm ground, such artistic work harnesses social, political, and energetic potentials of atmosphere, seeking antidotes to Anthropocene unsettling and unease.

I conclude that Anthropocene dwelling requires suspending secure Holocene attachments and, rather, inhabiting unsettledness and paradox. From this argument stem a series of contributions to broader Anthropocene and environmental humanities literature. First, contradictions arise for the theorisation of human-nature relations, conceptions of 'progress', and for socio-political response more broadly. This suggests the need for humans to learn to dwell within states of unease, and to use those conditions generatively to stimulate novel outcomes outside of modern conventions. Second, attending to affective registers opens portals into potential human responses to the Anthropocene. Existential ideas remain highly relevant to disturbing conditions of ecological emergency; not only confronting us with profound sense-making but revealing shared vulnerabilities and a coexistence of being within non-human others. Third, intransigent Anthropocene responses may be coloured by denialism, intolerance, and cynicism, suggesting the need for increased misanthropological analysis. Ultimately, we must approach the Anthropocene with clear, tempered examination that avoids overt optimism or fatalism. The Anthropocene is uncharted territory for humans and the planet, and navigating pathways through its unsettled dimensions demands attentiveness to the full range of human faculties.

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Declaration of published work

Papers:

Westgate, J. Beyond hot air: Anthropocene art and speculative practice, *Global Discourse*, special issue: Staying with Speculation: Natures, Futures, Politics (forthcoming).

Westgate, J. 2020. Anthropocene dwelling: lessons from post-disaster Christchurch, *New Zealand Geographer* 76(1): 26–38.

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Presentations:

Reflection: Cultural practices in the Anthropocene (invited discussant). Anthropocene Transitions Project, UTS, Sydney, September 2016.

'Imaginative practices and post-natural futures'. Department of Design, Goldsmiths University of London, London, September 2015.

'AnthroPolicy: Speculative policy for the Anthropocene'. Royal Geographical Society/Institute of British Geographers Annual International Conference, Exeter, August 2015.

'Speculative futures and serious possibility'. Royal Geographical Society/Institute of British Geographers Annual International Conference, London, August 2014.

'Adapting to what? Experimenting with speculative futures'. Unnatural Futures Conference, University of Tasmania, Hobart, June 2014.

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Preface

This research began with a sense of unease. An unease stemming from the awareness that ecological issues remain a significant yet intractable global problem. Pollution, deforestation and habitat loss, biodiversity loss, and climate change remain unaddressed, and future forecasts paint grim scenarios. Although not schooled in earth, environmental, or biological sciences, environmental themes have informed my personal and work lives over the last two decades. But, having been involved with numerous projects aimed at mobilising forms of social and political change, the fact that the same environmental problems persist, while additional others emerged, led to an amplified sense of uncertainty. My appreciation of the many issues – as well the potential solutions – was far from comprehensive. This left me with feelings of doubt and unease, which were further amplified by anxiety with being anxious.

Such concerns were a significant influence on the direction of this thesis. In a practical sense the project became a way of ‘taking stock’; using the opportunity presented by a major research undertaking to investigate current thinking around the human-environment nexus, and to better understand the complexities governing this. I viewed the project as a means to both challenge and reorientate my own thinking about what matters, and investigate potential pathways for action.

Such a pragmatic acknowledgement might appear a suitably rational response to my unsettled entry point – and was certainly intended as such. But, in highlighting this pragmatic impulse, I use it as a signal for the way in which the thesis has grappled with underlying dispositions of rationality and practicality against those of affect and feeling. In this way the thesis arc has been one beginning with practical concerns, but which veered towards reconciling dissonances between effective and affective potentials.

My approach is further influenced by multiple disciplinary, as well as political affiliations. Beyond geographic interest in human/nature entanglement I have interests in creative practice and social agency which, although not overt constituents of the research, significantly influence it. I use this preface as a way of disclosing allegiances informing my positionality as a researcher (Rose 1997; Savin-Baden and Major 2013); acknowledging that one brings with them

a particular background of beliefs, values, and outlook to a project which, even if not employed directly, will have an influence on it.

My ethical-political orientation sits within the 'green' and 'liberal' camps but, over time, has fluctuated between shades of green: between a deep-green politics (see Næss 1973), which takes a holistic and systems approach to understanding relationships between humans and non-human nature; and, bright-green environmentalism (Steffen 2004) which proposes innovative, technologically orientated solutions to social and environmental issues. Such allegiances are not directly compatible, and my thinking has oscillated, influenced by ancillary factors, such as the professional and intellectual circumstances I find myself in.

My professional affiliation sits within the creative industries, and is infused with an optimistic disposition both in its thinking and with its outputs (see for example McDonough and Braungart 2013; Kolko 2013). My own approach to design practice sits within the constructivist camp. A challenge to the influence of positivist-led 'design science' (Herbert 1969) that emerged in the mid-twentieth century, the constructivist approach looks directly to artistic and intuitive processes, and the sensibilities that designers bring to situations (see Schön 1983; Cross 2006). This makes the researcher/practitioner an integral constituent of the research, restoring faith in human sensibilities rather than seeing these as impeding production of knowledge about the world. Through a 'reflexive practice', the designer undertakes conscious reflection about their part in the research.

There are two significant implications from this approach to creative practice. First, it approaches the world as inherently complex and messy – more so than we might assume. Any response to conditions of the world must attend to contextual circumstances in formulating a suitable outcome. Second, what follows is that there is not necessarily a correct or singular solution – numerous different and appropriate responses exist for any situation. The work of understanding and generating a response to a problem, therefore, requires close attentiveness to context that is filtered and significantly influenced by the particular qualities of the researcher/practitioner.

My creative allegiances are visible throughout this thesis: in my approach to investigation, as well as how I express ideas. It is a methodological alignment dovetailing recent geographic interest in practices of knowledge making in relation to creative and artistic forms (see Hawkins 2013; de Leeuw and Hawkins 2017). However, to be clear, this thesis is not impelled by the concerns of creative geographies. Rather, any affinity comes from my own creative orientation, as well as the associations found between creative practices and interests with experimentation.

The experimental is a broader category than the creative (see Kullman 2013), and emerges as a key theme within this thesis. Both the creative and the experimental are open to novel ways of thinking and doing, which includes being receptive to risk-taking, uncertainty, emergence, and surprise.

What emerged in early stages of research was a sense of friction with my allegiance to creative practice. My familiarity with creative practice, combined with my initial practical impulsion, directed my early thinking about undertaking research to be focused on more functional and agential outcomes. After some exploratory investigation, however, the limitations of such an approach became evident, and this prompted me to re-evaluate and contemplate a more nuanced and deeper interrogation. One of the prompts for this reassessment came through the lingering resonance of a small but poignant experience. It was a moment that suggested being more attentive to situations; and so doing before moving towards action. The incident was also a reminder that the themes of uncertainty, emergence, and surprise may operate in ways more subtle than expected.

On the face of it, the event was small in nature, and not particularly dramatic. Indeed, I did not think much of it at the time: only some time later did my thinking come back to the moment, triggered by other events. The incident occurred during a conference I attended in the early stages of my research; an opportunity to be exposed to current climate change-related research. The National Climate Change Adaptation Research Facility (NCCARF) Climate Adaptation Conference was organised as a trans-disciplinary event, and while a wide range of research was presented from across different disciplines what struck me was the conservative approach taken by much of the work. I understand now that most climate change research tends to be cautious, needing to be informed by the science, to be rigorous, and be responsive to the highly political environment in which it operates. At the time, though, my personal creative bias was attuned to ideas appealing to imagination rather than reason: unconventional ideas diverging from normative thinking.

A brief moment in one presentation stood out against the more conservative atmosphere of the event. The session proceeded much like others, with the researcher framing the topic, and then presenting research and findings. This dealt with environmental campaigning activity and the influence this can have on policy change. The presenter was an older man – somewhere in his late sixties, grey-haired, and with a beard – who looked to have a long-running commitment to environmental issues and with campaigning. At the end of the presentation, as he delivered his concluding points, the presenter did something unexpected. To emphasise the conclusion he

looked at the audience and raised a symbolically clenched fist. Emotionally he urged the audience to “keep the rage alive”. The audience was quiet for a moment, waiting to make sure the presentation was concluded, and then politely applauded.

This small moment struck me at the time, not so much a powerful moment, but rather an inconsistent and perhaps awkward one. The impassioned call seemed out of place, and somewhat misdirected given the constitution of the conference audience: if there was any rage felt it was well masked. I noted the event but didn't dwell on it at the time – my attention was focused more on discerning intellectually stimulating ideas, and less on affective evocations. It was only later that I returned to considering this moment, coming to a juncture in my research after encountering the provocation of the Anthropocene. I was grappling with subsequent literatures, and having difficulty apprehending the concept and its implications in more tangible terms. Much work on the Anthropocene, at the time, came through debates within earth sciences; other work took a highly intellectual approach. The idea of an Anthropocene, though, appeared to have significant consequences for not just *thinking* about conditions of the world, but also having *affective* repercussions, as we – humans – are increasingly confronted by turbulent and disruptive circumstances.

Such grappling, and my emerging sense of the Anthropocene, directed me back to consider events at the conference. The presentation incident acted as a moment of affective incongruity: a call to emotion in a situation attuned to more intellectual registers. The moment poignantly foregrounded those strong emotional currents – such as rage – that have the capacity to move us into action. The potential within affective currents problematises assumptions about applied reason as a primary force in facilitating effective responses to complex and concerning real-world phenomena. This is not to say that rational methods are ineffective, but rather, calls attention to the fact that there are other human dynamics at play – and, at times, it is easy to overlook the significance of these. Such thinking is a reminder to consider the multi-faceted nature of things, and a prompt to remain attentive to those subtler signals rendered by events. It also redirected my thinking about the thesis towards considering wider implications of Anthropocene ‘thought’.

Contemplating affective and visceral aspects of the Anthropocene, therefore, was not a direct starting point for this project; rather, it was a trajectory that emerged through being unsettled, and also one that necessitated an openness to remaining unsettled. In this way, the outcome of this thesis is markedly different to that which I had imagined from the outset. Perhaps this is no surprise given my affinity with creative process, and being receptive to risk

taking, uncertainty, and emergence. But, for a project of this scale, the anxieties of producing an outcome with some significance were a challenge even to longstanding epistemological attachments. Such insight acts as a reminder to be more attentive to the fuller range of registers that constitute experience of the world. It can be within those odd moments – the ones that seem unimportant, and which we choose to ignore – within which novel concepts can be found. What I have also been reminded of is the folly of having a singular focus on outcome within research, and to remember that it is a process – not just an end product (see England 1994). It is also an undertaking that, when done effectively, *should* be surprising and have the potential to unsettle us.

Chapter 1 | Introduction

It is well and truly a matter of trying to think, starting from what is in the first place an observation: 'the epoch has changed'; that is to say of giving this observation the power to make us think, feel, imagine, and act. (Isabelle Stengers 2015, 17)

The Anthropocene is a term recently proposed to mark the onset of a new geological epoch; one in which the impact of human activity is argued to have significant planetary influence (Crutzen and Stoermer 2000, Crutzen 2002). Emerging from work in the earth and physical sciences, this idea is supported by evidence of disrupted biochemical cycles (carbon, nitrogen, phosphorous, etc), permanent changes to the distribution of living organisms as well as impacts on biodiversity, and material shifts and deposits registering in the stratigraphic record such as increased sedimentation, accumulation of synthetic materials such as plastics, trace elements, and nuclear residue – all resulting from anthropogenic activity.

Work within the social sciences, humanities, and arts has interrogated the more-than-material dimensions of the Anthropocene, concerned with cultural, social, and political implications (see Davis and Turpin 2015; Lövbrand et al 2015; Lorimer 2016). The Anthropocene unsettles key tenets of modern Western thought and disrupts established ideas of what it is to be human (Rose et al 2012, 3; Steffen et al 2011a, 862). Propounding the planetary agency of the 'anthropos', the idea of humans being a 'force of nature' challenges longstanding belief that humans are separate from and 'above' the natural world. Ideologically, the categorical human is unseated from having ascendancy over 'nature', and pulled into a proximate and entangled relationship. Both materially and conceptually, the world of the Anthropocene is one fundamentally different to that which has been assumed; it is a world both unfamiliar and disturbing, and one in which humans must reorient themselves.

In this thesis, I seek to dwell on and within the sense of unease that emerges from living in an altered Anthropocene world. Contemplating the conceptual implications, I take the

Anthropocene to be more than just a forceful provocation for *thinking* about the world differently: it is something we are thrown into *feeling* and grappling with viscerally. Theoretically the Anthropocene provokes an unravelling of modernist conceptions of a stable and ordered reality, rather, indicating one that is more complex and relational. I contend that the Anthropocene is as much an experiential ontic phenomenon as it is intellectual; shaped by the lived experience of a world that is increasingly disturbing and unsettling. To be unsettled is to feel unnerved, unbalanced, anxious, and agitated. Such emotional registers tell us that something is not right; something is causing us to *feel* distressed. This project takes such feelings as significant indicators for directing exploration rather than discounting them as anomalous, or seeking to alleviate such responses.

I align this project with work taking critical interest in wider philosophical, cultural, and political implications of the Anthropocene. The emerging field of environmental humanities operates across disciplinary boundaries but its unifying concern is with investigating facets of the human relationship with the non-human world, which includes: modes of perception; cultural framings; systems and measures of value; imaginative and creative production; and emotional and affective responses (Castree 2014c, 234). It applies a diverse qualitative analysis to critical environmental issues, and “fundamental questions of meaning, value, responsibility and purpose in a time of rapid and escalating change” (Rose et al 2011, 1). Within this field, disturbances of the Anthropocene are further evidence that challenge dominant modes of thinking about and investigating the world. Such perturbations act as a reminder to avoid human solipsism; to more humbly concede being a part of the wider mesh of life; and the need to negotiate with a multispecies world in more situated and relational ways (Instone and Taylor 2015, 139). Influenced by feminist ideas drawn into ecological concerns (Murphy 2011, 580), environmental humanities work returns an epistemological efficacy to the body, and to the affective qualities of being human in a world which seeks to render it precarious.

This thesis returns to the registers of the body as a way of ‘slowing down’ (Stengers and Zournazi 2002, 250) thinking and action, circumventing the modernist impulse to respond to ‘problems’ through technological interventionism (Baskin 2015, 6), and the ‘post-political’ vacancy argued to plague the Anthropocene-as-crisis (Swyngedouw 2010, 2013). My approach is informed by an allegiance with critical geography (Blomley 2007, 2008), but further aligns with work that reads the Anthropocene as a summons to alternative forms of scholarly engagement (Castree 2014b; Rickards 2015) – that is experimental, risky and generative (Gibson et al 2015; Davis and Turpin 2015); and which explores important affective and emotional attachments (Ginn 2016; Braun 2015).

Two key conceptual frames are employed. The first is existentialism, which is concerned with circumstances that confront us with conditions of disorientation, confusion, or loss, and experiences through which the world appears meaningless (Crowell 2016). This outlook focuses on subjective experience, and attends to the margins and limits of human experience and existence. Such an approach, I argue, is highly applicable scaled to the planetary and species entanglements of the Anthropocene (Mickey 2016), and throughout later chapters of the thesis I engage existential ideas within a methodological framework attentive to unsettled registers of experience. Second, a concern with experimentation emerges from knowing the world through experience. A focus on experimentation serves multiple purposes: it is a means to return to and reclaim subjective experience; it performs as an antidote to the rationalist logics that weight the Anthropocene debate (see Grusin 2017, x); and it seeks to reinvigorate what it means to experiment. To be experimental requires an openness to exploration and risk: a responsiveness to novel approaches, receptivity to a wide range of sensibilities, and an openness to the assembly of revised narratives about the world as unfamiliar.

Bringing these conceptual frames together, I set out to investigate a phenomenon that, despite its vast scale and planetary effect, is paradoxically immensely difficult to discern and grasp (Cook and Balayannis 2015). Returning to experience, I contend, is necessary in attending to the paradoxical qualities of the Anthropocene: reason alone is insufficient. In this thesis, I accept the unsettling of order, reason and certainty, and take seriously the discomfort that results. Being attentive to the paradoxical and uneasy reverberations that emerge, I argue, has the potential to provide novel insights into dwelling within the Anthropocene era, inviting experiments as responses to conditions of a fundamentally different world.

Chapter outline

This introductory chapter performs multiple tasks, outlining the structure and approach employed within the thesis, as well as providing a conceptual and theoretical framing. I begin with defining my research positionality, which is significant for this project given its methodological stance, as well as objects of investigation. I then proceed on to an examination of the Anthropocene thesis, interrogating the many facets and implications of this concept through a review of current literature. An up-front positioning serves two purposes: it introduces key Anthropocene ideas and arguments, and it allows the concept's far-reaching implications to be elaborated upon. The consequences of the Anthropocene proposition extend beyond material or stratigraphic boundaries and, as I show, profoundly unsettles how we think about the world. Significantly, this is not just the 'planet' but the very structure and constitution of the ontological 'world' we understand ourselves to live in, as well as how we conceive of the human relationship with non-human constituents of this world. I interrogate the Anthropocene across different dimensions: scientific, political, ontological, and imaginative. Such categories are far from discrete but are useful in providing analytical structure. Illuminating the conceptual effects of Anthropocene ideas, and especially their impact through the humanities, is an important precursor for the conceptual frames with which I engage in the thesis. I also include a short critical discussion of the term 'nature' which is a crucial concept used throughout the thesis.

Following the creative and practical interests outlined in the preface, I discuss the investigative trajectories which shaped the early direction of research, and that led me to consider alternative pathways of enquiry. I then move on to examine the two key conceptual ideas that frame my investigation: existentialism and experimentation. Finally, I discuss my approach to undertaking research, including stylistic considerations such as writing and narrative technique, which leads into a brief overview of the thesis structure chapter by chapter, and a precis of key research contributions.

Positionality

Researcher positionality is a crucial component to the thesis. This is, first, because of the qualitative methodological approach (Ellis and Bochner 2000, 734), which has existentialist allegiances and draws directly on personal experience and affective responses. Second, I employ an autoethnographic approach which uses a narrative style to document encounters (Frank 2002), and which also draws, in part, on personal, autotopographical connections to place. Positionality “reflects the position that the researcher has chosen to adopt within a given research study” (Savin-Baden and Howell Major 2013, 71) and is commonly identified by locating the researcher in relation to three significant areas: the subject, the participants, and the research context and process. Certain dimensions of positionality are culturally ascribed or fixed, such as gender, race, and nationality. Others, such as personal background and life experiences, are subjective and contextual (Chiseri-Strater 1996). Those fixed attachments may predispose the researcher towards a particular outlook, however this does not mean that research will necessarily follow habitual lines to prescribed outcomes.

In the preface I foregrounded my particular creative and disciplinary affiliations, alongside green-left political attachments which have informed the direction and shape of this project. An attentiveness to dwelling with unease and paradox rendered by Anthropocene experience has led to employing a reflexive methodological approach as a means to access inner thoughts and deep emotional currents. Much of this work draws on my own personal experience, although is supplemented in some instances with accounts relayed by research subjects. When reflecting on in-field experiences I do so from my own position: as an individual attempting to make meaning in a world made unfamiliar (provoked by varied experiential encounters); and seeking to confront the resulting problem of authenticity, and how to best live in a world taken to be profoundly changed by ecological emergency. My experience of being human is informed by my subjectivity as a white, heterosexual male, middle-aged, and well-educated – alongside those ideological and professional affiliations already foregrounded. Such socio-economic categorical positioning does not fully address personal nuance, difference or inconsistencies, nonetheless, I acknowledge my own complicities and privileges.

Relationship to place is a significant theme within the thesis. ‘Place’, at its broadest, I take as ‘the planet’ and, drawing on philosophical ideas of Heideggerian dwelling (Heidegger 1927) and the uncanny (Freud 1919), I consider how Anthropocene thinking disrupts and unsettles our planetary *home*, causing us to feel ill-at-ease in the world. To experience feelings of unsettling and ‘homelessness’ I survey different sites, drawing on personal attachments to place, key

to which is my own relationship to geographic 'home', New Zealand. Although I was not born in the country I spent my formative years in New Zealand: from age five, and for most of my schooling and higher education. It is a place that holds deep personal attachments, significant memories, and where all my immediate family currently reside.

My New Zealand place connections afford me unique insights that I bring into and interrogate within the research. I draw on personal experience, existing relationships, and bring other sensibilities to investigation such as cultural, historical, geographical, and political insights. I visit sites with strong personal attachments, such as in the first two field chapters (Chapters 3 and 4), which focus on disruptive events, although unfolding at quite different scales. I also bring a personal ontology influenced by Maori cultural concepts; one developed over my 30-plus years of living in New Zealand, although decidedly hybrid in character.

Chapter 5 draws on different place attachments; to an adopted home – Australia – where I have lived for the last seven years. Although different in size and geography, the cultural and political relationship between Australia and New Zealand is close. I also draw on my awareness of, and concern for, environmental impacts and forecasts for the Asia-Pacific region: both countries are increasingly feeling effects of a changing climate, as well as wider environmental impacts (Hashim and Hashim 2016) – themes I have followed over some 20 years of environmental activism.

Having such affinities has been useful in undertaking investigation of this kind, however does not hinder employment of critical analysis where required. I am aware, for example, of my own European-colonial and masculine attachments, and seek to avoid inflating my experience and interpretation, or misrepresenting other perspectives. However, alongside such personal attachments, I bring my already foregrounded concerns and anxieties, as well as an openness to possibility and, importantly, a willingness to step into the fray and tumult stirred up by the Anthropocene.

Constellation of the Anthropocene

Interest with the Anthropocene has exploded in recent years, overflowing the bounds of geosciences from within which the idea was first conceived. The Anthropocene has become a 'transcontextual' idea (King 2014), stretched across disciplines and pulled in different conceptual directions. The interest in the idea, Lorimer (2016, 121) suggests, is due to the Anthropocene's ability to capture an 'intellectual zeitgeist', and provide a 'catchy label' for popular interest and a growing concern with the current state of the planet and its future

after the 'end of nature'. The idea that we can no longer think of a 'pure nature' unaffected by human activity is foundational to modern environmentalism, and has been foreshadowed by work over the last two decades (see for example Haraway 1991; Latour 1993; McKibben 1999; Merchant 1989).

Consolidating such ideas, the Anthropocene can be taken as a significant provocation to thinking about the world, notably against the dominant rational logics of modernity (Morton 2010; Zylinska 2014). Such a provocation has 'profound' implications for social thought (Castree 2014b, 464; Latour 2013, 77), comparable in significance with historical moments of intellectual revelation: Copernicus's unsettling observation that the Earth was not the centre of the universe, or Darwin's evolutionary argument suggesting humans were merely another animal species and not 'divine' creatures (Steffen et al 2011b, 862). The reverberations of such intellectual provocation can be felt within the social imagination, affecting conceptions of the future and the divine (Rickards 2015, 280), significantly challenging established ideas and beliefs.

In this section I trace out the multiple dimensions through which Anthropocene ideas take effect. I begin by examining the emergence and development of key ideas within earth sciences, moving to consider wider political, philosophical, and cultural implications. Use of such broad categories are not intended to signify clear divisions between areas of the concept's impact, or between ensuing debates – which are decidedly entangled within Anthropocene literatures. Rather, a typological approach is employed to usefully identify and focus on significant emergent themes, and ultimately for ease of analysis. I show that the disturbances of an Anthropocene planet reverberate deeply, and have wide-ranging unsettling effects: not just for thinking about how the world is constituted but also for modern conceptions of the future. The result is a deep existential unsettling both at a species and individual level; and which, I argue, calls for an attentiveness to unconventional, creative and more-than-rational modes of engagement and response.

A question of science

First and foremost, the Anthropocene exists as a scientific idea. Its central thesis of humans having planetary impact is one that can be traced back some 100 years. Concern over increased human impacts on the environment was first voiced in the late 19th century by scientists such as Antonio Stoppani, an Italian geologist and palaeontologist, followed later in the 20th century by British geologist R L Sherlock and Russian geochemist and naturalist Vladimir Vernadsky

(see Steffen et al 2011a). The current conception of an Anthropocene, however, was first used by biologist Eugene Stoermer in the 1980s although never formalised, and then independently re-invented by Nobel Prize-winning chemist Paul Crutzen (Crutzen and Stoermer 2000). Crutzen and Stoermer's argument differs from earlier ideas in that it expands the scale of impact from environmental concern through to the planetary. Anthropocene thinking emerged within the multidisciplinary field of Earth Systems Science (ESS) which only developed in the latter part of the 20th century. Importantly, ESS offers a technologically and epistemologically innovative macro-level framework for visualizing, explaining and managing the Earth as a single system (Imura 2013), comprised of collection of coupled 'spheres' marked by boundaries, tipping points, feedback loops, and other forms of nonlinear dynamics. A systems-based Anthropocene framework is argued to prompt a significant paradigmatic shift in environmental science, moving it beyond 'uniformitarian' approaches to understanding human-nature impacts beyond that of 'landscapes' or 'ecosystems' (Hamilton and Grinevald 2015; Hamilton 2016). The shift in thinking about the planet, from multiple but distinct ecosystems to that of a *planetary system*, results in what is argued to be a 'second Copernican revolution' for our understanding of the world (Schellnhuber 1999).

The Anthropocene currently stands as a formal scientific proposal under consideration (as at December 2018) by the International Anthropocene Working Group (AWG), a sub-group of the International Commission on Stratigraphy (ICS) tasked with administering matters of stratigraphy, geology, and geochronology on a global scale. Assessment and adjudication of the Anthropocene therefore hinges on consideration of geological matters, notably the evaluation of significant anthropogenic material evidence – such that will remain as indelible signatures within the geological record. A great deal of debate has ensued, with over twenty different scenarios having been argued as suitable Anthropocene 'onset' conditions (Waters et al 2014). Crutzen and Stoermer's (2000) original proposal argued an onset date tied with the rise of late-18th century industrialisation and accelerated use of fossil fuels, and subsequent rapid societal changes. Other proposals range from earlier dates, including late-Pleistocene human impact – fire use (Glikson 2013); Megafaunal extinction (Barnosky et al 2014); and agricultural development (Foley et al 2013, Balter 2013) – to more recent dating, which includes alignment with the post-World War II 'Great Acceleration' (see Steffen et al 2015). As of mid-2018, the AWG has come to a consensus favouring on a more contemporary dating (Zalasiewicz et al 2015; ICS 2016), proposing the moment of the first nuclear bomb test at Alamogordo, New Mexico – at 05:29:21 Mountain War Time (± 2 s) 16th July, 1945 – as a

significant 'golden spike' onset marker. A recommendation has been passed on to the ICS, where the term remains under debate. If accepted the Anthropocene chronology will require ratification by the International Union of Geological Sciences before formal inclusion into the geological time scale.

The Anthropocene, however, acts as far more than a just classificatory scientific term and signifier, being implicated within a politics of science where the idea's provocative and unsettling capacity troubles conventions. The significant variance in onset proposals indicates a challenge to stratigraphic orthodoxy, and an assumed empirical clarity attached to 'golden spike' markers. Within geology the problem of identifying a significant material attribute within a process that will play out across a geological timescale (many hundreds of thousands of years) is argued to result in a wholly ambiguous classification and, additionally, that it is not possible to know the ultimate significance of the defined marker with such limited evidence (Edgeworth et al 2015). Concerns have been raised that the pressure to validate the Anthropocene has prompted a response from scientists whereby associations with planetary processes are applied in ways that they cannot be confident of, and that outcomes move to being inherently novel, political and speculative in nature (Finney 2014; Lewis and Maslin 2015; Gale and Hoare 2012). Autin and Holbrook (2012), for example, highlight problems with stratigraphic science being influenced by pop-culture whimsy, counselling caution in rushing to formally recognise the Anthropocene moniker. In response, suggestions have been made that the term could be used in less formal ways. For example, Ruddiman et al (2015) suggest that:

One way forward would be to use the term [Anthropocene] informally (with a small 'a'). This approach would allow for modifiers appropriate to the specific interval under discussion, such as early agricultural or industrial. In this way, we could avoid the confinement imposed by a single formal designation, yet acknowledge the long and rich history of humanity's environmental transformations of this planet, both for better and for worse. (p. 39)

Concerns with scientific classification and formalisation of the Anthropocene demonstrates science being undertaken in unorthodox and 'non-normal' ways (Kuhn 1962; Lorimer 2016, 132), foregrounding the term's cultural significance not just as a name, but wider conceptual and ideological implications.

Politics of the Anthropocene

Onset dating – whether later or more recent – determines the significance of the Anthropocene epoch, as well as what response is appropriate. Consensus of a later, mid-twentieth century onset by the AWG, suggests that concern *is* warranted (Baskin 2015, 4), reinforcing Crutzen's

intention of the Anthropocene as provocation: as a ‘warning’ to the world to take action on environmental issues (Kolbert 2011, np).¹

However, an Anthropocene rendered by scientific ideology is one problematically tied to the extension of modernist logics, leading to criticisms that discourse – certainly within earth sciences – is highly technocratic, often couched in the language of ‘governance systems’, and operates largely in a political vacuum (Hartley 2016, 157): Anthropocene scientists fail to see technology as a political force and therefore fail to see politics as a material force. Scientific thinking expands technological managerialism through to environmental stewardship expanded to a planetary scale (Steffen et al 2011b), leading to concerning proposals for large-scale geoengineering projects intended to ‘optimise’ climate (Crutzen 2002, 23). Or, as Robinson (2018) suggests, environmental justice has been refashioned as a survival technology.

Such thinking raises a number of concerns with which this thesis engages. A hasty response to ‘catastrophic’ Anthropocene unsettling – as an abrupt deviation from an expected stable baseline – limits the depth of interrogation, and does not effectively address the underlying disorder and systemic disruption. Hasty techno-political response circumvents issues from undergoing due political process (Swyngedouw 2007) and, in so doing, plays into hegemonic interests (Baskin 2015, 13; see also Klein 2007). A rational-managerialist response to Anthropocene concerns fails to adequately grapple with the inherent dynamics of the geophysical systems it seeks to address, ignoring the reality that even the best scientific models struggle to accurately predict the fluctuations of non-linear systems (Yusoff 2009). Geoengineering represents the most extreme of techno-managerial approaches, fallaciously exploiting the idea of humans as a ‘force of nature’. Problematically, geoengineering ‘fixes’ only attend to manifest symptoms and not to the root causes, effectively depoliticising the need to make structural adjustments (Robock 2008; see also Keith 2000). Such responses also overlook the possibility that the implementation of geo-technical interventions is likely to have uneven and discriminatory impacts at regional or local levels.

Such thinking perpetuates Enlightenment notions of ‘progress’ and the grand teleological story of human improvement (Head 2016, 44). For example, the centre-right US think-tank the Breakthrough Institute argues for a ‘good Anthropocene’. Their ‘ecomodernist manifesto’ (Asafu-Adjaye et al 2015) contends that humans can achieve their destiny as the ‘God Species’

¹ The Anthropocene was intended to operate in a similar way to previous ideas proposed by scientists whose figurative effects were just as important as the scientific – for example James Lovelock’s (1979) Gaia hypothesis which painted a picture of the Earth as a self-regulating complex system. Hamilton (2015) underlines this potential, arguing the Anthropocene as symbolising a paradigm shift in thinking about global-environmental change, towards conceptualising this rather in terms of a single dynamic and phase-shifted Earth system (see also Hamilton and Grinevald 2015).

(Lynas 2011) through the employment of technology, increased urbanisation, and by decoupling humans from nature. Advocates retain confidence in the ability of humans to continue their role as ‘world makers’, looking to evidence of the longstanding relationships humans have had with historical ecologies, and arguing that the Anthropocene is no different (Nordhaus et al 2015). Such proposals are criticised as a ‘Promethean technofix’ (Hamilton 2015, np), failing to recognise the relationship between the fundamental practices of modern capitalism and development, and environmental degradation.

Such technophilic critique should not be read as outright rejection of technological interventions as a component of Anthropocene responses, or subscribing to thinking that technological progress can *only* make things worse. Rather, it identifies the need to bring critical awareness to the enrolment of technology as well as expanding the political dimensions of discussion, which the figure of the ‘anthropos’ within the Anthropocene moniker reminds us is inherently entangled with additional ideological attachments (Baskin 2014, 11). Attendant work addressing such concerns comes from outside the earth and physical sciences, developing further critical frameworks which in varying styles embolden social, political and economic contours.

Critical political-economic readings call attention to the assumed universal agency of the human, arguing that such thinking disregards the historically situated forms of social power that have given rise to alterations of the Earth system (Rowan 2015; see also Löwbrand et al 2015; Malm and Hornborg 2014). Such analyses call attention to the Anthropocene’s manifest associations with the social injustices and ‘metabolic rifts’ arising from neoliberal capitalism. If this era is to reflect significant modern ‘human’ enterprise, it might more appropriately be relabelled the Age of Capital or ‘Capitalocene’ (Moore 2014b). Under this guise, capitalism becomes more than just an economic and social system, but also the producer and product of the very web of planetary life – bundled with and within the whole of ‘nature’. And, while such a proposal usefully expands socio-political attachments, foregrounding the significant role the historical development of the capitalist world economy has had in producing the Anthropocene, it fails in some areas. First, is an emphasis on social relations internal to the human sphere which fails to attend to the Anthropocene’s constitutive plurality. Second, is an accompanying universality which ignores the unevenness of both causality and impacts. Industrial capitalism did not develop evenly but emerged from particular geographical locations serving the interests of a discrete socio-economic class (Hamilton et al 2015). Consequent anthropogenic impacts will also be unevenly distributed, affecting both humans and non-human others differently, now and through the foreseeable future (Houston 2013).

Critical feminist readings take issue with the gendered associations and masculinist logics attached to the anthropos, further teasing out structural intersections between patriarchy, capitalism, racism and technoscience (Grusin 2016, ix). Seeking pathways beyond the 'hyper-separation' of divisive binaries such as human/nonhuman, subject/object, economy/ecology and thinking/acting, such ideas explore decentralised – and human-decentered – trajectories that connect globally dispersed subjects and places through webs of signification (Gibson-Graham 2011). Such thinking focuses additional critical scrutiny on the figure of the 'anthropos' within the Anthropocene, highlighting the importance of difference, and arguing that an undifferentiated species problematically reproduces those existing privileges of dominant social actors. Predominantly these are white, cis-gendered, heterosexual men in the global North, and are replicated within expert panels – such as the AWG – tasked with evaluating and deciding on the very character and existence of the Anthropocene, leading Raworth (2014) to suggest the era might be better termed 'Manthropocene'.

The Anthropocene's significance as an epochal moment therefore means different things to different people both ontologically and experientially, and this variation is greatly influenced by social, geopolitical, and cultural unevenness. Further critique is led by postcolonial scholars, pointing out the inequitable political and historical linkages that permeate Anthropocene thinking. Suggesting an 'Anglocene', Bonneuil and Fressoz (2016) bring attention to the way in which the Anthropocene is a problem created by, is being named by, and is predominantly only discussed by, scholars in the Global North. Within this field an alternative onset date of the Anthropocene is argued to be more appropriately tied to the global transformation coupled with European colonisation of the Americas (Lewis and Maslin 2015). This argument is taken to foreground the social and ecological devastation resulting from slavery and the establishment of plantation economies driven by a colonial capitalism, leading to another apposite relabelling as 'Plantationocene' (Haraway et al 2015). Parallel to postcolonial critiques, indigenous scholars focus attention to the 'Anthropo-not-seen' (De la Cadena 2015) which similarly seeks to decolonize Anthropocene discourse. Examples from Central and South America, Australasia and the Arctic call attention to the impacts of colonial histories and consequential environmental degradation (see Collard et al 2014; Instone and Taylor 2015; Sundberg 2014; Todd 2016).

Exploring geo-political implications, and drawing on Grosz's (2008) formation of 'geo-power', additional discussion explores the material agencies of the Anthropocene manifesting between social and geologic forms of power (see Clark 2014; Yusoff 2014). Responding to the

anthropos-as-master, such work brings a volumetric and vertical depth to understanding our engagements with the Earth, arguing for a different kind of politics with expanded concerns with shaping and reshaping territories through processes of stratification and de-stratification (following Deleuze and Guattari 1987). Attending to an ‘exorbitant’ planetary other (Clark 2016) emphasises a relational asymmetry, which acts as a reminder that the ‘mesh’ of the world may not only be uneven but may contain structural gaps impossible to bridge.

Such a brief political Anthropocene mapping is necessarily constrained, but helps to illuminate the scope of emerging debates and the many inconsistencies which permeate them. As might be expected in relation to Anthropocene phenomena, the answer is not clear-cut in the traditional sense: to shift thinking we are required to be open to unsettled – and unsettling – conclusions. Put another way:

The Anthropocene is not a problem for which there can be a solution. Rather it names an emergent set of geo-social conditions that already fundamentally structure the horizon of human existence. It is thus not a new factor that can be accommodated within existing conceptual frameworks, including those within which policy is developed, but signals a profound shift in the human relation to the planet that questions the very foundations of these frameworks themselves. (Rowan 2014, 447)

The Anthropocene is more than simply a classificatory geological term but a philosophical event with powerful conceptual force, and which has stimulated useful debate far beyond its intended disciplinary boundaries.

Within this thesis I take cues from such critical readings seeking to unseat dominant rationalist logics, opening us up to interpreting the world as more dynamic and complex, ultimately as a mesh of vast uncontrolled experiments where we are asked to be attentive to an interconnectedness with planetary others and be willing to engage with them in adventurous ways (Gibson-Graham 2011). A concern with experimentation emerges as a significant theme within Anthropocene literature in different forms. A diverse range of projects concern themselves with experimental politics under the Anthropocene, including: political-economic (Gibson-Graham and Roelvink 2010; Lehman and Nelson 2014), socio-ecological (Lorimer 2012; 2015), and creative (Davis and Turpin 2015). A politics of experimentation is argued to be a necessary background concern under conditions of the Anthropocene (Battistoni 2013); a requirement for leveraging ‘cracks’ of possibility, and opening up new political imaginaries.

While experimentation remains a key concern for this thesis, it is as a background condition rather than overtly foreground practice. At a more mundane level, being thrown onto new terrain first requires orientation before practical action can be taken. This project is therefore

one largely focused on orientation and ‘re-grounding’ within the vast experiment of the Anthropocene. I return to discuss conceptual attachments to experimentation later in this chapter, and in relation to methodology in Chapter 2.

A different kind of world

The Anthropocene brings with it a significant challenge to modernity’s dominant ontological composition (see Lorimer 2012; Harrison 2015; Lövbrand et al 2015), leading to arguments for the reconstitution of fundamental categories and relationships by which we understand and locate meaning within world; ultimately destabilising the human/nature binary upon which foundational arguments of modern human exceptionalism have relied (Chakrabarty 2009). The ‘troubling’ of categories is significant to this thesis given their importance for how we use them – either consciously or unconsciously – to ‘position’ and orientate ourselves within the map of the world we conjure up both individually and collectively.

The ‘paradigm shifting’ implications of the Anthropocene are evidenced in earth system science’s attention to planetary dynamics and systems (Hamilton 2016; Maslin and Lewis 2015), where understanding the earth is argued to require holistic analysis rather than attending to discrete constituents such as ecosystems or technology systems. A planetary-scale framework is argued as critical in developing responses to the significant rupture from stable Holocene conditions (Hamilton 2016). Conditions of the Anthropocene will be fundamentally different from those of the recent past, transitioning the planet to one more unstable and unruly, where tipping points, positive feedback loops, and fluctuating patterns of non-linear change become the ‘new normal’. An Anthropocene world will be one with changed and unfamiliar conditions, where humans need to fundamentally reconsider ways of living and being.

An emerging ‘new ontologies’ for environmentalism cuts across the natural and social sciences, diverging from previously accepted ways of comprehending human/nature relations investigating new configurations encompassing life and non-life on a complex and disrupted ‘human-dominated’ planet. Responding work sits within one of three broad categories (Cook et al 2015, 6). One approach further explores ideas of human domination and mechanisms of control following lines of ecomodernist thinking. For example, conservation strategies explore an expanded ecological framework replacing the concept of ‘biomes’ with ‘anthromes’ (Ellis 2015; Ellis and Ramankutty 2008), which define a bounded – though non-linear and non-stable – socio-ecological system through which we can better manage and actively engineer adaptations (such as by using methods of translocation, rewilding and de-extinction

(Keulartz 2012). Another proposes the idea of the ‘technosphere’ drawing on the Anthropocene’s geological character (Haff 2014). Alongside the current lithosphere, biosphere, hydrosphere and atmosphere, the technosphere is the large-scale, non-natural technical, bureaucratic and productive built infrastructure that envelops the planet. Humans are an essential but subordinate constituent to the larger technical system, which Haff argues provides a model for thinking about human impacts in systems terms rather than solely human. Such thinking problematically aligns with previously discussed modernist ideologies and a reliance on technocratic solutions, while also failing to address underlying systems disruptions that will make Anthropocene conditions fundamentally changed and uncontrollable (see Hamilton 2015, 2016).

In contrast to work which refocuses on the human, other work interprets the Anthropocene as blurring the imagined boundary between humans and nature, attending to the ‘assembled’ and ‘entangled’ agencies of both humans and non-humans. Such thinking challenges anthropocentric explanations of agency written by modern Cartesian ontologies of the environment, and rather seeks to ‘flatten’ the relationship looking to models of kinship and politics along ecological and multispecies lines. For example, Bruno Latour’s Actor-Network Theory (ANT) (Law 1986; Latour 1987, 2005) looks to understand agencies through emergent relationship and nonlinear assemblages. Concerning itself with the material agencies of technologies, ANT investigates how networks are constructed or assembled to achieve a specific aim – notably within science – and explores human embeddedness within such socio-technical ‘networks’ or ‘assemblages’. Critical of the way science purports to produce ‘facts’ that speak for nature, Latour proposes ‘multinatural’ ontologies for the Anthropocene (Latour 2010, 2011a; also Law 2015). The world, Latour argues, is comprised of varied hybrid entities that emerge through socio-natural relations within nonlinear assemblages. Critical of modernist ideas that allow humans to decouple themselves from the non-human world (‘nature’), Latour draws on the parable of Frankenstein arguing that humans must learn to ‘love their monsters’: divorcing ourselves from the responsibilities attached to our acts of creation comes with great risk (Latour 2011b, 2015). Such thinking has also been expanded within Object-Oriented Ontology (see, for example: Harman 2002; Morton 2010).

Other work extends the concerns of relational ontologies, grappling with the messy, entangled and unsettling resonances they take as emergent with the Anthropocene. Haraway’s (2008) interest in ‘companion species’ expands Latour’s (1993) argument that ‘we have never been modern’, provocatively suggesting ‘we have never been human’. Haraway weaves together a

framework that is, at the same time, ontology, ethic, and epistemology, proposing ‘Chthulucene’ as a fervent reply to Anthropocene and Capitalocene: “a kind of time-place for learning to stay with the trouble of living and dying in response-ability on a damaged earth” (Haraway 2016, 2); and which “entangles myriad temporalities and spatialities and myriad intra-active entities-in-assemblages – including the more-than-human, other-than-human, inhuman, and human-as-humus” (Haraway 2015: 160).²

Associated work delves into the fraught but tangled possibilities found within emergent assemblages, such as with ecological, fungal and animal meshes (Hobbs et al 2006; Kirksey 2015; Lorimer 2015; Tsing 2015). Seeking to understand the world as comprised of lively meshes and entangled relationships enriches thinking about the Anthropocene, importantly foregrounding inescapable visceral and ‘earthy’ qualities; qualities that are a key concern for this thesis in the way they counteract the theoretical abstractness of the Anthropocene-as-concept bringing emphasis to its more tangible, felt dimensions. As well, rather than focusing on solutions, more-than-human investigation suggests the need to explore ways of grappling with relational embeddedness – such as through ‘making kin’ with the other beings within this mesh – and with the unsettling that comes from so doing: opening ourselves to encounters with ‘strange strangers’ (Morton 2010, 15).

Additionally, a parallel strand of ‘more-than-human’, ‘geophilosophical’ investigation attends to what it considers as important asymmetries between humans and non-humans. Such work explores the human-geological convergence that comes through the material and planetary churn of the Anthropocene; considering geo-sociality (Yusoff 2013, 2015, 2016), geo-politics (Clark 2014), geoaesthetics (Grosz 2008; Yusoff et al 2012) and associated concerns with geo-experimentation (Clark 2012; Clark and Yusoff 2014). Attentive to the inevitable asymmetries generated by planetary dynamics, such thinking, importantly, does not seek to completely merge the human with the other, but holds on to the former category – though not the exceptional status. Humans are rather rendered as ‘vulnerable’ geological subjects, who are “utterly dependent on an earth and a cosmos that is, to a large degree, indifferent to us” (Clark 2011, 50). Far from being ‘in control’, humans are subject to inhuman forces that have the power to tip the planet into precarious states: a poignant reminder that our relationship with the planet is not one of domination, nor is it one on equal footing. The implications from

² Haraway’s (2016) Chthulucene evokes a pathos not found in other Anthropocene work, conjuring images of dark and unnerving supernatural forces, not as insubstantial spectral phantoms but as durable, mythic ‘chthonic’ monsters, ancient and earth-bound. Chthonic comes from the Greek khthonios, meaning “in, under, or beneath the earth”, and describes deities or spirits of the underworld, especially in Greek religion. The Chthulucene brings with it a deep unease, as though we have disturbed dormant monsters from deep within the earth.

this are concerning if we consider not only that we remain vulnerable, but that such vulnerability becomes multiplied under disrupted conditions.

Concern with the 'geo' is an important theme within the thesis, and directs my attention towards geologically situated phenomenon such as mountains and rivers, seismic events, as well as elemental phenomenon with planetary associations: oceans and atmosphere. Each has the potential to reveal something about the asymmetries and paradoxes of *being* human in the 'era of humans'. Beyond disturbing planetary conditions, the Anthropocene rewrites what it is to be human, both at the scale of the species and the individual. The Anthropocene hits with a double-whammy: throwing humans into a world that is profoundly unfamiliar, unseating any certainty of what it is to be human. Psychologically, erosion of identity – one's perceived sense of self – leads to anxiety (Robbins and Moore 2013, 9), and I take such existential discord as a significant condition for human experience within the Anthropocene having repercussions at both the individual and species level – and a phenomena warranting further investigation.

Unsettling trajectories

Modern narratives used to understand the world and steer future trajectories unravel under the Anthropocene. New narratives are needed (Davidson 2015, 302; Rickards 2015, 7; Scranton 2016, 19): accounts which express more appropriate relationships and pathways – through the past, the present, and the future (see Bonneuil 2015). While science is able say something about past and current conditions, it less effectively deals with future concerns. Creative and speculative methods are better suited to this task (Bai et al 2016; Braun 2015). Speculative narrative can aid thinking through vast timeframes and unknowable futures, expanding the scope of response to novel and unfamiliar conditions, both politically and practically (Strauss 2015, 348).

The Anthropocene's disruptive constitution therefore invites responses that explore integrated approaches to grappling with the planetary emergency (Palsson et al 2013), and which can be found in the transdisciplinary work of scientists, social researchers, writers, and artists. The ways in which imaginative and affective registers are engaged by such work is significant to this thesis. Speculating about plausible futures helps us to not only *think* about conditions that may arise, more viscerally we are invited to imagine what it might *feel* like to dwell in such a future.

For example, geologist and convener of the AWG Jan Zalasiewicz (2008) takes a future-speculative approach in his book 'The Earth After Us', exploring scenarios of the legacies that humans might leave after their extinction, prompting contemplation across the material and temporal dimensions of the Anthropocene. Prominent climate scientist James Hansen (2009) employs

fictional scenarios in his book 'Storms of My Grandchildren' not just as a means to better illustrate the findings of climate change research but to evoke an emotional response.

The crossover between science fiction and Anthropocene speculation enfolds factual scientific narratives with long-standing apocalyptic concerns that trace back to flood myths such as *The Epic of Gilgamesh* and *Noah's Ark* (Hall 2009; Lerner 2013). Climate fiction (cli-fi) has emerged as a sub-genre of science fiction that grapples with planetary concerns, and has become a focus for prominent authors, including Kim Stanley Robinson, Ian McEwan, Margaret Atwood, and Barbara Kingsolver – although as Amitav Ghosh (2016) notes, the visible footprint of climate change in contemporary literary fiction is surprisingly small given its significance, and has a much greater presence in public discussion.

Speculative work has also been explored by social science and humanities scholars (see for example Negarestani 2008; Oreskes and Conway 2014; Szerszynski 2015), including a series of presentations at a recent IBG/RGS Conference that invited geographic work exploring 'future fossils' from the year 5000AD (Greenhough et al 2015). Other work has emerged within the clustering of feminist and postcolonial scholarship: Swanson, Bubandt and Tsing (2015) invoke science fiction's ability as a provocative thought-experiment; while Haraway's (2016) *Chthulucene* emerges from an interest in "SF: science fiction, speculative fabulation, string figures, speculative feminism, science fact, so far" (Haraway 2011, np), dramatically rendered to evoke a sense of monstrous dread.

The constitution of future worlds has long been a concern with creative disciplines. Recent work in art (Davis and Turpin 2015), architecture (Turpin 2014), and design (Dunne and Raby 2013; Anderson 2015) explores Anthropocene implications. Creative methods bring with them a provocative capacity which exceeds the imaginative limitations of scientifically-impelled visions, given attachments to factually-based renderings. Aesthetics, Davis and Turpin (2015, 4) argue, offers alternative modes with which to conceptualise and sense the Anthropocene; pathways of 'polyarchic' experimentation able to generate unconventional responses for living within this new era.

My own attachment to creative practice makes me highly receptive to innovative and experimental responses. However, I am also cognizant of the designer's compulsion to seek solutions-focused outcomes. A conflict arises from these differing impulses – one exploratory and expansive, the other reductive – and is something I explore through this thesis. Such discord is reflective of the aforementioned ideological troubling, and subsequent reliance on modernity's singular attachment to fixedness. Speculation about the future amplifies such

ideological associations, and a key issue for all future-facing narratives is a tension between utopian and dystopian trajectories (Von Mossner 2014; Strauss 2015). To think about the future through simple linear trajectories is, however, misguided. Rather, futures are more likely to unfold unevenly, mingling utopia and dystopia – what Margaret Atwood (2015) describes as ‘ustopia’. The singular designation of the Anthropocene is therefore misleading, and it is better to consider subsequent trajectories and effects as ‘patchy’ and ‘fractured’ (Tsing 2015b, 2016; see also Kirksey 2015), as having disparate and contradictory consequences. Within this thesis, therefore, I take the Anthropocene as a broad category to explore; one that is composed of multiple and varied ‘Anthropocenes’.

Accepting the Anthropocene as multiple and uneven further amplifies the Anthropocene conundrum: it does not constitute a response strategy. For this thesis, the question of how to respond remains key, but is one complicated by the far-reaching, disruptive and unsettling reverberations of the Anthropocene. However, despite the concept’s intellectual impact, including uncanny and experimental couplings, most literature to date focuses on the categorical figure of the human ‘anthropos’. For all the discussion on the Anthropocene’s varied and uneven impacts to life on the planet, little attention has been given to the affective realities of being thrown into a world that is unfamiliar. Such a gap provides a significant fracture to be explored, and one to which this thesis turns its attention.

Responses to crisis situations at the individual level are often approached through a psychology of hope: having hope is considered important for motivating and directing agency towards a desired future (Rand and Cheavens 2009). Such concerns are applicable to the scale of planetary environmental crises (Kretz 2013; Kleres and Wettergren 2017), and are taken up within Anthropocene debates. While criticism is duly applied to ‘Edenic’ modernist visions, other work seeking to expand possibilities of Anthropocene response argues that optimism should not be completely abandoned and investigate diverse pathways with generative potential (see Gibson-Graham 2006; Buck 2015; Roelvink et al 2015; Kallis and March 2015). Hope or optimism is not something I seek to discount, nevertheless it is not a focus for this thesis. At the same time, my concern is not with the absence of hope, or with despair. Rather, my interest lies in the friction generated between registers: the deep disturbances, contradictions, paradoxes and unsettledness emerging within the Anthropocene.

Ideas of a ‘Misanthropocene’ draw on themes of human self-hatred or disgust (see Horney 1950): neurotic psychological states that can be expressed through self-accusation, self-contempt, self-frustration, self-torment, and through self-destructive actions and impulses

(Feist 1994). However, a Misanthropocene is more than just about individual human neurosis and misanthropic behaviour, but expands to a general dislike, distrust or contempt for human-kind or human nature (Morson 1996, 59); and, is shaped by the ontological 'death' of the human (Foucault 1970; see also Hicks 2004) which similarly informs Anthropocene thinking. Morson (1996) considers misanthropological expressions in literature that grapple with social and relational contradictions of the human condition. In Fyodor Dostoevsky's novels, acts of great suffering, humiliation, torture and death often take place in front of a crowd that revels in this lurid social act; Jonathan Swift's writing shows a deep dislike for humanity's ineradicable vices; and, despite the United States Constitution's elevation as a cornerstone of individual liberty and justice, Morson suggests that "with all its endless checks and balances... [the Constitution] expresses everywhere the belief that power is likely to be abused." (Morson 1996, 62). In a similar vein, Clover and Spahr (2014) bring misanthropological sensibilities to poetic expressions of disgust for the history of the Anthropocene.

Concerned with socially and culturally situated misanthropological phenomena (Žikić 2016) focuses attention on dynamics and relationships that are distinctively awkward, uncomfortable, difficult and potentially dire:

Misanthropy itself as a subject can be as environmentally important as the establishment of national parks which deny human industry on their land, as humorous and enchanting of dark subjects as an Edward Gorey comic narrative, or as offensive as the recent Charlie Hebdo cartoon equating drowned Syrian asylum seeker Aylan Kurdi with Cologne New Year's Eve gropers. (Wakeling 2016, np)

The misanthropological, therefore, is more than just concern with misanthropic dislike or hatred, suggesting a useful frame through which to consider responses to ongoing Anthropocene instabilities, as well as disruption to human ontological boundaries. The Anthropocene prompts us to contemplate 'The Earth without us' (Weismann 2007), geological futures where humans no longer exist (Zalasiewicz 2007), or 'rewilding' conservation strategies designed to limit human ecosystem disturbances (Lorimer 2012, 2015). Misanthropology is useful for considering escalating human inhospitableness, finding vitriolic expression, such as through increased incidents of hate crimes (see Meier 2017, Pells 2017); and increased support for far-right politics – not just in the United States, but globally (Sheehy 2017).

A Misanthropocene is not an argument for an unmitigatedly troubled Anthropocene, but rather draws attention to agitated themes; misanthropology is no more a solution to Anthropocene discordance than is attending to existential anxieties. However, focusing on events or situations charged with disturbing and unsettled registers can be useful in helping us to better understand conditions, and formulating strategies to navigate across uncertain ground.

Sensing and feeling the Anthropocene

Plotting trajectories through the unsettling space of the Anthropocene demands attentiveness across the full range of human faculties (Castree 2014a 444; Cook and Balayannis 2015; Braun 2016, 241). Effective responses to the Anthropocene are unlikely to be found in or indeed mobilised through singular or instrumental processes, but rather in looking to novel and diverse approaches (Lorimer 2016, 133). Applied thinking and speculative imagination are important, as is attending to bodily and affective responses (Head 2016; Ginn 2015), and exploring ‘intimate interconnectedness’ with human and non-human phenomena (Belina 2017). But we should also be willing to accept that ‘darkness’ and ‘weirdness’ (Morton 2010, 2016) may be indissoluble conditions of an Anthropocene world; conditions that may well unfold through ‘unthinkable’ lines, having catastrophic potentials – scenarios that deviate significantly from the conventional pathways to which we remain attached (Kingsnorth and Hine 2014). Within this thesis, I accept it may be necessary to ‘stay with the trouble’ stirred up within the Anthropocene (Haraway 2016). The emergent contradictions and affective disturbances I take as significant indicators of deeply provocative and challenging conditions. Such signals may be difficult to engage with and make sense of, but so doing has the potential to generate valuable insight.

While the scope of Anthropocene investigation is broad across the ‘constellation’ of concerns, within this thesis I look to work which assists me in responding to profound visceral resonances. The first is to emotional and non-representational geographies which brings focus to exploring our lived and immediate experience of the world. The second is to the environmental humanities which, while also sharing affective concerns, bring expanded interest to the wider implications of human experience, and notably to the human/nature relationship.

Emotional geographies focuses on discerning the interplay between emotions, identity, and place, as well as the role emotions play in the process of conducting and producing geographical knowledge (Mayhew 2015). This includes a concern with the spatiality and temporality of emotions, and their relationship with and within certain places (Davidson et al. 2007). A key distinction in such research is between emotion and affect. Emotion is the projection/display of a feeling, and becomes a *social* performance used to communicate how one is feeling. Affect is our unconscious response which precedes our conscious feelings and decisions; affects are *prepersonal* (see Shouse 2005). Affect is described as a “feeling, disposition, or mood that exists prior to cognition or rational thought. Often referred to as a mental state, affect is also bodily or sensory and unconscious or nonconscious in character. To be affected

is to feel or to be touched or moved” (Dewsbury 2009, 20): it is also, importantly, a capacity residing within the body, and beyond cognitive thought (Anderson 2006). Non-representational geographies have followed such affective concerns through to visceral manifestations, focusing on the experience of the body in action: walking, dancing, climbing, and travelling – and which have geographical attachments given they involve movement within and through places, landscapes, and environments (Castree et al 2013). Deeply interdisciplinary, such research has methodologically expanded geography through multi-sensory and experimental modes of practice (Dowling et al 2017). Non-representational geographies marks a political move away from thinking that is systematic, rationalist, and directed towards achieving clearly defined ends, and towards a politics of openness where novelty, surprise, and creativity are taken as stimuli to ‘enliven’ the world by multiplying possibilities rather than seeking to impose analytical or normative order.

Affective and emotional dimensions have only recently been considered in relation to global issues such as climate change, where previously the value of understanding people’s individual perceptions and experiences has largely been discounted (Akerlof et al 2013). Studies have sought to better discern the emotional geographies of climate change, investigating emotive-physical personal narratives employed in understanding and responding to climate change, and which are argued to be useful in developing emotionally-conscious climate change planning methods, as well as having the potential to generate transformative change through enrolling positive emotions (Ryan 2016). Such research also helps to shed light on associated issues such as climate change migration (du Bray 2017; Parsons 2018).

Within this thesis, visceral, affective, and experimental themes emerged as key concerns, to which little attention has been given within the highly scientific and intellectualised work underpinning Anthropocene investigation to date. In following this trajectory I looked beyond the borders of cultural and non-representational geographies to consider emerging interdisciplinary work investigating human and environmental themes.

The environmental humanities, also known as ecological humanities, has emerged within the humanities over the last decade drawing on many environmental sub-disciplines such as environmental literature, environmental philosophy, environmental history and environmental anthropology (Rose 2004; Rose 2011). The environmental humanities seeks to bridge traditional divides between the sciences and the humanities, as well as the divisions between Western, Eastern, and Indigenous modes of knowing the natural world and the position of humans within it.

Importantly, the environmental humanities assemble a response which reframes global environmental change as more than just an issue of ‘the environment’ but fundamentally social and human challenges (Palsson et al 2011, 5). Investigation is characterised by a connectivity ontology and a commitment to two fundamental axioms: the need to submit to ecological laws and to an ‘ecological kinship’ which sees humanity as part of a larger living system (Rose 2004). The environmental humanities brings a human-scale concern to essentially large-scale ecological and environmental issues; a relationality that is key to this thesis’ intervention within the universalising ‘anthropos’ of the Anthropocene, seeking to ‘flesh out’ the small-scale, individual, affective, and felt dimensions of living within planetary unsettlement.

Recent work by environmental humanities scholars has employed the Anthropocene concept as a provocation to contemplate humanity’s current condition and future prospects. Kate Rigby’s work almost a decade ago used the Anthropocene as a framing concept alongside that of ‘ecocide’ which she argued demanded greater critical and affective responses, including scholarly writing as a kind of ‘prophetic witness’ (Rigby 2009, 174). Responding work has taken up this call, seeking to bear witness and bring a voice to the dark and confronting conditions resulting in species threat and extinction (van Dooren et al 2016; Rose et al 2017).

Other work explores more agential responses, seeking to devise an ‘economic ethics’ for the Anthropocene arguing that alternatives to the thoughtless and unfeeling practices of capitalist modernity already exist and can be productively and collaboratively repurposed in developing options outside the existing techno-managerialism, aiding us in moving beyond an ecological fatalism (Graham et al 2009; Gibson-Graham 2011). Such projects bring a semblance of hopefulness to otherwise foreboding readings, allowing for lines of experimental possibilism to overwrite those currently dominating political-economic relations. However, not all thinking follows in this vein, others see a future that plays out more darkly, both for humans and non-human others (Dibley 2012).

‘Writing’ the Anthropocene extends through to more literary works (Robin 2008), looking to themes of dystopia and apocalypse expressed within science fiction – the aforementioned ‘cli-fi’ – but also through an eco-criticism and analysis of literary works which draws out unsettling sensate and affective registers as an aid to understanding the profound ruptures rendered by the Anthropocene (see for example Ginn 2015; Richardson 2018).

Other work overlaps environmental humanities’ boundaries drawing on corresponding literary themes and exploring deep ontological fractures along the human/nature division while seeking to render a map of the world inherently unsettled and interconnected. Timothy Morton’s

(2007, 2016) dark 'eco-criticism' looks to literature and, more broadly, art as an aid in exploring deeply affective lines to describe the strange, uncanny and disturbing experience of post-natural being. Donna Haraway (2016) summons a comparable sense of foreboding within her 'Chthulucene', drawing on deep mythological and narrative sources which attend to the fervent troubling reverberating through the mesh of life. Haraway blends methods, styles, and practices – 'science fiction, speculative fabulation, string figures, so far' – compelled by an urgency to write better stories about the world. Affiliated work clusters loosely around these themes, whether it be unsettling science- or climate-fiction narratives such as explored by writers Margaret Atwood or Ursula Le Guin, or transdisciplinary scholarly work tracing interconnected lines of being, such as Anna Tsing's (2015) visceral and entangled Anthropocene explorations.

And, while environmental humanities work opens up Anthropocene debates in more sensate, grounded and creative ways, criticism is focused on the blurred politics they bring. Clive Hamilton, an Earth System scientist and prominent commentator on Anthropocene science, rejects ideas such as Latour's and Morton's, arguing that only planetary-scale thinking can adequately address Anthropocene concerns (Hamilton 2017). He critiques environmental humanities outputs as being arcane and theoretically empty (see also Heise 2013), while at the same time calling for an end to Holocene-style thinking and embracing the uncertainty and endangerment that comes from living in the Anthropocene (p 158). Other critiques focus on the 'anti-humanism' that emanates from some environmental humanities work: the politics of de-centring the human for many is an unthinkable attack on the species. For Lewis (2017), Haraway's multi-species ethics for the Anthropocene goes too far in exploring ideas where human numbers are reduced to allows others to flourish, falling into blatant misanthropy.

Such critiques are not without some merit, however the work emanating from environmental humanities needs to be read within the context of the discipline's political and stylistic concerns. The work purposefully grapples with profound ideas about contemporary existence: ideas ultimately unsettling to those established and familiar. The literary style employed is intended not as a replacement of Anthropocene science scholarship, but rather an addition which returns a subjective and affective dimension to sense-making. That essence has influenced what follows here. At the same time environmental humanities' literary style is an acknowledgement that making sense of the Anthropocene condition may not emerge with the kind of coherence and clarity expected. Indeed, Morton's summoning of 'weirdness,' 'uncanniness,' 'monstrosity,' and 'strange strangeness' when discussing human as well as non-human objects and environments is intended to unsettle outmoded conceptions we might have about a harmonious or balanced 'natural order' (Morton 2013, 113). And, as Morton's idea

of hyperobjects seeks to reveal, planetary issues trace through different scales: the planetary is inexorably entwined with the human.

For this thesis, the wider range of environmental humanities work provides a fertile ground for expanded contemplation of the Anthropocene's important visceral and affective dimensions. Although highly reliant on literary practices, such work usefully explores additional expressive and creative forms: practices of making, through art and craft, as well as thinking that importantly extends through challenging future temporal dimensions, rewriting and experimenting with new forms and narratives of being.

Defining nature

Prior to embarking on this thesis' journey into unsettled terrain, the foundational concept of 'nature' requires defining and disentangling. 'Nature' is argued to be one of the most complex words in the English language (Williams 1976, 64): a linguistic signifier that possesses one or more meanings that are attached to all sorts of different real-world 'things' (Castree 2005, 36).

The word 'nature' has four general associations:

1. The non-human world, especially those parts purportedly untouched or barely affected by humans ('the natural environment').
2. The entire physical world, including humans as biological entities and products of evolutionary history.
3. The power or force governing some or all living things (such as gravity or the conservation of energy).
4. The essential quality or defining property of something (e.g. it is natural for birds to fly and fish to swim). (OED 2013)

Previously dominated by natural and physical sciences, human geography's renewed interest in investigating the 'natural world' has focused on social and cultural constituents of ideas of nature: the social construction of nature (Smith 1984), both physically and conceptually; and the ways in which nature is represented (Williams 1976). Such approaches conform to a dualistic conception of culture and nature as separate – ideas that recent geographic thinking challenges. Work under 'new materialism' takes a non-dualistic approach to understanding the world, arguing that categories of culture and nature cannot easily be separated (see Instone 2004); complexity, hybridity (Whatmore 2002) and relationality (Latour 2004) inform more appropriate concepts.

The Anthropocene not only disturbs conceptions of 'nature', and its relationship with 'culture' or the 'human', it is used by some to argue for the 'death of nature' (McKibben 1989), where an

'untouched' and 'wild' nature no longer exists. However, the new materialist perspective makes possible conceptions of nature less idealised, making room for multiple forms of nature: 'natures' (Maris 2015, 1).

The relational and coexistential concerns of this thesis aligns with such thinking. When discussing concepts of nature, I do so by considering associated phenomena not as singular or separate, but having multiple attachments, both 'natural' and 'human'. When using the term, I do so in a considered manner, avoiding the problematic definitions outlined above. I employ categories of 'nature' – as well as 'culture' or 'human' – to discuss broader ethical, epistemological or ontological issues. At times, I refer to 'natural' phenomena as a way of bringing focus to distinct non-human assemblages for purposes of discussion. For example, I use the term 'natural disaster' in reference to the earthquake-related events in Christchurch (Chapter 4). 'Natural disaster' is an accepted term for such events, however I am aware that such phenomena result from a combination of socio-economic, political and environmental factors (Gotham and Cheek 2017). The point is not to redefine nature, but to dwell within its contemporary unease.

Framing concerns

Initially, my interest with the Anthropocene focused on its potential as a creative and imaginative prompt, argued to require highly novel and imaginative ways of thinking and acting collectively in response (see Castree 2014b, Gibson et al 2015). As the Anthropocene rewrites conditions of the world, this leads to an erosion of trajectories directed towards imagined futures. The work of reimagining and renarrating the future opens potential for radically different socio-ecological configurations.

Imagination has long had a central place in the arts and humanities, though has more recently become a focus for the social sciences (Gregory et al 2009). Geographers concern themselves with the 'geographical imagination' in considering the role imagination has in shaping geographic thinking, perception and models of the world (Gregory 1994). Imagination is seen to have an important cultural role in the manifestation of worldly phenomena, such as with anthropogenic climate change – equal to that of scientific, technological and economic constituents (Szerszynski and Urry 2010).

However, little attention has been given to the ways in which imaginative processes can be used to "open new spaces and practices for dealing with the effects of living with uncertain futures" (Yusoff and Gabrys 2011, 518). Applied imaginative practice in the production of

alternative future possibilities remains an under-utilised feature of the arts and humanities (Castree 2010). Applied creative thinking has the potential to expand the range of narratives about the future (Tyszczyk 2012). Such thinking has an improvisational quality: an open-endedness and flexibility responsive to unforeseen conditions and uncertain futures; and the potential to be reality-making.

Investigating situations where imaginative practices were enrolled in the production of real-world outcomes was an early focus for this thesis. Scenarios of design-led practice, for me, were a natural choice. I focused on creative practices used in collaborative problem-focused workshops. Known as design jams, such events are intended to generate creative and innovative outcomes responsive to a defined issue. During the early stages of the research process, I participated in two design jam events, seeking to evaluate the potential of this research pathway (see Box 1.1). I found that while a design jam employs a set of effective creative tools, the scope of impact was limited to having more short-term effect, and was more appropriate to problems that are able to be clearly defined. The complexity and far-reaching temporal dimensions of the Anthropocene require, first, a more nuance analysis and, second, techniques to creatively extend and expand thinking through to far-future effects.

Future studies and scenario planning frameworks address a wider scope of concern, employing imaginative processes to consider implications arising from uncertain future conditions. Such approaches are favoured by those with vested interests in near or far future circumstances, such as large commercial organisations, the insurance sector, and governments. This led me to consider the ways in which imaginative practices were enrolled within such organisations, and how effective these were as operational tools (see Box 1.2).

I had mixed results in pursuing this research pathway: some organisations, such as insurance companies, I approached were initially amenable to providing access, although this wavered. Eventually, gaining access to such sensitive internal practices and information proved to be problematic and I abandoned this second investigative pathway.

My initial research explorations did not lead to the study cases that I hoped for. Drawn initially by the way that design thinking, and futures and scenario planning each employed creative and imaginative thinking for practical purposes, upon further consideration I recognised that any such methodological analysis would come with limitations. Investigating creative practices directed towards largely functional or instrumental concerns comes with a 'practical' appeal, but a focus on what is practical may undermine an appreciation of more radical potentials.

Box 1.1: Applied design thinking

An early investigation in the project followed my initial concern with practical application of creative and imaginative process. I was curious about the effectiveness collaborative design practice in developing responses to complex socio-ecological issues, and in order to explore this I participated in an organised design workshop focused on the theme of sustainability.

The workshop employed a ‘design thinking’ methodology, a structured process developed for practical and creative resolution of problems both within professional design practice, but which may also be applied in other contexts such as business or social sector (see Visser 2006; Brown 2008). The process follows a number of stages, which include: problem definition, research, creative idea development, prototyping, and testing. Progression is not necessarily linear, and stages may occur simultaneously and be repeated. Design thinking emerged during the 1950s and 1960s with the development of strategic creativity techniques intended to formalise a clear methodology within design practice (see Archer 1965), impelled by the desire to establish a “science of design” as an intellectually grounded, analytic, empirical, and ultimately teachable design doctrine (see Simon 1969). However, such an approach makes assumptions that an interpretive and creative process can be reduced to a clearly defined set of instructions and be applied to any situation; and design thinking may not be the panacea it purports to be outside of the design field.

The design process is argued to be significantly different to other modes of investigation, largely through its temporal orientation. Whereas artists and scientists focus on present conditions, designers concern themselves not with *what is* but what *might be* – actively imagining and producing futures (Jones 1992), and leading to arguments for increased attention to be given to the inherently ‘futuring’ consequences of all design activity (Fry 2011).

The workshop I attended sought to apply design thinking using a creative ‘jam’ approach to broad concerns of sustainability. In this context a ‘jam’ is a design-led approach to problem solving drawing on the idea of a musical jam where people come together to create something without a specific end-plan, largely organic and improvised.

The 2013 Sydney Sustainability Jam ran over a full weekend. The workshop was one of many held at the same time in other cities around the world, coordinated as a global event, and which followed the same concern with developing products and services in the aim of environmental sustainability. All jams also shared the same creative ‘trigger theme’, which for 2013 was ‘AB3’: a combination of ‘ABC’ and ‘123’ intended as a provocative starting point.

Such events are organised and run by volunteers, often design practitioners who are interested in spreading the value of collaborative design practice. This makes the cost of the event low, providing entry to a wide range of participants. The group composition of the Sydney event was broad: a mix of people from business, some from local government, some from the social sector, as well as design practitioners and students. Our jam group numbered just over 30 in total.

The event began with short introductory talks to set the scene and provide inspiration: the design thinking process was introduced, and sustainability-related concepts discussed. A collaborative exercise followed to identify common-interest sustainability issues, which led to thematic group

forming. Afterwards, brainstorming methods helped pare issues down to a core 'problem'.

The rest of the weekend followed similar guidance through the design process, which was infused with inspiring design speakers, playful group exercises, continued brainstorming and development of ideas, as well as various forms of in-field and performative-style research.

The second full day focused on 'defining the problem', which involved first clarifying what the 'problem' was. We were ushered outside to get out of our heads and our own biases, and to engage the 'real world' directly, as well as people and the environment. During the second half of the day we used our research findings to help us better define the problem. At the close of the day each group presented a brief summary of insights, using performative techniques such as acting out user experiences or journeys.

The third day focused on the actual 'design' process. For the first half, ideas were tested through rapid prototyping, and to gather feedback. The latter part of the day focused on converging ideas into a final concept and producing a final presentation.

The end results from the weekend were surprisingly innovative. Given that projects were developed over just a 48-hour period, many were easy to imagine being put into trial application: a community composting programme; a creative networking platform; city maps and installations prompting human-nature connection.

Collaborative work can be challenging, especially if you don't know the people you are working with or if they have different disciplinary backgrounds. The design-thinking framework provided a useful generative structure to work within. Creative activity was approached in an affirmative way, encouraging participants to be open to emergent ideas (having a 'yes' attitude), and supporting collaborative process. At times, however, the creative process had potential to slip into problematic group-think, where mediocre suggestions aren't questioned because of the affirmative atmosphere (and probably amplified by the sort timeframe in which we had to find some practical resolution). Similarly problematic was the lack of being able to apply a critical analysis during the process, which meant that final outcomes had the potential to be less robust as practical solutions to real-world problems.

The outcomes from only 48-hours of work were intriguing responses to issues but, at the same time, the two-day time constraint limited the depth and complexity of what could effectively be grappled with. While the point of the exercise was more than just about outputs, and acted as both as an educational and promotional platform for design thinking as well as for relationship building, at the end I was left with concerns about the effectiveness of the process in tackling the real-world complexity that comprise sustainability issues: to address such issues would require longer-term development, including more in-depth systemic analysis and research.

What was appealing about such a collaborative creative approach was its experimental character. In application, there was very little theorising; time and energy were focused on empirical investigation and testing. A 'short, sharp' design jam was an effective way to 'play around' and experiment with ideas; to very rapidly prototype and test; and to feel comfortable failing due to minimal investment. In this way, the stigma of failing is removed, which encourages a more risky and innovative approach to conceptual experimentation.

Box 1.2: Futures, speculative design, and art

Moving on from applied design thinking, I considered imaginative practices which explore future and speculative dimensions. Such creative methods extend thinking about the world beyond the bounds of what is considered probable or possible. At their core, these practices are about telling stories as prompts for the construction of different future worlds. Drawing on the literary tradition of speculative fiction – a story-telling genre that incorporates fantastical or futuristic elements – science fiction is a key influence given its concern with more concrete themes, such as science and technology, and ability to project anticipated consequences through to plausible future scenarios (Milner 2012).

The field of future studies was first proposed by science fiction writer H.G. Wells at the beginning of the twentieth century (see Wells 1902), but it wasn't until the middle of the century that it began to be developed methodologically. Post World War II, military forces sought to develop strategic responses to the existential threat of the Cold War and, from the 1970s onwards, the corporate sector saw the benefits of applying such thinking to business (see Schwartz 1996). Using a range of methods, such as systems analysis, mapping and forecasting, future studies and scenario planning generate new narratives and potential trajectories for the future. Here 'the future' is important: concern is less about representing the present, but rather with imagining different future worlds, as well as considering pathways which navigate towards such futures.

More recently, designers have taken a critical interest in futures and scenario planning approaches, concerned with how design practices enact the world. Critical design, speculative design and design fiction are amalgams of literature, art, design, science, and future studies (Dunne and Raby 2015). Such practices are influenced by the story-telling conventions of movies and television (Bleecker 2009), employed to performatively construct imaginative worlds.⁴

For Dunne and Raby (2015, 88), key design exponents of speculative practice, the purpose is pointedly to “unsettle the present rather than predict the future”. For them, speculative design work:

strives to overcome the invisible wall separating dreams and imagination from everyday life, blurring distinctions between the 'real' real and unreal... whereas it is accepted that the present is caused by the past it is also possible to think of it being shaped by the future, by our hopes and dreams for tomorrow. (p160)

My interest was drawn by the enrolment of speculative practices within organisations; notably by large corporations seeking to more effectively navigate market instabilities, as well as an increasingly volatile planet. Of particular interest was the insurance sector, which has a vested interest in discerning and navigating future disruptive scenarios (see Mills 2005). I identified potential candidate organisations within the sector, and while some were initially receptive to the idea of allowing me access to internal process, such possibilities eventually fell through.

⁴ Science fiction movies, for example, create worlds through the construction of a limited set of objects. These artefacts are embedded with the social and political dynamics that illuminated the future world in which the story is set. The point is, such speculative storytelling does not require the construction of entire worlds, rather, seemingly simple objects have a performative potency.

While I was not given reasons, I concluded that access to sensitive internal organisational process and knowledge was most likely considered too problematic.

I followed my interest with futures and speculative imagination in another direction, looking to instances where practitioners engaged with such ideas. While in London in late 2014, I interviewed a number of design practitioners working with critical and speculative design methods, such as Anab Jain of Superflux, and Tobias Revell. I also attended a range of events which dealt with wider futures and technology issues, including: an experimental workshop at the think-tank, Nesta, in London exploring possibilities of micro-satellite use; attending the public events of the Anthropocene project launch at Haus der Kulturen der Welt (House of the World's Cultures) in Berlin; a symposium on the theme of extinction at the Serpentine Gallery in London; a conference focused on futures at Goldsmith's College, London; and a 3D printing technology expo held in London.

Undertaking this broad range of investigation exposed me to varied approaches for considering the implications of futures, however, I recognised a reliance on the application of technology and attachments to uncritically optimistic outcomes⁵ – not wholly aligned with ecomodernistic thinking but jarring against the wider range of sensibilities I felt that surfaced in response to Anthropocene trajectories. While I reoriented my focus away specifically from design, creative practice remained a peripheral interest.

The ability of art to expand Anthropocene discussion and response is argued to be critical. Concerns with 'ecological' issues emerged within art practice during the 1960s (Weintraub 2012) and, over time, the capacities of art and creative methods have been drawn into expanded interdisciplinary arts-science discourses reconsidering the role of cultural and creative responses to environmental change (Gabrys and Yusoff 2012). The complex material, economic, political, and ideological planetary mesh of the Anthropocene is paradoxically vast yet indefinite, surpassing thresholds of objective certainty and knowing, unhinging previously stable narratives and trajectories.

Aesthetic practices are argued to be highly effective for responding to Anthropocene conditions (Davis and Turpin 2015, 3). Visual practices are a means for representing Anthropocene phenomena – such as through data visualisations and satellite imagery – helping to make ambiguous phenomena tangible. Further, aesthetics address the highly sensorial experience of living in what has become an increasingly damaged and toxic world. Significantly, art practices open up polyarchic sites for experimentation for “living in a damaged world” (Tsing 2014, np). Creative strategies are not confined by regimes of scientific objectivity, political moralism, or psychological depression, and effectively respond to the ‘crisis of thinking’ (Morton 2010), inviting unorthodox investigate qualities, such as hesitation, uncertainty, irony, and mindfulness.

Aesthetic practices have therefore been enthusiastically drawn into varied engagements with Anthropocene ideas. Such employments blur the designation of ‘art’ as projects

5 Critiques of future studies highlight its male gender bias, as well as a neo-colonial political current (Gunnarsson-Ostling 2011); a similar critique is applied to speculative and critical design (see Oliveira 2014).

developed through transdisciplinary and collaborative processes, and outside of traditional gallery spaces. Artists work with scientists, as for example with the transdisciplinary project *STRATA: Art-Science collaborations in the Anthropocene* (2016). Designers following critical and speculative pathways reflective of Dunne and Raby explore possibilities of real-world products, such as Natalie Jeremijenko's *Farmacy^{RX}* urban farming projects, or Jae Rhim Lee's *Infinity Burial Project*, an alternative burial practice employing unique strains of fungi trained to eat human body tissue. Non-traditional spaces are opened up to actively explore Anthropocene themes, such as within museums employing performance to engage public audiences in inclusive and non-technical ways: see for example *Violent Ends: The Arts of Environmental Anxiety*, staged at the National Museum of Australia in 2011, which used art, film and performance to explore anxieties and public concerns about climate change.

Transdisciplinary and collaborative approaches are also being explored more directly for knowledge production in scholarly settings. Germany's centre for international contemporary arts and culture, Haus der Kulturen der Welt (House of the World's Cultures), has committed to a long-term project investigating the Anthropocene (*The Anthropocene Project*), supporting transdisciplinary research, public events, workshops, and the development of education resources. The 'Anthropocene Campus' ran for 11 days in 2014 and involved more than 100 participants consisting of doctoral and postdoctoral scholars and practising artists, as well some 30 presenters and facilitators, most of whom came from scientific disciplines. Public events included lectures and exhibitions, and outputs of the Campus were used to develop a 'curriculum' for Anthropocene education made available via the HKW website. The aim of curriculum materials is to develop human and emotional responses to the Anthropocene, as well as explore ways to communicate beyond disciplinary silos and work collaboratively to solve problems and engage audiences.

HKW ran a second campus in 2016, which I was invited to attend. The ten-day campus provided a range of intellectual and sensorial stimulation, which I draw on for the final field chapter where I return to consider the unsettling but productive potentials of aesthetic experience. Similar Anthropocene campus-style workshops have also been organised in other locations: Philadelphia in 2017, and Melbourne in 2018.

From that point, I considered two key trajectories to pursue within the thesis. The first expanded an interest with design, following my investigation of speculative and critical design, and exploring ways such thinking might be enrolled in responding to concerns of the Anthropocene. I saw such an approach as having collaborative potential, through which others could be invited to explore and contribute to the development of novel responses. However, I had concerns whether such an approach would result in suitably effective outcomes due to the commitments required by participants, and the challenges of orchestrating the process. I also became uneasy with the idea of instrumental responses to the Anthropocene; using creative processes under the guise of problem solving or solution finding.

A second trajectory took a different approach; one also influenced by my encounters with creative projects, but less instrumental in nature and more exploratory. As I continued to grapple with trying to apprehend the scale and magnitude of the Anthropocene, I recognised that much work focused on either scientific or philosophical dimensions. As a tangible phenomenon, however, the Anthropocene remains highly abstracted (see for example Cook and Balayannis 2015; Morton 2013). Intellectually I understood the arguments made for significance of the Anthropocene but, at the same time, I had little sense of the phenomenon as tangible and visceral. A concern with Anthropocene futures is task in high abstraction, but a more immediate challenge appeared to be with re-imagining the world of the now as 'Anthropogenic'. For myself, the unsettling of the Anthropocene comes not only from considering that accepted dominant future narratives are untenable and require rewriting – given the future is always uncertain – but also from an erosion of the present: an unravelling of familiar conditions of the world. The Anthropocene's more immediate unsettling led me to explore existential thinking as a conceptual frame for investigation.

An existential invocation

The concerns of existentialism can be traced back to the beginnings of Western philosophical thinking: to the ancient Greeks and Socrates, and the development of ideas about 'care of the self'. But, it is ideas developed in the early modern period, notably those of Søren Kierkegaard and Friedrich Nietzsche, that provide the foundation to the philosophical outlook that came to be associated with the moniker of existentialism (Crowell 2016). Both Kierkegaard and Nietzsche responded to a conceptual crisis of their own era where religious narratives of the world began to be unsettled by new scientific ones: Darwin's theory of evolution was a key contributor. Kierkegaard and Nietzsche grappled with what they saw as failings of rational and scientific conceptions of the world, arguing these to be too detached and observational to accurately represent human experience. Their response was to focus on subjective experience, drawing on self-reflection and emotional response as more veracious modes of producing knowledge about the world.

Kierkegaard's ideas, developed in reaction against the dominant Hegelian philosophy of the day and as a radical response to his own Christian faith, provide a philosophical ground for modern existentialist thinking. A recurrent theme for Kierkegaard is the importance of subjectivity, which has to do with the way people position themselves in relation to (objective) truths. Truth, he argued, did not come just from the discovery of objective facts but with how

the individual chose to interpret and relate to those matters of fact. Such a paradox Kierkegaard referred to as a 'leap of faith': to resolve conflicts in one's experience of the world we ultimately defer to subjective and irrational decision-making rather than some clearly rational method; or we submit to some 'universal' belief (Crowell 2016). In contrast to traditional philosophy, with its emphasis on either objective 'laws of nature' or universal standards of moral reason, Kierkegaard looked to the single individual as the site for locating truth. Against the individual was the crowd: formed of public opinion, taken-for-granted ideas, ordinary and accepted behaviours, complacent and conformist living – what performs as 'untruth' against the task of individual sense-making and selfhood. To 'exist', for Kierkegaard, is always to be confronted with questions of meaning which can only be answered by oneself rather than be given by prescribed beliefs, or deduced through rational analysis. Other important themes emerging through Kierkegaard's work include alienation, abstraction, death, dread and anxiety, despair, and passion (Aho 2014): concerns which others were later to explore.

Responding to the rising cultural capital of the natural sciences in nineteenth-century Europe and subsequent erosion of fundamentalist readings of the Bible, Friedrich Nietzsche examined the consequential collapse of any theistic support for morality – the 'death of God' and resulting challenge of nihilism. Similar to Kierkegaard, Nietzsche looked to the individual and to an ethics of the self against that of conformity and 'herd' mentality (Anderson 2017). Without God or religious dictates we are forced to make our own sense of the world. For Nietzsche, this meant taking life's challenges at face value, and as experiences that productively shape us – leading to the well-known aphorism "what does not kill me, makes me stronger" (Nietzsche 1889). The ultimate goal for humans, living in a world without divine guidance, is to live one's life fully in accordance with one's values, in a manner beyond pleasure and suffering – taking both as inseparable qualities of existence. The resulting "Übermensch" (Nietzsche 1908), variously translated as "superman", "superhuman" or "overman", describes an aspirational being; one that lives in total freedom, without the need for God and having conquered those limiting human impulses.

Kierkegaard and Nietzsche are useful entry points for introducing existentialist themes. Both grappled with the emergent issue of their time; where the world once described by religious narratives was being increasingly overwritten by those of science, rendering a conceptual turbulence into which humans – and the individual – were thrown, forced to reorientate themselves in a new landscape without points of reference. A sense of the world changing, modernising, and increasingly resulting in 'unnatural' and alienating experience also became a concern for other thinkers and writers, including Max Weber, Fyodor Dostoevsky, and Franz Kafka.

Where the emergence of existential thinking deeply troubles individual being – how to live an authentic, ‘good’ life – Anthropocene ideas scale up such trouble to an entangled planet. In returning to existentialism I seek to draw on themes useful for engaging contemporary experience: one not just of individual crisis but profoundly reverberating through the very ground on which we all stand. I do so not looking to a single existential philosopher or body of work but rather by drawing on ideas across the gamut of existential investigation. I also remain cognizant that existentialism is not a unified school of thought or rigid doctrine, but rather a collection of connected attitudes and approaches (Aho 2014, 12). Indeed, the term ‘existentialism’ was coined only in the mid-twentieth century by Gabriel Marcel in 1943 (see Daigle 2006). And, it was events that transpired during the early twentieth century, resulting in conditions of upheaval and crisis, that instigated a revival of existentialist inquiry. Such reinvigoration helps demonstrate the utility of existentialism in moments or times of adversity or emergency. Indeed, existential analysis has very little to offer under stable or agreeable circumstances and, as Mickey (2016, 2) advises: if you are content with the way things are, existentialism is better left well alone.

Responding to dark events unfolding in the first half of the twentieth century a coterie of scholars, intellectuals, and artists returned to existential inquiry in the aftermath of World War II during the 1950s and 60s, seeking to relocate meaning in a world left traumatised. Emanating across Europe, and notably through the work of artists and writers living in Paris, well-known contributors included Jean-Paul Sartre, Simone de Beauvoir, Albert Camus, Gabriel Marcel, and Maurice Merleau-Ponty. Existentialism’s influence was wide, cutting across disciplines, being explored in literature by Jean Genet, André Gide, André Malraux and Samuel Beckett; by artists such as Alberto Giacometti, Jackson Pollock, Arshile Gorky, Edward Hopper, and Willem de Kooning; by filmmakers such as Jean-Luc Godard and Ingmar Bergman; and influencing psychiatric medicine via Rollo May, Victor Frankl, and Irving Yalom. In this way, existentialism’s heritage is that of an applied conceptual approach. It became a way of living to its adherents who sought to enact ideas within the fray of everyday life (Mickey 2016, 2). Existentialist practitioners sought to protest against academic philosophy, which they considered too far removed from the concerns of lived experience. Such dissent extended through to an intentionally unmethodical application (Kaufmann 1968, 12) and, resultingly, existential philosophy is better approached as an aggregation of overlapping and connected themes as opposed to a well-defined philosophical school of thought (see Flynn 2006).

At its heart, mid-twentieth century existentialism is a human-centered philosophy. The key focus of investigation is with the individual’s pursuit of identity and meaning-making against

the social and economic currents that push them towards conformity and in superficial directions. This marked a subtle shift from Kierkegaard and Nietzsche's religious concerns with 'crowds' and conformity, but more appropriately responded to modernity's ascendant powerful socio-political currents.⁶

A key concept is that humans have no pre-given 'essence'. First suggested in the works of Kierkegaard and Nietzsche, this idea was more clearly articulated by Sartre through the aphorism "existence precedes essence" (Sartre 1947, 21). For Sartre, humans, as opposed to trees or animals, are self-making beings required to make choices and actions in defining themselves and creating meaning within their lives. What follows is a reciprocal concept of freedom and responsibility. Humans have the capacity to stand back from their lives and reflect on their actions – in a sense, are able to be 'more' than their unexamined selves. But with such freedom comes responsibility in attending to making one's self, and one's life. Ethical considerations are therefore paramount. Although each individual may examine their ethical conduct in his or her own way, the underlying concern invites us to examine the authenticity of our own personal lives and of wider society.

However, the condition of having to 'make ourselves' creates tension between the givens in our lives – such as physiology, sexuality, and social position – and our ability to transcend or affect these. We are required to make choices about how to interpret our given qualities and, through the process of ascribing meaning, we create our individual sense of identity. The freedom afforded us to define ourselves becomes a profound challenge, and potentially a source of anxiety given that we alone are responsible for making choices and taking actions that significantly influence the direction of our lives.

A common response to anxiety is to try and alleviate it by simply subscribing a set of external rules – such as religious doctrines. Living 'authentically', however, is to face the self-responsibility for creating a meaningful, committed and fulfilled life. For Kierkegaard this was to 'become what one is' (Kierkegaard 1846: 130); for Heidegger (1927) it was 'being one's own' – owning up to and owning what one is and does. For Sartre and his contemporaries life was unequivocally ambiguous, and our challenge was to 'transcend' the given characteristics and qualities – 'facticity' – in our lives, which led to ideas which sought to contextualise the individual within their own situation – 'in-situation' (Flynn 2006, 64). Importantly, living authentically requires careful attentiveness to subjective, lived experience, which leads to existentialism's essential emphasis

6 Socio-political application of existential thinking emerged in the aftermath of World War II was spearheaded by Sartre through a 'committed' expression of ideas. Taken up by the Parisian coterie of intellectuals and artists such thinking culminated in the political uprising of May 1968, also known as the 'Satrean revolution' (Flynn 2006, 105).

on personal experience and inner response to worldly phenomena: an active repudiation of objective measures of human experience.

Finally, the sense- and self-making activity undertaken by individuals makes visible a significant temporal relationship. Time is of the essence: we are fundamentally time-bound beings. While the idea of being embedded in time comes from Kant, it was Heidegger who brought this thinking into the existential frame, treating time not as quantifiable and measurable ‘clock time’ but rather as a qualitative lived time, as a part of one’s experience. Thus, we make and perform ourselves in the world through our experience of our past and present, as well as projections of an imagined future.⁷

For existentialism, our moods and the way that we *feel* about phenomena provide crucial signals about our experience of the world. Certain moods are seen as particularly significant in making authentic decisions: for Heidegger this was anxiety and uncanniness; for Sartre nausea; for Kierkegaard anguish and guilt; and for Camus absurdity (Aho 2014, 13). Such significant emotional registers are argued to have the capacity to shake us out of everyday complacency, forcing us to be honest with ourselves and valuable in assisting us to contemplate more authentic ways of living.

In looking to existentialism, I do so because it offers effective pathways for thinking into and interrogating the affective and visceral dimensions of the Anthropocene constellation. However, to be clear, my concerns do not follow those of Kierkegaard or Nietzsche in looking for moral recalibration, nor am I concerned directly with tracing or enacting a particular social politics, as was assembled by post-War existentialists. Rather, I am concerned with the broader offerings existentialism brings, and which prove particularly apposite to investigating circumstances that are jarring, unsettling, and paradoxical.

In a small way my unsettling experience at the NCCARF conference, where the audience was urged to ‘feel the rage,’ performed an existential invocation by inviting affective engagement amidst the scientific-intellectual atmosphere of the event. However, against the dominant rationalist approach to the ‘science’ of understanding complex planetary issues – such as climate change – the idea that such issues are *not* able to be solved solely by the application of science and the production of ‘facts’ is emerging (see Jasanoff 2010).

Existential ideas remain highly relevant to the tumultuous conditions of contemporary experience and ecological emergency; although expand concern beyond that of individual sense-

⁷ This explanation is a very coarse summary of Heidegger’s discussion outlined in *Being in Time* (Heidegger 1927). For further exploration, see Blattner 2005.

making as the bounds of ‘human’ sensibility is expanded through to a planetary anthropos. The question of what it is to be human, as well as how to live authentically, is amplified by the Anthropocene. Long-term and planetary impacts bring ethical and moral concerns (Schmidt et al 2016), troubling ideas of what appropriate and effective human agency and response might be. Beyond a philosophy of ethics, we must personally grapple with our own complicity in planetary impacts. How should humans respond to evidence that we are implicated in a mass extinction event? (Kolbert 2014; Ceballos et al 2015) The disruption to the web of life is profoundly concerning for a multi-species ethics of co-existence (van Dooren et al 2016), but also given that humans rely on a biodiverse planet for their own individual continued existence.

Existentialism is relevant not only for emergent disturbing physical phenomena, but can tell us something about responding attitudes coalescing around apathy and denial, and which characterise so many reactions to emergency conditions. As Heidegger (1989, 75) emphasised, “the distress of a lack of distress” (die Not der Notlosigkeit) is also a concern: the condition of the emergency is also the very *lack* of a sense emergency. Similarly, the optimistic attitude that everything will work out for humans⁸ – and which manifests withing policy pragmatism, technological innovations, as well as the cynicism of critiques against hegemonic systems of capitalism, technoscience, neocolonialism – act simply as ‘shock absorbers’ preventing the emergency from emerging (Mickey 2016, 28).

There are problems, however, in tracing existentialism only along its most recognisable contours. Existentialism may have experienced a peak during the mid-twentieth century, but its ideas percolate through contemporary philosophical lines of investigation. The failure of the May 68 uprising to bring about revolutionary change was certainly not the end of existential ideas, but rather highlighted key deficiencies. Amongst these were existentialism’s focus on the individual, and resultant hyper-subjectivity above significant social constitutions and structures; a dismissal of genetic and environmental constituents as important components of the individual; a rejection of the potential benefits to be found in the modern project; and the overwhelming nihilistic and fatalistic character with which is argued to permeate life (see Flynn 2006).

Existential ideas subsequently influenced post-structuralist thinkers such as Foucault, Deleuze, Derrida, Levinas and Irigaray, opening up a pathway away from the isolated subject, and towards a more relational understanding of experience in intimate contact with other beings, and living with difference and strangeness (Mickey 2016, 12). Reflected in ideas of systems

⁸ Such as argued by ecomodernist adherents.

complexity and dynamics, such thinking is expanded through Latour's (2005, 2013) Actor Network Theory, conjuring a world comprised of an intimate interconnectedness between living things and non-human agents, as well as work exploring the more vital and vibrant agency of matter (Bennett 2009; see also Barad 2007; Coole and Frost 2010).

Contemporary existential threads are woven through current Anthropocene debates. Issues of human agency, relationality, ecological impact, and threats to continued existence have become a focus for emerging research within environmental humanities scholarship. Penetrating the intellectual surface, such work delves into corporeal, fraught and perplexing dimensions of phenomenal experience, providing significant signals which I use to orient this thesis.

A key difference between existentialism and, what I will explore as 'coexistentialism' (see Mickey 2016), is the latter's ecological concern. Although current ecological science allows a far more comprehensive understanding – and concern – than was possible during the nineteenth and early twentieth centuries, to some degree the widespread ecological threat to life was addressed by existential recognition of nihilistic tendencies which reduce lives, species and communities to nothing (Mickey 2016, 43). We can again look to Nietzsche, who forewarned us of the 'desertification' of the Earth which was already underway at the time and would only accelerate:

Deserts grow: woe to him who harbours deserts! (Nietzsche 1891, 319)

The nihilism Nietzsche saw, was not just the threat to Europe he saw, but would spread everywhere:

the hyperbolic naïveté of man: positing himself as the meaning and measure of the value of all things. (Nietzsche 1901, 7 (#1))

Concerned with interspecies care and responsibility, Deborah Bird Rose (2011), examines the plight of the Australian dingo, developing an 'ecological existentialism' which, she suggests, "pulls together two major shifts in worldview: the end of certainty and the end of atomism." (Rose 2011, 2; see also Instone and Taylor 2015). Following a similar concern for ecological thinking under the rubric of object-oriented ontology, Timothy Morton (2007, 2010, 2013) explores an environmentalism premised on ecological entanglement: a 'mesh' of 'interconnectedness' between living and non-living things (Morton 2010, 31). Existentialist themes emerge within a framework of 'dark ecology', with the necessary implication of catastrophe and death. For Morton this requires a 'radical intimacy' of existence (2010, 47), leading him to explore a 'coexistentialism'. Such work necessarily confronts the difficult and challenging realities found in observing conditions of the natural world: realities often unexpressed.

Similar existential and dark themes are a focus for multispecies studies (see van Dooren et al 2016) and extinction studies (see Rose et al 2017), which seek to 'bear witness' to the complex and relational constitution of the world, as well as events that threaten it.

My aim here is not with delineating a 'new' existentialism but rather demonstrating how existential thinking is highly relevant in considering the contemporary human condition, and the experience of a world re-written by the Anthropocene. Ideas of coexistentialism align with ontological shifts argued within Anthropocene literature: significantly 'decentering' humans; asserting that humans are bound "within [a] worldly "mesh" rather than above it" (Meyers 2013, 127). Coexistentialism challenges narratives of human mastery and, for Meyers, "should guide the way we care for the world, as both home and in-between" (2013, 128). Such thinking importantly broadens existentialism's scope, suggesting it untenable to focus solely on our own individual well-being, or just that of humans: a wider relational mesh of life must be embraced. To open oneself up to the coexistentialism of inter-being remains a summons to live dangerously and invite exposure to strangeness outside of our comfort zones; but here 'strangeness' becomes 'strangers', as humans are asked to rethink their existence not just by themselves but in a world full of other beings dependent on each other, and having similar vulnerabilities.

Significant implications follow for what it means to live 'authentically' both as an individual and as a species, expanding attention to the challenges and potentials of 'risky attachments' (Instone 2015a), the outcomes of which might better guide the actions of humans in their role as planetary stewards.

More practically for this thesis, existentialism and coexistentialism provide a conceptual framing highly appropriate in considering the implications of large-scale 'ecological' issues (Mickey 2016). Such ideas steer investigation away from highly theorised or purely intellectual engagement, rather focusing attention on insightful experiences that come through upheaval and crisis: moments that render a life of stability or conformity as either undesirable or impossible. It is within conditions of emergency – confronting events that make us *feel* a sense of unease – that have the potential to deepen our understanding of ourselves and of the world, and to reorientate how we respond.

Attending to existential resonances through experience therefore emerged as an effective way of interrogating the unsettling gap exposed by Anthropocene ideas. The composition of this project accordingly shifted, becoming more exploratory and empirically reflexive. Rather than focusing on creative and imaginative methods, a concern with affective unsettledness redirected my attention towards encounters and experiences with disorientating or unsettling

existential potential. Subsequently, I bring empirical cases to bear on existential thinking; cases within which disruption, disorientation and unsettlement are performed, and which unlock key insights into existential Anthropocene experience.

Experimental concerns

A return to experience prompted a corresponding reconsideration of experimentation. Both *experience* and *experiment* are derived from the same Latin root *experiri*: to try or attempt (also the etymological root for ‘expert’) (OED 2013). Existentialism emerged as a response to the co-option and instrumentalisation of experience by science: the formalisation of experimentation, leading to a depreciation of subjective human perception (Flynn 2006, 4). The epistemological friction between the sciences and humanities (what became known as ‘two cultures’ of knowledge (Snow 1959)) remains, and can be found in debates in which complex phenomenon are defined by science – such as environmental climate change – but are argued to be inadequate to provide sufficient social mechanisms for change (Yusoff and Gabrys 2011, 518). By returning to human experience existentialism performs an act of rebellion: against reason, rationality, and rules and principles of order (Barrett 1990). Looking to the inner and irrational, existentialism seeks to revitalise human sensibility. Taking an unabashed phenomenological stance, experience is acknowledged to be more-than-cerebral and, rather, a complex intersection between the body, the world, and others (Farina 2014, 58).

The Anthropocene invites multiple associations with experimentation, supporting arguments for an ‘experimental society’ (Callon et al 2009) as the scope of experimentation becomes expanded to the planetary scale (see also Davies 2010; Gross 2010; Hinchliffe et al 2005; Latour 2004). The constellation of global constituents can also be argued – as with climate change – to be a ‘collective experiment’ (Yusoff and Gabrys 2011), albeit one highly uneven in nature. Re-writing conditions of the planet leads to proposals for an ecological politics driven by a need to experiment which, problematically, can create a postpolitical ‘state of exception’ in which normal procedures, rationalities or norms are suspended (Lehman and Nelson 2014). Projects may be written in very different directions. Those looking to techno-managerial solutions, such as geoengineering favoured by ecomodernists, amplifies human governance and management through technological interventions into planetary disturbances which brings a dark aspect to experimentation (see: Yusoff 2013; Hume 2014). Alternative proposals seek to move beyond existing socio-political norms, looking to amplify promising non-standard political responses (Gibson-Graham 2009), or to emergent socio-ecological responses – ‘wild

experiments' (Lorimer and Driessen 2013) – open-ended and uncertain political negotiations between people, wildlife, and landscapes.

Experimentation has become a focus for geographers. This includes investigation into sites where experimentation is undertaken: 'geographies of experiment', which encompasses the places and locations, such as laboratories, cities, artistic projects where experimentation is undertaken (see Kullman 2013); as well as the enrolment of experimental approaches: 'experimental geographies', where researchers undertake conceptual and methodological experiments with the aim of exploring new modes of doing geography (see Paglen 2009; Instone 2010a; Last 2012). The practice of experimental geography draws inspiration in part from existential ideas, notably the Marxist-inspired Situationist International. This art collective sought to expand existentialism's subjective and reflexive focus through cultural and political expression. Situationists endeavoured to produce moments of *collective* awakening – 'situations' – intended to arouse people from the 'spectacle' of modern living (Thompson 2009). Experimentation and agency are also key concerns for non-representational (Thrift 1996, 1997, 2000a) and more-than-representational (Lorimer 2005) geographies.

This thesis draws on both experimental and non-representational geographies, taking a similar interest with embodied and intangible aspects of lived experience. Although diverse in nature, non-representational research encompasses work that "seeks to better cope with our self-evidently more-than-human, more-than-textual, multisensual worlds" (Lorimer 2005, 83). Such work attends to the broader sensorial and affective dimensions of the body, acknowledging the inherently fluid and relational communion that occurs between the self and the outside world; and which are registers often exceeding representation (Longhurst et al 2009, 334). Experimental and non-representational geographies therefore seek to go beyond simple representation of phenomena, exploring methods that might more actively 'co-produce' the world (Thrift 2000, 5; see also Dewsbury et al 2002).

I take the experimental as a broad frame within this thesis; one highly applicable in investigating the dimensions of the Anthropocene. Such an approach operates less as a precise methodology, and is more effectively employed as a loose mindset, or as 'background hum' (Lorimer 2008, 6) within research. By design, experimentation involves risk and uncertainty. This is not only because such undertakings can fail (Latour 2004a, 196) but that they require we remain open-minded to outcomes and findings that may challenge us and "exceed our capacities to describe, analyse or otherwise engage with [them]" (Greenhough 2010, 49). However, far from constituting a hindrance, the risky aspects of experimental research remind us of the uncertainties involved in generating new knowledge (Kullman 2013, 888).

The experimental, therefore, has many affinities with the existential: opening one up to the world as messy and contingent; asking the researcher to remain open to emergent possibilities – as well as their own ignorance. Ideas of a coexistentialism are pulled in through expanding agencies: participation by other actors and the more-than-human. There are also affinities between the experimental and creative investigation, through practices that have phenomenological dimensions – which are subjective, and attentive to experience (Seeley and Reason 2008, 28; see also Hawkins 2013, 2015). An interest with the experimental is reflective of knowledge production responsive to phenomenological complexity, such as with mixed-method and transdisciplinary approaches. This brings the concerns of geography into conversation with different disciplines, allowing for a diversity of methods, and more exploratory approach, such as under the banner of ‘geohumanities’ (Dear et al 2011; Cresswell et al 2015), which brings geography together with the humanities, as well as with the ecological and environmental concerns through the ‘ecological’ or ‘environmental humanities’ (Rose et al 2012; Sörlin 2012).

Together, the experimental and the existential constitute a wide lens through which to reconsider experiences of being in the world: through encounters with places, events, and with others. Concerned with better understanding a world profoundly rewritten by conditions of the Anthropocene, my aim within this thesis is to remap parts of this world; doing so in ways unattached to conventional intellectual and academic lines, rather, tracing pathways inscribed by affective resonances. Opening myself up to registers of unease and unsettlement suggest a decidedly uncertain outcome, but one more receptive to the unsettling registers of the world rendered by Anthropocene influences. Such a stance is described in non-representational terms as a mode of ‘witnessing’: allowing a researcher to be “in tune [with] the vitality of the world as it unfolds” (Dewsbury 2003, 1923). Bracha Ettinger (2006) suggests a more relational mode of ‘wit(h)nessing’, arguing that one’s independent subjectivity is always in relation with the other. Being witness to events in the world ironically requires attentiveness to subtle and imperceptible cues – the act of seeing is not always one leading directly to believing – internal and affective registers are just as important in providing insight about the world: social relations, for example, are mediated not by rational analyses but through feelings and sensibilities (Anderson and Smith 2001, 8). Within the emergency of the Anthropocene Jean-Luc Nancy (2015) calls this remaining ‘exposed’: allowing ourselves to endure encounters of catastrophic loss by allowing ourselves to sense it.

This thesis takes up the challenge of witnessing/wit(h)nessing the Anthropocene; remaining exposed to a complex, multi-scalar phenomenon deeply paradoxical and unsettling. The uncertainties and uncanniness rewritten through the world, I contend, are best attended to

through expanding the subjective experience of the researcher, and an attitude of existential experimentation open to the potentialities of risk and the unknown. For this project, bearing witness becomes a constituent creative act: productively reorienting thinking and rewriting my own conceptual maps of the world; as well providing generative inspiration for creative trajectories.

Approach and thesis structure

My approach within this thesis has itself followed lines of existential experimentation, iteratively exploring, observing, and reflecting. The project changed in response to a varied range of experiences, some more aligned with formal research, others less so. The range includes attending events, workshops, exploring creative interventions, in-field investigation, subject interviews, as well as drawing on personal experiences. The journey through the process required resolving numerous frictions and sticking points, and included moments of questioning and feeling lost. On the one hand, engaging with existential and experimental ideas and methods opened the thesis up to plurality and diversity, and it is fitting that a sense of unease was more than just an object of investigation. An existential approach is decidedly open and unstable: it has no stable foundations, being more freestyle than adhering to a particular idiom or genre (Mickey 2016, 31). Part of the tussle was gauging an appropriate methodological mix: wrestling with an approach more analytic and critical against one more intuitive and generative.

Resulting fieldwork takes the form of a multi-sited ethnography, and explores different sites and experiences in drawing out connected themes around the paradoxes and disturbances of emergency. Such an approach better aligns with geography than anthropology, but is ultimately driven by the project's existential influence, calling for indirect and meandering lines of investigation and experimentation. I return to discuss my methodological approach in more detail in the following chapter.

Attending briefly to my writing approach within the thesis: first-person is used as a narrative style, but also employed more generally within the text to express authorial voice (Ivanic and Weldon 1999). I do so as a way to more directly express thoughts, as well as a means to clearly articulate the positions I take within research (Hyland 2002, 1093). Such a stance I differentiate from the sometime inclusive phrasing used when discussing Anthropocene themes. At times I refer to 'humans' collectively, which sometimes is reduced to 'we'. Such conflation is not intended to dilute the complexities and contradictions rendered by Anthropocene ideas – particularly those emerging through critical analysis (see Baskin 2015, 7) – but is employed

for reasons of simplicity. I use such collective terms when considering consequences that have species-wide effect. The existential threat of the Anthropocene poses a species-level threat to all human life – alongside other species – making visible shared human circumstance. At other times my use of an inclusive ‘we’ speaks more directly to the reader, whom I take to be similarly aligned: an investigator with Western intellectual Anglophone attachments, engaged with similar research themes.

I aim to foreground experience and, drawing on autoethnographic methods, do so by writing from an immediate personal and reflexive point of view. However, such writing is balanced with, and works alongside, more conventional analytical exposition.

There is a risk that research of this kind develops a narrative trope of researcher as hero (see Davies 2010); which, for this thesis, may be compounded by autoethnographic writing foregrounding my own personal experience and, in some instances, through tracing events inherently personal. The event that I return to in Chapter 3, where I narrate my involvement in a traumatic situation, is a case in point. However, throughout I have made efforts to focus on the qualities of experience I attempt to tease out as opposed to my role as a protagonist within events.

The thesis structure takes inspiration from the concept of flows, pathways, and journeys; ideas that I explore in relation to methodology within Chapter 2. While the thesis is formatted into formal chapters, I retain evidence of alternative routes travelled and experiments undertaken, appearing as short boxed inserts within the main text. These excerpts are brief but are pertinent ‘scrappy’ remnants of an uncertain and experimental process: broken lines and dead-ends that remain important to the thesis due to lessons learned and ideas explored.

The thesis arc takes inspiration from the idea of a journey which traces an elemental trajectory. Starting in mountainous terrain, my route follows the course of a river, moving across a flood plain, into the ocean, and then up into the air. The theme which connects each ‘stage’ however does not rely on the Anthropocene’s physical resonances but rather upon the emergent states of disruption and emergency which, in each case, manifests in the different landscapes. This introductory chapter begins the journey, serving as a map by which to orient the thesis.

Chapter 2 outlines my methodology, detailing and discussing the research approach. I take the two framing concepts – existentialism and experiment – and extend these through to methodological application. Existentialism is not just a way of thinking, but is intended to be performed: to draw upon experience and influence the way one approaches living one’s life. It directs one to seek out the unfamiliar and the uncomfortable as way to expand the experience

of the world. Such thinking has affinities with an experimental outlook, which is similarly drawn towards investigating novel and unfamiliar phenomenon. More practically, I draw on autoethnography as an approach that affords methodological rigour in investigating cultural phenomena from a visceral and reflexive standpoint; and I outline the practical methods I engage.

Four field chapters follow. Each is an account of my exploratory pathway through a site or event, observing and reflecting on the unsettling qualities encountered in each space. Field chapters are written as a blend of personal encounter that includes observations and reflections, alongside theoretical interrogation. Beyond their connecting threads, the chapters vary in nature: they are not intended to be directly comparable, rather, each allows me to draw out different qualities and ideas that emerge through uneven experiences of Anthropocene emergency.

In Chapter 3, I visit a river, starting with an account of a personally traumatic event that occurred some years ago. I return to considering the significance and impact of this experience, and revisit the site where it occurred as a pathway into contemplating personal disorientation and trauma. Reflecting on the wider implications of this event help expand my thinking through existential and coexistential dimensions, as well as relational and geological asymmetries.

In Chapter 4 I visit a disaster zone. Examining the unsettling impacts of the recent earthquakes that struck the New Zealand city of Christchurch, I consider how forceful geological events can existentially shake us, both individually and collectively, disrupting familiar attachments to place and 'home'. The task of reorienting and remapping place after such 'ground-shaking' events opens up novel possibilities for dwelling among the unsettledness of the Anthropocene, but jars against persistent attachments to stability.

Chapter 5 dives into the ocean. Visiting the Great Barrier Reef on Australia's east coast, I concern myself with the anthropogenic impacts that threaten the Reef's existence. This marine ecosystem acts as a compelling example of complex relational interdependence between life and planetary systems. Contemplating the Reef's demise is deeply troubling given its – and all reefs' – importance to life in the oceans. Yet, an examination of corals and reefs reveals that instability and precariousness are qualities paradoxically inscribed within the very constitution of these organisms. I take the fluid and dynamic qualities of oceans and corals as useful themes for contemplating dwelling under turbulent conditions.

Chapter 6 considers air. I encounter artistic explorations that take this elemental medium as an entry point into technological and political possibility within the climate of the Anthropocene. The work of artist Tomás Saraceno is an invitation to unsettle normative thinking. By experimenting

very simply with warmth and sociality, his novel ideas open up radical potentials of atmosphere in response to the social, political, and energetic challenges of the Anthropocene. Intentionally disruptive to familiar attachments to dwelling on firm and familiar ground, such artistic work has the potential to map alternative pathways for navigating the Anthropocene, as well as ameliorate registers of unsettling and unease.

Chapter 7 marks an end point for this experimental journey. In the culminating chapter I critically reflect on emergent ideas and themes. Returning to qualities of unease and unsettledness, I consider the possibility of these as indissoluble elements of Anthropocene experience. While much work has focused on ontological dimensions of the Anthropocene, as well as a universal anthropos, within this thesis I bring attention to the lived, ontic facets of coexistential experience which I argue to be a potent counterpart of Anthropocene phenomena. By focusing on experiences of trauma, disruption, loss, and unsettling this research contributes to emerging scholarship that calling for attention to affective and felt dimensions of the Anthropocene condition (Ginn 2015; Roelvink 2015; Head 2016; Scranton 2016; see also Mickey 2016; Rose et al 2016), across the full range of human faculties (Castree 2014a 444; Cook and Balayannis 2015; Braun 2016, 241).

The thesis brings a novel methodological approach to investigation through employing multi-sited autoethnography, and the enrolment of design theory. Investigation across multiple sites allows the researcher to follow people, connections, associations, and relationships across non-contiguous but thematically connected spaces (Falzon 2009, 2; cf Tsing 2015). Such a multi-faceted approach aligns with existentialism's intentionally meandering, indirect and unpredictable method; and allowing themes to be mapped across disparate phenomena. Autoethnography acts, to a large degree, as a self-narrative, placing the 'self' via the researcher's engagement within specific social contexts (Reed-Danahay 1997); and for the thesis becomes a key method for tracing ontic and affective themes.

Additionally, a concern with generative and experimental themes looks beyond disorienting and 'polyarchic' artistic potentials (Davis and Turpin 2015), and through to performative and future-oriented agencies rendered by design-related frameworks. Beyond the disruptive capacities of existential emergency, I find that transformative potentials of emergence and surprise must be practically directed through meaningful and collective pathways of reorientation and world-making.

Chapter 2 | Lines of approach

State of emergency

How beautiful to be

State of emergency

Is where I want to be

'Jórga', Björk

The methodological approach undertaken in this thesis involved diverse activities, informed by work in cultural geography and environmental humanities, as well as my own creative practice background. Over the course of the research my orientation changed, with the key shift being a move away from a focus on imagination, and with creative and speculative knowledge production methods, towards a concern for existential themes and empirical encounters opening up visceral and affective disturbance and unsettling. Concern with unease and paradox rendered by Anthropocene experience led to exploring a more reflexive approach, though one still receptive to creative and generative potentials. In this chapter, I outline the methodological framework developed for undertaking research. I return briefly to ideas of existentialism and consider implications for practical application, as well as attachments with experimental and creative practice. I then outline the ethnographic methods employed for empirical investigation.

Existentialism in practice

Existentialism is more than just a philosophical stance. It becomes a way of living; a way of experiencing the world (Mickey 2016, 2). In rejecting systematic and rationalist ways of knowing, existentialism compels humans to remain in the fray: to encounter the inherent messiness of the world in all its uncertainty, ambiguity, unpredictability, and absurdity. As a result, existentialism returns us to subjective, felt experience of the world as a more direct route to knowledge.

My interest with the Anthropocene became more than just a conceptual interrogation. To engage with the Anthropocene viscerally required techniques of locating and exploring experiences that opened up corporeal and felt dimensions of the world as 'Anthropocenic'. I looked to foundational existentialist practices as a starting point, then, given that my concerns were beyond those of the existential self, I sought to expand such methods.

Dwelling in paradox is a key starting point for existentialism. It is a technique to aid an investigator to discover something that thought alone cannot produce (Kierkegaard 1985, 37). Where reason and analysis break down, we are forced to consider ‘unreasonable’ ways to account for ambiguous phenomena (see de Beauvoir 2000). For existentialism, to face up to paradox and to the ambiguity of existence is the pathway to living an ‘authentic’ life: accepting a reality that is both chaotic and meaningless, and to take responsibility for creating meaning.

Translating such thinking to this project required considering appropriate scale and magnitude of paradoxical experience: that the approach and phenomena investigated would be appropriate to the size, complexity, and gravity rendered by the Anthropocene. Morton’s (2010, 2013) notion of ‘hyperobjects’ – ecologically entangled phenomena that are massively distributed in space and time relative to humans, such as global warming, plastic bags, and radioactive plutonium – was useful in considering how such phenomena might be interrogated. Paradoxically, the vastly distributed scale of hyperobjects can make them difficult to sense, obscuring the threats they pose, with such phenomena arousing feelings of weirdness or uncanniness (Morton 2012, 14). The weather is a fitting example: an unseasonably warm spring day as a result of climate change may be pleasant but simultaneously feel unusual and unsettling. Weather is part of our everyday experience which has ultimately become an entangled, uncanny phenomenon of global warming. It is a pervasive, everyday experience, yet so massively distributed that finding some causal relationship between events, such as atmospheric pollutants and abnormally warm spring days, or severe storm events, becomes highly complicated – if not impossible. Consequently, global warming is constantly present and felt while its exact causes are unable to be located, leading some to prefer the term ‘global wierding’ (Waldman 2009).

Accepting the Anthropocene proposal comes with unsettling recognition that we no longer reside within the familiar world of the Holocene. The mental shift brings with it uncanny feelings: the world looks the same but is ultimately unfamiliar. Uncanniness was a condition explored by Freud (1919) and Heidegger (1927), both concerned with experiences of feeling ill-at-ease in the world. Feeling ‘at home’ (from the German *heimlich*) contrasts with that of feeling ‘not at home’, or having a sense of ‘homelessness’ (from the German *unheimlich*). For Freud, the uncanny is “something one does not know one’s way about in” (1919, 128). Such a space of uncertainty provides a site for interrogation; one where a rational criticality may be applied, but with an understanding that the outcome may not be the one we expected or hoped for (see Royal 2003, 8). Heidegger expanded Freud’s psychological and individual concerns by considering the human relationship with the world, through contrasting ideas of *residing* and *dwelling* (de Beistegui 2005, 196). Heidegger troubles concepts of home and

homelessness: to reside *in* a home insulates us from *dwelling on* our inherent human homelessness; that is, from experiencing the inherent ‘wildness’ of the ‘natural’ (non-human) world. Stepping outside the safety of one’s dwelling – one’s home – therefore functions as a vital transcendental exposure to the world. Anthropocene ecological disruption further troubles ‘home’: our *planetary* home itself becomes a site of alienation (Morton 2012, 14). Such ecological disruption in turn troubles our ability to ‘go outside’ with the intent of experiencing ‘nature’ – nature, in a pure, unadulterated sense, never actually existed.

My concern, however, was not with seeking circumstances leading to more ‘direct’ experience of the natural world or with those with some ‘re-integrative’ qualities, but rather exploring encounters that affectively agitated and unsettled. In so doing I sought to focus my attention *inside* as opposed to *outside*. That is, to return to the body and visceral experience as a source of knowing or transcendence: through the relational ‘meshes’ of geology, rivers, plains, water, and air. Contemplating one’s bodily experience as a “body-in-the-world” (Merleau-Ponty 1998) begins to expand the ‘fleshy’ and relational constituent of experience, towards that of a co-existence, better acknowledging human entanglement in the wider and stranger mesh, composed of associated and assembled elemental and fleshy materials.

Following existential methods obligates the researcher to commit to living a ‘dangerous’ lifestyle (Mickey 2016, 30). As Nietzsche presciently urged:

...the secret for harvesting from existence the greatest fruitfulness and greatest enjoyment is – to live *dangerously!* Build your cities on the slopes of Vesuvius! Send your ships into uncharted seas! Live at war with your peers and yourselves! (Nietzsche 1882 [1974], 228)

I took such advice seriously (though not with waging war against my peers), and sought to bring the idea of ‘living dangerously’ into contact with contemporary ideas of coexistentialism, where a recognition of entangled human relationality with non-human others, must also accept challenging and disturbing asymmetries between human and non-human. The ultimate unsettling of coexistential awareness is that of being intimately entwined with countless “strange strangers” (Morton 2010, 8): the uncertainty of being human within in a world comprised of countless intimate alterities in which every bit of every other finds attachment via the troublingly captivating allure of the wholly other.

Coexistence with strange others situates humans in an intimate worldly mesh with more-than-fleshy others: uncanny elemental beings with agencies comprised of poetic qualities of earth, air, water, and fire. Within such an ‘anthropocosmology’ (Bachelard 1964), each assemblage of material and energy harbours its own alluring agency or value: a flame, a bird nest, a meadow,

river, or mountain. A world of coexistential entanglement and intimate alterities is one where humans lose their exceptional status, becoming merely another filament in the weave of the world-mesh.

Geophilosopher Nigel Clark (2011) follows such challenging elemental lines, reminding us of those planetary geological asymmetries which find expression in boundary frictions between 'human' and 'natural' phenomena. Powerfully disruptive events, especially those that come from the earth itself such as earthquakes, "have the fearsome capacity... to undo our sustaining connections" (p xvi). Such planetary fluctuations have the potential to unravel the fabric of human culture and pose fundamental questions about what it is to be human. A concern with natural disasters extends through to similar large-scale natural phenomenon such as cyclones, wildfires, and biological pathogens – all which emanate from the earth system. The magnitude of these is often deeply unsettling, reminding us of the extra-human scales of the planet – both spatial and temporal – and of a forceful planetary capacity that remains beyond human influence.

As a consequence, I looked to sites of unsettling or asymmetrical natural disaster or emergency as fitting candidates for investigation. Such consideration came with practical questions of access and safety. Undertaking in-field research within such locations posed a range of risks: physical, but also emotional, ethical and professional (Lee-Treweek and Linkogle 2000; Eriksen 2017). I therefore identified potential sites that were not immediately hazardous. For example, Fukushima in Japan was a site with potential to provide insights into both geologic and anthropogenic phenomena. However, access and safety would have been a barrier, as would culture and language. I turned attention to a comparable event easier to access: Christchurch in New Zealand, which had recently experienced a series of major earthquakes. Christchurch was geographically close, easily accessible, and not immediately hazardous. As well, it was a location I had personal familiarity with. Other possibilities emerged in this vein. The criteria for research sites extended beyond just 'disaster zones', and included spaces where disruption or paradox might be encountered more broadly while retaining planetary associations. The result was a range of phenomena being explored, such as revisiting an earlier experience of personal trauma, which forms the basis of Chapter 3; a site reflective of 'ecological' emergency, the Great Barrier Reef, the focus of Chapter 5; and events intended as creative or performative interventions, such as art experiments whose purpose is to enact imaginative disruptions and openings, and which forms the basis of Chapter 6 (see also Box 2.2 and 2.3). Much like creative or artistic practice, my aim was to explore pathways across new or unfamiliar terrain, and undertake uncertain experiments.

Geography and experimentation

Experimentation, I have argued, is not just significant for ideas of existentialism, but is foregrounded by Anthropocene conditions. Here I extend concerns with experimentation through to methodological application. I begin by outlining Geography's interests with experimentation, and consider further attachments to creative practice and existential thinking.

Geographers are concerned with more than just *spaces* of experimental activity, and have sought to employ experimental approaches within research practice (see for example Davies 2010; Enigbokan and Patchett 2012; Hawkins 2011; Last 2012; Kanngieser 2015). Two broad methodological categories are identified: 'theoretical experiments' and 'methodological experiments' (Kullman 2013).

Theoretical experiments encompass work in which researchers challenge the way conceptual and theoretical tools are assembled and defined, making such tools more responsive to the unexplored potential of the world. Such work follows the 'art of experimental thinking' (Dewey 2004), where knowledge of the world is understood not to simply exist independently as a solid and stable construct, but is rather found through novel engagements with empirical phenomena which allow inherently more useful associations and differences to be revealed. Recent geographic work applies such thinking, grappling with concepts of 'affect' (Thrift 2007), 'assemblage' (Anderson and McFarlane 2011) and 'diagram' (McCormack 2005), which are treated as experimental – formed by dialogic processes – as opposed to being fixed theoretical elements – being defined by a fixed set of functions and meanings.

Geographers undertaking 'nonrepresentational' and 'performative' modes of research seek to move beyond simple *representation* of social phenomena (see for example Anderson and Harrison 2010a; Dewsbury et al 2002; Latham and Conradson 2003; Thrift 2007; Kanngieser 2013). Rather than approaching phenomena with already established ideas and concepts, researchers take these as irreducible *events*, focusing on practices of how both human and non-human arrangements are performed or enacted – not simply on what outcome is produced (Thrift 1997). Attention is focused on experimental and performative processes by which new – previously unthought-of – ideas and configurations emerge in the world. A wide range of activity has been explored, including dance (Thrift 1997, McCormack 2003), musical performance (Morton 2005), walking (Wylie 2005), gardening (Crouch 2003), listening to music (Anderson 2004), children's play (Harker 2005), and political protest (Kanngieser 2013). Importantly, this type of research is not simply about the study *of* space, it involves an active experimentation

through the researcher's own practice as a way to affect the production of space directly (see also Paglen 2009).

Methodological experiments, in turn, are concerned with the procedures of experimentation, suggesting it problematic to reduce experimentation to any one approach or method.

Rather than assuming a specific and a priori shape for any particular method, these are taken to be more dynamic and variable: as 'apparatuses' (Barad 2007), 'assemblages' (Law 2004), or 'devices' (Lury and Wakefield 2012). Of particular interest is the dynamic transformation that any method undergoes during research: such change expands any method into a potential space of innovation. Consequentially, any person involved with the research – researcher or participant – may act as co-experimenter, having potential to change or destabilise the method, making it more responsive to the issues being explored. Researchers therefore need to be highly attuned to the specificity of the methods they employ and, if need be, continually adjust or reorient them in a dialectic-like manner responsive to the changing needs of the research environment.

Another outcome derives through expanding research participation. Experimental research can be undertaken by multiple actors, as 'collectives' (Latour 2004a) or 'hybrid forums' (Callon et al 2009), inviting new skills and competencies, configurations and power dynamics into a collective and shared process. Such work also allows a distributed range of knowledges to be captured – both human and non-human – contributing to the co-creation of methods and ultimately knowledge (for example, see Davies 2010; Gross 2010; Hinchliffe et al 2005; Whatmore and Landström 2011).

Widening interest in experimental geographies has seen recent research explore more-than-rational orientations, and modes of thinking and doing as means of opening up new opportunities for perceiving and making worlds (Dowling et al 2017, 2). This has included interest in performative phenomena such as 'social curiosity' (Phillips 2016), surprise and the unintended (Emmerson 2016), and engaged learning and material experimentation (see Smith 2017; Woodward 2016). Others look directly to creative methods within research: drawing directly on performance (see for example, Rogers 2012; Nordström 2016; Pratt and Johnston 2017); while some explore creative forms as research outputs, including poetry (Cresswell 2013; Eshun and Madge 2016) and fictional writing (Lancione 2016); public radio broadcasts (Pompeii 2015) and film (Mason 2017).

More directly, as a response to increased concerns over environmental issues – notably climate change – experimentation has been taken up across varied projects within academia,

NGO-sector, and government (see Edwards and Bulkeley 2018). Responding to how humans might more effectively dwell under such planetary disturbances is a political project that enrolls 'calculation, imagination and performance' (Anderson 2010, 779) as three modes of practice through which futures are made present. Much work has clustered around the development of urban responses, which employ experimental approaches to creating sites through which different future scenarios can be explored and experienced (see Caprotti and Cowley 2017; Evans et al 2016).

An experimental approach necessitates the development of an outlook or mindset that is distinctly 'open' in character: one receptive to unexpected surprises emerging from experimentation (Gross 2010, 5), and by which the researcher is open to realising their own ignorance – what Whatmore (2003, 98) calls the 'joy of not knowing'. Beyond knowing, self-reflexivity also foregrounds an affective openness: attentiveness to affective compositions and concerns emerging from interactions with other actors and entities (Latour 2004; Greenhough and Roe 2011).

I take the increased risk and uncertainty of the Anthropocene as conditions requiring novel response: imaginative and creative practices open up thinking about the world, expanding sensibility, and renarrating trajectories. An attitude of experimentation is therefore important, and I use such an orientation to direct investigation: actively seeking out strangeness and surprise; paying attention to intangible and affective signs; exploring and probing without attachment to outcome. I also explore performative experimentation, taking direct cues from cultural and political interventions, such as those explored by the existential practitioners and other cultural 'agitators' (see Box 2.1), and more recently within experimental geographies (see Paglen 2009).

Box 2.1: Practices of disruption

Although existentialism as a philosophical approach has associations with being deeply introspective, it is better understood through praxis.

Practices of reorienting one's outlook – or that of one's audience – has been the focus of certain artistic traditions. 'Defamiliarisation' was a term first coined by Russian literary theorist and writer Viktor Shklovsky in 1917. Applied to literature, especially poetry, it was employed to engage the reader with phenomena they were accustomed to in uncommon or strange ways in order to enhance their perception of the familiar (Margolin 1994). Defamiliarisation mirrored ideas emerging from Avant-garde thinking at the beginning of the 20th century which explored experimental and provocative approaches, not just to art but culture and politics.

During the post-War era, existentialists explored ways in which their ideas could be most effectively expressed, looking to different modes of artistic expression. Sartre and his contemporaries focused on literature and theatre. Sartre saw works of literature broadly as "...an imaginary presentation of the world inasmuch as it requires human freedom" (Sartre 1948, 45). A work of art, he argued, did not simply represent the world, making visible some of its features, but summoned human participation, notably through collective imaginative action (Goldthorpe 1992). An artwork performed a vision of freedom: one not solely the artist's but contributed to by the audience, rendering a collective vision in which others were invited to get caught up in and do something about.

Sartre saw art's real potential in theatre. Dramatic performance, centred on the praxis of human beings confronted with the contradictions of concrete situations, was a form Sartre thought best performed the tragic responsibility of human freedom in a world that is ultimately inhospitable to our projects:

if it's true that man [sic] is free in a given situation and that in and through that situation he chooses what he will be, then what we have to show in the theatre are simple and human situations and free individuals in these situations choosing what they will be.... The most moving thing the theatre can show is a character creating himself, the moment of choice, of the free decision which commits him to a moral code and a whole way of life. (Sartre 1947, 20)

Such thinking influenced political proponents of the day. Inspired by Sartre's invocation of the 'situation' – referring to both circumstance and location – 'Situationists' sought to mobilise pathways liberating human experience through performative events (see Kanggieser 2013).

The Letterist International and Situationist International groups brought the philosophy of the situation to the experience of living authentically within everyday life. Strongly influenced by Marxist ideas, they took a critical stance of modern capitalist society. Combined with Debord's (1995) notion of 'spectacle', modern lived experience was characterised as a frozen moment in history that made it difficult for life to be authentically experienced and lived. People became

alienated from their labour, from being able to *effect* and *make* their worlds, as well as from their own experiences, emotions and creativity. People become simply spectators of their own lives.

The Situationist response took a revolutionary approach, in line with Marxist thinking, but differing from this by looking more directly to sources of imagination, creativity, desire, and pleasure. Situationists reacted against Surrealist ideas which drew inspiration from the unconscious imagination. Spurred by emerging themes within analytic psychology – developed by Freud and others – Situationists sought to tap into the depths of the human unconscious, seeing this as a rich source for ideas unaffected by rational thought and bourgeois values – enterprises that they argued had led the world into the horrific First World War. The Surrealists sought to juxtapose ideas: those pulled from the depths of the subconscious, with those of the everyday. They believed that by engaging in this form of Hegelian dialectic new and revolutionary ideas would emerge.

Situationists, in contrast, rallied against the focus on individual imagination. They saw the mind – including the subconscious – as a product of modernity's influence, shaped by forces of capitalism. Situationists looked to artistic practice for antidotes: constructing moments of reawakening – 'situations' – which prompted the self to drop its usual motivations and be drawn by the terrain and encounters in an environment ('Dérive'); and explored ways of turning expressions of the capitalist system against itself ('Détournement') (see Plant 1992).

Situationists argued that to change this state or structure of mind, one needed to alter the geographic conditions acting upon it. Such concerns led Situationist proponents to experiment through spatial dimensions. Cartography was one method explored in efforts to re-make, or re-map, space. Other forms were distinctly performative, seeking to re-orientate experiences of the world, and took the form of pranks or hoaxes. The May 1968 uprisings in Paris were the culmination of the Situationist movement; a significant political moment shortly after which the Situationist International dissolved. The influence of disruptive practice, however, remains influential (Clark and Nicholson-Smith 1997). Such tactics influenced the shape of 70's punk, where radical gestures were used to political effect, such as the Sex Pistols mocking performance of 'God Save the Queen' during the Silver Jubilee celebrations in 1977. Culture jamming, popularised in the late 80s by *Adbusters* magazine, employed hoax and parody as tactics to ridicule rising brand commercialism; The Yes Men, a political activist group, have similarly employed pranks and hoaxes to make pointed political commentaries (Holt and Cameron 2010, 252).

Situationist ideas inform recent geographic work seeking experimental and performative lines of expression. Paglen's 'experimental geography' (2009, 2010, 2012) takes a visual approach to illuminating and remapping spatial-political concerns, drawing overtly from Situationist practices (see Thompson 2012). Other work reaches across disciplinary boundaries: *ATLAS: Geography, Architecture and Change in an Interdependent World* (Tysczuk et al 2012), collectively explores through image, narrative, poetry and maps alternative renderings of ecological, economic and cultural interdependence.

Box 2.2: Everyday Anthropocene experiments

During the later stages of this project I continued to experiment with creative manifestations of existential ‘exposure’, considering how these might be expressed as speculative provocations. In contrast to the sites I visited, I sought to document uncomfortable and dissonant experiences that were more mundane – moments surfacing in my everyday experience. I paid attention to events, objects, and images that revealed uncanny slippages between familiar everyday encounters and ideas of an affectively unsettling Anthropocene. Examples were scrapbooked through an online blog platform (see Appendix II), for example, images of a birthday cake in the form of a nuclear waste dump; light pollution of the night sky (diminishing experience of a ‘cosmic’ relationship); hermit crabs housed in human-made objects such as plastic bottle caps.

Taking cues from existentialism and Situationism, I explored the idea of ‘everyday’ objects that performed as uncanny ‘reminders’ of Anthropocene themes. Camus’ (1955) reinterpretation of the myth of Sisyphus introduced a philosophy of the absurd. The myth describes the fate of a self-aggrandising mortal punished for eternity by the gods to an unending cyclical fate of pushing a boulder uphill: an unending and seemingly futile task. The story distils the poignant idea that we need to learn to live with, and indeed welcome, the frustration and ambivalence that is an inescapable aspect of being human.

Such thinking resonates through multiple philosophical schools, where cognizance of life’s futility was brought into mindful practices. The Stoics of Ancient Greece used self-dialogue and meditative practice to focus attention on the present, along with contemplation of death (Sellars 2006). Buddhism’s Four Noble Truths follows the philosophy that all life has suffering, which is caused by human desire; happiness is freedom from desire; moral restraint and self-discipline are pathways to this freedom (Powers 2007). Japanese Samurai subscribed to *Bushido*, following *hagakure* – the code of the warrior (Tsunetomo 1906) – which included meditating daily on one’s inevitable death. To focus on one’s death is not to fetishise it, or to want to give up living. Rather, contemplation of one’s essential ‘limits’ is helpful for attending to the present. Haraway’s (2016) *Chthulucene* draws on similar themes by asking us to ‘stay with the trouble’. In a similar way, I interpret the unsettling asymmetries rendered by the Anthropocene as a poignant reminder of the ineffaceable existential limits of the human – both individual and ‘planetary’ – being.

I experimented with bringing existential awareness to ‘moments’ encapsulated in everyday objects. In place of Stoic or Samurai meditative practices, I looked to *memento mori* – symbolic reminders of mortality – and redesigned familiar objects as poignant reminders; not so much of death as do *memento mori*, but of the ongoing trouble and turbulence to which we should remain attentive.

Such objects are not intended as an answer to the Anthropocene any more than Samurai practices of meditating on death helps to avoid its eventuality. Rather, everyday Anthro-

cene objects serve as prompts, reminding us to connect both conceptually and affectively to the difficult-to-discern planetary conditions unfolding around us; conditions that can be easy to forget when our attention is captured by more immediate distractions. They may also be read through a lens of ‘environmental irony’ (Szerszynski 2007) which promotes a reflexive awareness of the limited and provisional qualities of human understanding, while avoiding falling into cynicism or quietism.

A sample of speculative objects is thus interspersed between fieldwork chapters. Some take inspiration from the themes explored within chapters, such as the ‘rock drive’ (Figure A), which fuses together the shape of smooth river stones and the capacity to store memories digitally, which was inspired by the return to the site of my river encounter. ‘Dead coral stuffed toy’ (Figure C), draws on the theme of loss, considered in my exploration of the Great Barrier Reef. Other objects play with related Anthropocene threats: radioactive contamination (Figure B), and climate change (Figure D).

This speculative experiment does not stand as a conclusion or outcome but rather as evidence of sense-making and experiment stirred up by acts of witnessing/wit(h)nessing: allowing myself to remain exposed, and channelling the resultant affective and conceptual agitation through to creative expression.

Dwelling as autoethnography

A key question for this thesis is what it means to dwell with unease in the Anthropocene. A concern with being in the world, and especially a world in which one does not feel ‘at home’, underpins Heidegger’s (1954) ideas of dwelling. The place where one dwells provides a set of structures and spatial coordinates through which making sense of the world occurs. We understand the world through our experience of familiar conditions: anxiety unfolds when we are uprooted from familiar ground and made homeless.

I draw on more recent work which brings ideas of dwelling into conversation with the concerns of cultural ecology. A dissatisfaction with conventional epistemological approaches describing the human relationship with the environment, which assume separation between people and space, has led to the emergence of a ‘dwelling perspective’ (Obrador-Pons 2016). Taking the world to be essentially relational, the dwelling approach sees humans as intrinsically embedded: existing within situated and contingent relationships with the surrounding environment, which includes other beings and things (see Cloke and Jones 2001; Ingold 2000; Wylie 2005; see also Plumwood 2008). Humans are born into a world full of existing social and environmental relations but, rather than being defined by this world, humans are shaped by it while at the same time shaping it. The world is understood as a rich field of reciprocal

relationships having both spatial, social, and temporal entanglements (Ingold 2005). A concern with dwelling extends through to human sensibilities that directly inform experiences of being *in* the world: sensations and registers that motivate and direct our engagements, such as attachment, responsibility and caring – affective drivers (see Dreyfus 1993). In this way, a dwelling perspective acknowledges the rich, intimate ongoing togetherness of beings and things which make up landscapes and places, and which bind together nature and culture (Cloeke and Jones 2001, 651).

A dwelling perspective grounds the methodological approach pursued here, suggesting a way of *being in* place(s) while attending to the full range of coexistential entanglements – historical/socio-political, practical, as well as embodied and affective – that challenge the ‘Anthropocenean’ to *dwell with unease* (Head 2016; see also Instone 2015a). I looked specifically to anthropologist Tim Ingold’s (2007; 2011; 2015) use of the framework, which explores dynamic qualities of being in the world. Through a series of experiments, Ingold has endeavoured to unpick representational ways of knowing, developing an interest in tracing the *movement* of things through the world. ‘Wayfaring’ for Ingold is an extension of Heidegger’s more static conception of dwelling; one in which he reconceptualises as movement through life: “a trail along which life is lived” (2011, 69) – as an unplanned path of progression and growth. A focus on movement brings a vitality to dwelling, where *pathway* becomes the primary condition of being rather than *place*.

Such trajectories, or ‘lines’ as Ingold calls them, are not limited to obvious ones – such as roads or thoroughfares – but includes more ephemeral and abstract activity: drawing or writing, weaving, the spinning of cobwebs, or the building of homes. Ingold sees ‘life’ being woven together by a web of movement: movement of many kinds, whether they be things or social activities. Each line weaves its way like:

one strand in a tissue of trails that together comprise the texture of the lifeworld... a relational field... not of interconnected points but of interwoven lines; not a network but a meshwork.
(Ingold 2011, 69–70)

Such thinking expands upon Ingold’s previous work on walking as a way of thinking about moving thorough the world (see Ingold and Vergunst 2008). For Ingold, walking is more than relocating the body, it acts as a way of knowing: a practice of enskillment, a process of storytelling, and as a performance between human and more-than-human worlds (see for example, Instone 2010a; 2010b). It is an approach that draws on existentialism’s embrace of methodological anarchy. Wayfaring allows for many lines of interest to be traced; reflexive and fluid lines which split, bifurcate, and lead in new and unexpected directions. It is a robust methodological style

without being a neat, clear, linear, or logical approach, showing allegiances with assemblage theory¹ (see for example Deleuze and Guattari 1987) with its focus on rhizomic structures, nonhierarchical and complex systems, fluidity, and multiplicity, although synthesising a more coherent outcome.

Ingold's approach to mobile ethnography takes more than just an interest of subjects' movements in the world but attends also to the researcher's 'co-present immersion', where they not only observe what is happening but are also required to attend to their own experiences and feelings of moving through the world (see Novoa 2015, 99). By 'travelling through' and attending to my own experience of the world – as well as being attentive and sensitive to the experience of others – my project aligns with current geographical mobilities research, at times attempting to move with others, but being highly sensitive to my own movements within a world-mesh: being moved by, and paying attention to “the fleeting, distributed, multiple, non-causal, sensory, emotional and kinaesthetic” (Büscher et al 2011, 1). Current interest in mobilities has resulted from shifting academic interest in the metaphysics of fixity to a metaphysics of flow over the last decades of the twentieth century (Cresswell 2006, 25), and concern with the fluid, dynamic, and non-linear qualities of the world are made increasingly relevant by Anthropocene ideas.

Applied to this project, the idea of wayfaring (Instone 2015b) suggested an approach attentive to phenomena as rich meshes of activity, which expanded possibilities about the places and events I considered investigating. The events I explored showed multiple entanglements: social, political, ecological, and, importantly, affective. I approached each event as a juncture where different lines meet: a mix of stories, practices, events, and experiments of varying sorts. I therefore saw my research task as involving identifying and tracing significant lines in each situation. Wayfaring through the mesh of the world, I took on the role of a participant-observer, applying tools from autoethnography, and drawing on direct experience of phenomenon as a springboard for coexistential thought.

¹ Deleuze and Guattari's work emerges in the post-existential lineage of philosophical thinking, and while it is problematic to trace clear lines of relationship, individually and collectively Deleuze and Guattari's work follows paths opened up by existential investigation (see Aylesworth 2015).

Box 2.3: Dismaland as a site of performative disruption

Figure 2.1: Shot taken inside the Dismaland Bemusement Park. Two Park visitors stand in front of the site's central feature, a Gothic rendering of the iconic Disneyland castle. (Source: author.)

A potential site I considered for analysis was Dismaland Bemusement Park, an art event curated by street artist Banksy, themed as 'a sinister twist on Disneyland.' Staged in the now-disused outdoor swimming venue The Tropicana, in the seaside resort town of Weston-super Mare in Somerset, England, the installation performed, as Banksy described, "a family theme-park unsuitable for children" (Banksy 2015, 3). Some 60 artists contributed to the event, including such well-known figures as Damien Hirst, Jenny Holzer, Jeff Gillette, Jimmy Cauty, and Bill Barminski – as well as Banksy himself.

The exhibition was open for only five weeks in late summer of 2015 and, being in the UK at the time, I was able to visit the site. I was drawn to the event's performative dystopian character, specifically its alignment with Situationist *détournement* or 'cultural hijacking'. Taking the Disneyland amusement-park trope and distorting this into a dark carnivalesque performance acted as a dark mirror to contemporary reality.

I wondered how effective the event might be in revealing social, political, and perhaps existential truths about the world to those who visited. Could this unsettling performance be effective in unseating people's perceptions about the world?

Unable to book tickets on the Dismaland website (the site crashed shortly after tickets were released), I was forced to turn up on the day and queue with hundreds of other 'turn-ups' for a full six hours before being allowed entry. Such a 'miserable' experience acted, in a different way, as a prelude to the main event (and appeared deliberately orchestrated to elicit such feelings). Queuing also provided an opportunity to observe – for quite some time – the dynamics of the site, allowing me to strike up conversations with other visitors and gauge their reactions to the experience.

The long wait only worked to build anticipation, and finally being granted entry felt all the more special. The experience was well thought out, and appropriately infused with ‘dismalness’. I particularly enjoyed the surly performances provided by support staff: they skulked around the site acting appropriately disinterested. Buying a souvenir programme, the glum young lady in the booth threw my £5 change on the counter, “There you go” she said, not even looking at me. At one attraction, I heard the attendant berate a teenager: “You’re not here to have fun – if you want that go to Disneyland.”

Dismaland Park looked more like a run-down seaside carnival, rather than capturing the scale of Disneyland itself, but contained a pastiche of the classical Disney castle with appropriate Gothic modifications. In front was a pond housing a ‘glitched’ mermaid Ariel statue and a crashed police van converted into a water fountain. The venue also contained a collection of macabre and intentionally pointless fairground-style attractions: remote-controlled boats overflowing with migrants; ‘Astronaut’s Caravan’ zero-gravity ride; Hook a Duck from the Muck game; Topple the Anvil (with a ping-pong ball). In one corner of the arena stood a Ferris wheel; on the other side a burned-out ice-cream van with a small children’s roundabout beside it; beside this was a Punch and Judy show complete with reclining deck chairs. There were also eateries with appropriately themed offerings – ‘dismalafel’ for example.

The event was well staged and orchestrated. It felt packed with things to see and do – something for all ages. Of course, the irony was that the Dismaland experience was not really so dismal. Everyone seemed to be enjoying their visit, enthusiastically participating in the performance, using cameras and smartphones to capture and share the novelty. It was perhaps unfortunate that everyone interpreted the experience as just a clever art performance. Dismaland can be read within the bounds of Bakhtin’s carnivalesque: an inversion of everyday life; a ‘world upside down’. A surface reading might take Dismaland simply as the antithesis of the contemporary amusement park – a staging of its dismal doppelgänger – but there was more going on.

Explaining the concept, Banksy points to Bertholt Brecht: “Art is not a mirror held up to reality, but a hammer with which to shape it.” But then rhetorically asks: “Which is fine, but what if you’re in a hall of mirrors and the giant hammer is made of foam?” (Banksy 2015, 3). Dismaland took the stage of the amusement park as a way to focus critical commentary on current social and political issues, but in my view failed to do much more than this. Coming away from the experience, I felt like I wanted more. I had the feeling of ‘yes, and...?’

Banksy’s work has been criticised as being simply sarcastic and negative (Brooks 2015) – a view I shared with the Dismaland experience. Holding up a mirror to reality is one thing, smashing it is another. But, of course, creative practice comes with real world-making

potential, which emerges through imagining and enabling alternative pathways. There was none of the latter with Dismaland.

So, while Dismaland Bemusement Park proved to be a well-orchestrated performance of carnivalesque space, for my interests it did not go deep enough. The staging of an unsettling ground was highly effective: the inviting amusement park painted dark, generated a sufficiently uncanny atmosphere. However, the focus was predominantly on political and social issues; there was little engagement with concerns beyond those human. Similarly, commentary dealt with present-day concerns, while the future was unattended to. The trajectories suggested by Dismaland's dark unsettledness acted as a singularly bleak forecast.

The irony of the Dismaland Bemusement Park was that it *was* fun. While unsettling to some degree, as a study for this thesis it proved to be not unsettling enough. Dismaland showed that critical artistic engagement, while necessary, needs to do more. Beyond holding up a critical mirror, creative and imaginative practice has the potential to open up thinking about what is possible; it can renarrate the world and suggest alternative pathways towards different social, political, and ecological futures; and, if done well, inspires and propels others into reimagined narratives and trajectories.

Lines of autoethnography

At its simplest, autoethnography is a method that deliberately draws upon the researcher's reflexive experience of the world in order to better understand or represent events, or some worldly phenomena that transcends the self (Ellis et al 2011). An autoethnographic approach acts to a large degree as a self-narrative, placing the 'self' via the researcher's engagement within specific social contexts (Reed-Danahay 1997). It challenges established ways of doing research and of representing others by allowing the researcher's own experience to become a constituent of the research, and responds to critiques of ethnographic research claiming to be objective and singularly authoritative (Butz and Besio 2009, 1662). Autoethnography both acknowledges and invites the researcher's subjectivity, emotionality, and their ability to influence the research rather than disregarding, or trying to eliminate it (Ellis et al 2011). Methodologically, autoethnography is understood as both a process and a product: it is something the researcher *does*, and an *output* produced from research.

Autoethnography may be employed in a range of different ways. 'Personal experience narrative' autoethnography encompasses research where investigators examine autobiographical stories about some aspect of their life, often using personal writing as a way to help better understand some cultural phenomena (Denzin 1989). In 'reflexive or narrative ethnography', researchers

include themselves and their own experience as a part of what they are investigating (Tedlock 1991). 'Autoethnography from below' or 'subaltern autoethnography', is an approach in which the *objects* of research are used to produce self-representations intended to act as interventions in the discourse around the subject (Pratt 1992). 'Indigenous ethnography', is applied largely in non-academic situations, where members of an Indigenous group seek to study the group's workings from within (Deck 1990). 'Insider research', is an approach by which researchers immerse themselves and study a group or social circumstance from within to gain insights from an insider perspective (DeLyser 2001).

Within this thesis I draw on the first two categories. Reflecting on my own in-field experience during encounters with people, events and places is key but, as well, I draw on my own personal histories as a way to deepen investigation. Autobiographical detail is used to explore personal attachments to place, as well as significant events, foregrounding emotional registers and enhancing coexistential reflection. Recent work in cultural geography and environmental humanities explores such 'autotopographical' connections with landscape and place, with particular interest in presence, absence, trauma, and loss (see Wylie 2005; Lorimer 2014; Jones 2011). Less concerned with landscape, I focus on attachments to place, memory, and personal histories as lines into contemplating conceptual ruptures to 'home' and the familiarity of dwelling emerging in the Anthropocene. Such an approach is used as a significant entry point into my investigation in Chapter 3, and is also employed to a lesser degree in Chapter 4.

An autoethnographic approach provides a useful methodological toolset for approaching investigation with both existentialist and experimental attachments. It allows for a wide range of subjective sensibilities to be engaged within the sites explored. There have been changes with how this type of research takes a reflexive interest in understanding the cultural dimensions of phenomena, moving from a concern with the epistemological – how subjectively positioned researchers might adequately know and represent conventional objects of research – to the ontological, and a concern with what kinds of objects are appropriate to undertake fieldwork-based analysis of the contemporary world (Butz and Besio 2009, 1663). Interest has moved away from the investigation of cultures, communities or identity groups, and towards the study of relational and enmeshed phenomena, such as networks, rationalities, or emerging assemblages (Ong and Collier 2005; see also Cook 2004).

Autoethnography brings a certain practicality to experimental methodology. It was helpful in simplifying the scope of data that I collected and used. Given that my interest with being experimental included instances of 'jumping in' and exploring events, autoethnography

afforded flexibility and allowed me to be minimally obtrusive as a participant and observer. I could observe phenomena and record my own thoughts, feelings, and responses, as well as be responsive to unexpected and serendipitous moments (Fine and Deegan 1996). Autoethnography also comes with the advantage of being straightforward to employ: it does not rely on any particular apparatus, or requiring access to others, and it helps to mitigate some of the ethical constraints of social research (Reeves et al 2008, 514).

My use of autoethnographic methods deviates slightly from conventional application. Ethnographic work often employs long-term fieldwork, immersing the researcher with a single social setting. In this thesis I take a multi-sited approach, which is argued to be more appropriate when investigating social phenomena that cannot be accounted for by focusing on a single site (see Marcus 1995). Employing multi-sited research allows the researcher to wayfind, following people, connections, associations, and relationships across space where such phenomena have substantial attachments but spatially non-contiguous (Falzon 2009, 2). For all its many planetary entanglements, locating instances of Anthropocenic paradox and uncanniness called for multiple experiments: some which worked, others which did not. My methodological meandering and indirect wayfaring led me to investigate multiple dispersed sites across a span of three years, with short periods of time (from days to weeks) immersed in each. The diversity of sites allows me to tease out pertinent themes across different experiences rather than from just a single case. Such an approach is more common within geographic research where brief periods of 'ethnographic contact' are undertaken followed by detailed analysis of data gathered (see Garrett 2012, 42). Travelling extensively enabled a productive horizontality of wayfaring upon which lateral lines of approach could be followed. On the flip side, a short amount of time in-field made it more difficult to build relationships and develop an identity as an 'insider'. Consequently, some field sites were chosen due to prior knowledge or experience which allowed me to draw on existing relationships. However, my leading concerns with intangible and affective qualities meant that my own experiences and reflection upon these remained key in data collection.

Approach and methods

In-field research took a semi-structured approach to investigating identified sites along waypoints. Once a location had been defined and logistics arranged, my aim was to immerse myself for a short period and allow experiences to emerge. Where I was able, I attempted to establish a relationship with a local contact as an initial source of information. Having a local

contact was useful in discerning activity options, as well as a referral for other in-site contacts. This was not always applicable, such as with my visit to the Waitawheta River, detailed in Chapter 3 which, because of the isolated location, was a solitary undertaking, but also a site that I was familiar with.

The tools I applied for in-field research were largely conventional. Taking field notes is fundamental for any ethnographic-style research (Taylor et al 2016, 81), and in all situations I used a notebook to record activity: themes that emerged through observation or in conversations, as well as in-field reflections. In situations where note taking was problematic – such as when it became obtrusive or was not practically possible (for example, during snorkelling, or engaged within group activities such as workshops) I sought to take notes on the events as soon as practically possible afterwards.

As a supplement to written notes, I used a range of media to capture scenes or record details, and to act as a reminder or prompt for later writing: an act of multi-modal recording (see Pink 2008, 190). This included basic photography, capturing short videos, as well as sound recordings. For the main, these were used as data from which to later develop written notes, however photography was explored intentionally as a representational *and* reflexive practice in certain instances.

My rationale for photography was informed by my longstanding relationship with creative and visual practices. Photography had the capacity to alternatively document experiences, as well as communicate additional qualities of events and encounters to readers. At the same time, it was a practice with which I was able to use reflexively to deepen my own interrogation of events. My employment of photographic methods was, therefore, not just an exercise in visual anthropology but also a counter to social science as a 'discipline of words' (Mead 1995). However, given that this project takes the form of a written thesis, rather than that of creative practice, images are not meant to replace words but rather serve as an equally meaningful constituent of an ethnographically-informed approach (Pink 2007, 4). Geography has a longstanding relationship with visual research (see Driver 2003), which has led to the recent development of a 'visual geographies' approach (see Schlottmann and Miggelbrink 2009), although such work takes a more functional interest with visual process than my use of images in this thesis.

Photographs, therefore, are intended to enhance the text: to both complement and deepen narrative. Their use is uneven across chapters. In some instances my intention is to simply document and demonstrate a location or an object. In other cases, images perform a more

evocative role by inviting the reader into an experience, and are used with the goal of conveying the mood or affective atmosphere, such as with my experiences on the Great Barrier Reef (Chapter 5). I also explore more conventional artistic and reflexive image-making practice in Chapter 3, which takes cues from experimental and creative geographic work employing visual methods (see Paglen 2009; Tyszczyk et al 2012; Ellsworth and Kruse 2013).

Additionally, I apply an attentiveness to the presentation of the thesis document by which I aim to more effectively stage images in relation to text. I have devised and implemented an integrated page layout so that visual elements are given more considered treatment than would be normal in an academic thesis (within the confines of formal formatting requirements). Significant imagery is staged in isolation on the page, and in some instances, where panoramic images are used, spread across two pages. Images documenting my Great Barrier Reef experience form a 'gallery' of contiguous images at the heart of the chapter.

Interviews were a key research method during fieldwork, as is often the case within ethnographic-style research (Whitehead 2005, 15). I undertook both semi-structured and unstructured interviews. In each case the format was defined by the situational context, and ability to control the interview process (Bernard 2002, 204). Semi-structured interviews are useful for developing an understanding of some broader topic or not-fully understood cultural aspect. From background research I identified key themes of interest, as well as a series of pre-formed questions designed to allow participants to respond broadly. I also used interviews to gain insight into a particular topic or issue I planned to investigate, such as with speculative design or ocean management, but also in situations where I wanted to tease out themes and important concepts. In such instances I identified and approached professional experts who were willing to discuss the topic with me, developing guiding questions, but allowing for unplanned themes to emerge.

As existential themes became more of a focus within my research, and I considered in-field investigation, my approach to interviewing changed. I sought ways to gather data that were less obtrusive and easier to manage, and looked to unstructured and descriptive interview methods (Bernard 2002, 205). In unstructured interviews the researcher approaches in-field interviews with no defined structure but with key ideas to be explored in conversation with an informant. Descriptive interviews follow a similar unstructured approach but are open-ended and conversational in style, allowing the informant to direct the topic flow. I employed both approaches in-field, and with each I clearly identified myself as a researcher. Employing such methods allowed me to more easily gather data in-field when I was also participant, such as during my

visit to Cairns and activities on the Great Barrier Reef, and time spent in Christchurch walking around the city. In some instances interviews were better approached in a conversational style with the participant directing it. Doing so provided useful data about people's motivations and interests in relation to the location, as well as revealing affective cues. At other times I steered discussion towards particular themes, using questions designed to prompt further detail from the participant. Having flexibility during in-field data gathering allowed me to more effectively explore affective themes, within discussions, or through personal stories that participants shared.

To record interviews I used either a small voice recorder or took notes. A recorder was used mainly for semi-structured interviews, as these were often long (30-60 minutes) and covered topics in some detail; and it was useful to have these recorded in a format able to be transcribed. In-field interviews were more informal and 'organic' in character, and it was often not appropriate to use a voice recorder. During such interviews I made notes at the time or, more often, notes were made immediately after the event when the conversation was still fresh-to-mind. Consequently, I was unable to record conversations in detail, but it was possible to note and remember poignant discussion topics – particularly any stories the interviewee relayed. In-field encounters were also useful in gauging emotional response to discussed issues, and the absence of a recording device allowed the interactions to remain informal.

Data from interviews was used in multiple ways. Semi-structured interviews were transcribed, and I applied a thematic analysis – identifying emergent themes within the text (Boyatzis 1998, 5). However, many of the interviews initially undertaken have not been used with the final thesis. Rather, emerging themes from earlier interviews were used to inform topics and chapter investigations.

Writing up of research has followed autoethnographic convention, where the investigator writes in first-person, making themselves the object of the research (Ellis 2011). Such an approach can be highly autobiographical, and include details of the researcher's life, along with information about other participants presented in a reflexive manner, or dramatised through the text showing chronological development. Autoethnography can be used to connect the personal to the cultural (Ellis and Bochner 2000, 739), and express multiple layers of consciousness. At significant points in writing I focus on emotional experience, aiming to evoke some appreciation by the reader of the event (Bochner and Ellis 1996, 24). At times, I focus on immediate experience of phenomena; occasionally I look to personal historical events that have particular significance or which illustrates some point.

Autoethnographic accounts may sometimes blur boundaries between fact and fiction, with some writing becoming more literary than social science (Richardson 2000; Rabbiosi 2017). Geographers have also recently rediscovered the use of storytelling, and fictional narratives have been explored to expand the scope of this (see Lorimer 2009). Such approaches are reflective of existentialism's experimental and 'freestyle' literary expression which seek to remove any clear sense of certainty. Clearly visible in Sartre's writing, autobiographical elements blur the line between author and character, intended to obfuscate what is real, becoming a hallucinatory performance. While I do not experiment with fictional narrative within writing, I do consciously narrate empirical experiences, while at points during the thesis I engage with speculative process in other ways. Drawing from my design background, this kind of imaginative activity is applied as a way of thinking experimentally into some issue. This approach differs from written accounts as they manifest often in visual or material forms (see Dunne and Raby 2013).

Following an existentially inspired and experimental approach, the overall outcome for the thesis is one evidencing more fragmentation than might be considered normal. As discussed, field chapters focus on seemingly discrete events, but which are connected by varying threads; within each chapter I have highlighted supplemental lines of exploration – boxed sections documenting auxiliary ideas and, in some cases, exploratory 'failures'. The display of such remnants is intentional, both as evidence of research undertaken, but also of the inherently fraught and fragmented way in which the project developed. Such a 'scrappy' approach draws on the writing styles employed by existentialists – Kierkegaard's pseudonyms, Heidegger's poetic thinking, Sartre's and Camus' philosophical novels – where outputs were intentionally fragmented to both stylistically and functionally affirm the exigencies of experience (Mickey 2016, 37). In my case, however, the dictates of an academic thesis requires a written outcome which aligns with more coherent conventions and, resultantly, the text has been edited and structured along such lines to make it less ambiguous than a literary or artistic work might be.

Limitations

As with any methodological approach, there were limitations to the approach undertaken here. The approach I have taken, I am aware, is highly reflexive. Application of an existentialist outlook, by returning to the subjective, focuses attention inwards so that the investigator has only a singular, internal, point of reference. Such criticism is similarly applied to autoethnography, in which introspective analysis has the danger of being self-indulgent and narcissistic,

running the risk of becoming mired in solipsism (Pile and Thrift 1995). Within this thesis, I apply autoethnographic and existential techniques, as simple but effective ways of investigating the kinds of affective registers which I argue to be entangled within Anthropocene experience. Such approaches come with practical advantages, given that insights can be uncovered directly by the researcher. Importantly, I take such insights as indicative as opposed to prescriptive: the experiences I have explored are attached to a unique set of circumstances, but will reflect broader themes. Affective resonances, such as unease, anxiety, paradox, and the like – operate as useful cues for considering contemporary experience. At the same time, following existential concern beyond that of the human, as suggested by Morton (2010, 2013), Mickey (2016), and Rose et al (2016), leads to considering inseparable relational ties.

Another key issue with existentialism is the way it can ‘unground’ the subject or investigator, producing a sense not only of ‘homelessness’ but removing stable reference points with which to make claims about the world (Crosby 1988). Admittedly, at times during research I experienced moments deeply unsettling and disorienting. Often such feelings came from reflecting on the experiences I had, as well as contemplating potential implications. To talk about feeling anxious or unsettled is easy at a distance but is decidedly challenging to experience in the moment – or over a period of time. I feel that my investigation would not have been as insightful without such moments, however problematic they were at the time. As a strategy I found it useful to keep in mind the practical aim of the research: a reminder that an unsettling of normal affective registers was to be expected; that it was useful data; and that some resolution would be found by moving through such moments.

Within this research I have sought to substantiate and explore the association between experience and experimentation. I have followed an approach of ‘trying things out’ – experimenting – as a way to generate new experiences. The uncertainty of experiments (see Jasanoff 2006) has meant that results were only sometimes ‘successful’. As far as experimental practice goes, however, my engagements have not undertaken significantly risky pathways. Concerns of safety and ethics have been key factors informing the bounds of experimentation and, as a result, the project became more aligned with geographies of experiment, as opposed to experimental geographies. Consequently, I have looked to spaces, or sites imbued with some disruptive or unsettling quality, focusing on the experience of such spaces, as well as emergent themes.

I am aware of potential limitations of the positionality I bring to investigation. As discussed, existentialism’s foregrounding of subjective experience purposefully rejects claims of objective rationalism. Yet, while I have also argued for a coexistentialism, and a concern with relationality

and more-than-humanness, the accounts I focus on within this thesis remain attached to *human* experience, and one shaped by particular personal, professional and intellectual orientations (England 1994), as outlined early in the thesis. My primary concern has been with teasing out the visceral human dimensions of the Anthropocene that elicit coexistential reflection. A focus on the unsettling – and other – affective responses is intended bring a reflexivity to experience; the documentation of which allows others to similarly reflect critically upon (Bochner and Ellis 1996, 22). I do not aim to represent or give voice to more-than-human or multi-species others unable to speak for themselves, in the vein of Plumwood (2002), Rose (2004), or Bennett (2010). While more-than-human sensibilities remain important, a key focus for the thesis is ways in which ‘individual’ and ‘collective’ reorientatation might be undertaken. Finally, I make no grand claims about what emerges from this thesis. If it manages to say something about the affective conditions of the Anthropocene, this is admittedly checked by the positionality I outline, combined with the circumstances I have had the opportunity to place myself within. Just as there will be many different experiences of the Anthropocene (Berkhout 2014), my ideas here reflect a single perspective, and will only be one of many – and in no way more valid than others. The subjective and experimental bearings of this thesis align it with both existential and artistic investigations that are loose, uneven, uncertain, unconventional and, occasionally, surprising (see Davis and Turpin 2014). Consequently, my aim is not an attempt to objectively document or draw out some map of reality but rather undertake investigation as a provocation to knowing and dwelling in the world: first, as a provocation to myself and my own sense of the world; and second, one which others might engage with and take something from.

The first field chapter, to which I now turn, traces such a provocation: an experiment in making sense of the Anthropocene by exploring an encounter with elemental forces, geological asymmetries, and resulting visceral trauma.





River

Chapter 3 | Turbulent flows

This chapter tells the story of a personal encounter with a river. I focus on this event as a coexistential trigger for thinking into and contemplating moments of turbulence and unsettling, but with intimate geological attachments. Encounters beyond our ability to control, and which threaten our very being, can deeply unsettle our sense of the world and our own agency, ultimately prompting re-evaluation of ourselves and our map of the world. I approach events autotopographically: personal connection to place is an important theme, and I return to this experience as a way to viscerally explore feelings of unsettlement and displacement. Through this chapter I trace lines of movement, ideas, and sensations as an experiment in ontological unravelling. These are not straight lines but irregular and uneven, having diverse entanglements. I begin by returning to memories of events alongside a river, which I position in relation to place – ‘home’. I then explore the capacities that trauma can have in shift thinking and perception about dwelling the world. I briefly examine the impacts of corresponding unsettling experiences. Finally, I retrace my path along the river, returning to the site of trauma as an affective experiment: one having potential to reorientate my own outlook.

Immersion

When the river took me, there was nothing I could do. My left foot found no secure footing, only a channel of fast-moving water. I hardly had time to think. Off balance as my foundering foot was dragged away by the current, the rest of my body had no choice but to follow. “I’m gone!” I exclaimed. That was it – all that came out of my mouth – hoping that my river-crossing partner would hear. The water immediately grabbed hold, sweeping me downstream. The supporting arm lock with my friend was broken. I can’t remember if this was because I intentionally let go, or whether it was the force of the current that separated us. Certainly, I didn’t want to drag him away with me but, as it happened, it was too late – Damian lost balance

anyway, and was himself taken by the current. I wasn't aware of this at the time though – I was focused solely on my own situation.

The river was in full flood now, its water high and fast-flowing. It had been raining continuously for the last 24 hours, not heavily but enough for the river's volume to swell. Our party of five had made the decision to continue our journey – a circuit hike in the Kaimai-Mamaku Forest Park in the eastern part of the North Island of New Zealand. I had been in the park a number of times before and was used to wet weather. This trip, a three-day, two-night hike, was a chance to get away over a long weekend. While the weather had initially been pleasant, conditions turned during the second day becoming overcast and the rain started later in the afternoon. I hadn't expected such a significant change. I would later find out this was the result of a tropical storm in the Pacific moving further south than had been expected.

The North Island is dominated by a series of mountain ranges which form part of the 'backbone' of the country. New Zealand is a land formed by the friction of two tectonic plates upon which it sits – the Pacific and Australian. The fault line cuts the country almost in half, forming a series of volcanic cones – some still active – in the North Island, and the South Alpine Range forming the rocky mountainous ridge of the South Island (see Figure 3.1). The ranges in the north pale somewhat in comparison to the scope of the southern ranges, being largely sub-alpine in nature. A peninsular to the east of the country's main northern spur is formed by a sub-alpine mountain range – the Coromandel Ranges – which runs down into the Kaimai Ranges, which in turn meets the Mamaku Ranges. Covered in forest, Europeans found these areas a rich source of high-quality timber, which was extensively logged during the 1800s.

Later, gold was discovered and ushered a second wave of extractive activity (Te Ara 2015).

Today these mountain ranges make up a network of forest parks managed by the New Zealand Government. The areas have become not only important areas of natural conservation but have historical cultural significance to local Maori and provide recreational amenity.

An integrated component of the geography is river systems. On the western side of the ranges waterways lead to large inland lakes: Lake Taupo, Lake Waikeremoana and others; on the eastern side lines flow into the Pacific Ocean. For early Europeans focused on extracting resources in the remote and rugged terrain these river systems provided valuable access paths, both into and out.

Today, kauri logging and gold mining are historical legacies of the North Island. For the Kaimai Park, a two-hour drive from the country's largest city, Auckland, historic site-seeing is merged with outdoor recreational activities where visitors can walk or ride bikes along the still-visible

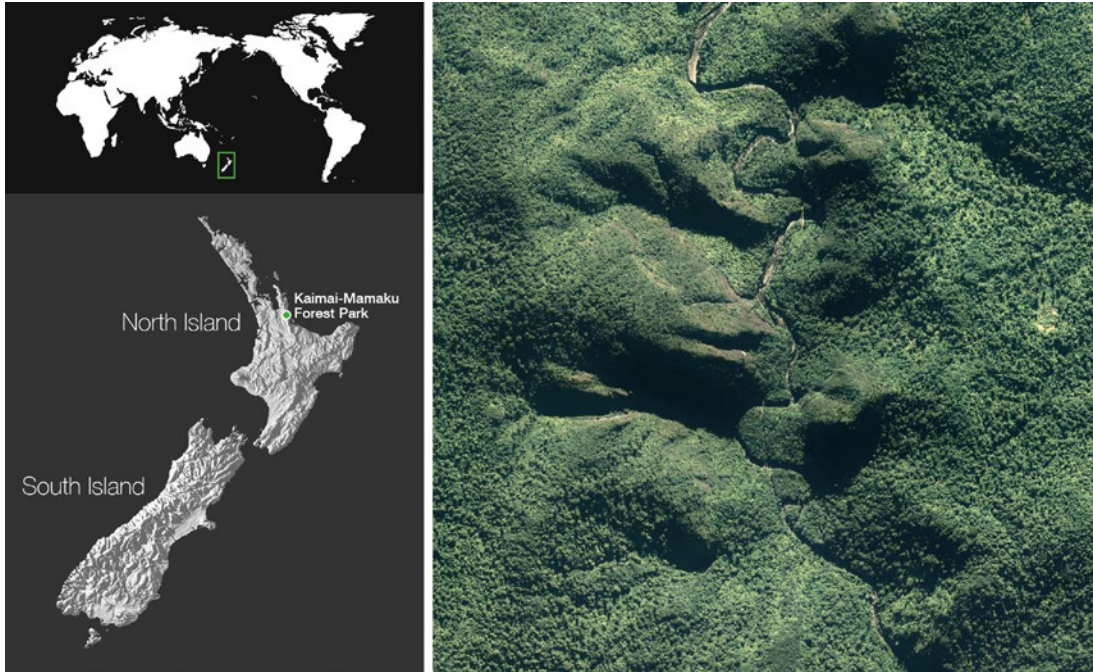


Figure 3.1: Map of New Zealand, with Waitawheta River aerial imagery. The Kaimai-Mamaku forest park is located in the northeast of the North Island. Aerial imagery shows the Waitawheta Gorge, which cuts through the volcanic strata of the Kaimai Range. (Satellite imagery copyright Land Information New Zealand.)

traces: tracks forged by colonial loggers and now defunct gold-mining tramways. Indeed, our exit route followed an old tramway track built in the mid-1800s for both gold and timber extraction, and which would return our party to where we had begun the journey three days earlier. The path followed the course of the Waitawheta River, a waterway beginning in the ranges and flowing eastwards to the coast, crossing it many times.

On the final day of our trip we had assessed the situation. We had a full day's walk back out to the car park from Waitawheta Hut where we had spent the night, and the route followed the old tramway which ran alongside the river for the final half of the day. Overnight rain had begun falling – though not heavily – and by morning had eased to drizzle. The river level, however, looked to be no higher than when we had arrived the previous day. Our options were to either continue on as planned, or face backtracking the route we had come over the last two days. Most of us had work the following day, so there was a push to get back to the city on schedule.

The first river crossing was merely shin-high, but with each crossing the river level increased a little – though was not fast flowing. At the fifth or sixth crossing, we were forced to link arms for stability and wade across together. Somewhat concerningly the water reached our chests, but the map showed us to be only a few more crossings from leaving the bush – and the river. We had gone so far that backtracking had become an unappealing option.

Leaving the river, the path made its way up the side of the valley and through thick bush.

We lost sight of the river but could still hear its muffled sound as background noise through the wet foliage. Low cloud filled the valley giving it an ethereal quality. The drizzle had remained constant and cold since leaving the hut, refusing to stop. We had come prepared for wet weather, but after the turn of the last few days and the morning's river crossings, we were looking forward to the dry change of clothes awaiting us, and a hot meal. There was little conversation as we continued along the muddy track, our focus was on walking and reaching our end point as quickly as possible.

After a while the path descended back down towards the river. Coming out of the bush, we found ourselves immediately on the riverbank. However, instead of finding high but slow-moving water as we had previously, we discovered a more turbulent flow. Rocks and boulders curdled the water, leaving the surface broken and white. The geology of the terrain had changed. We had reached the beginning of the section where the river cut a path through the hard volcanic ignimbrite of the ranges, creating a serpentine gorge. The banks of the river tapered and disappeared, replaced by sheer rock walls. The width of the river narrowed, its flow directed into a concentrated channel with increased velocity.

Assessing the situation, we decided it was not safe to cross, we'd need to find an alternative route. Scouting a short way downstream we discovered that the riverbed widened slightly and became shallower before moving around a bend and towards the gorge proper. It was still fast-flowing but appeared to offer a safer crossing point.

A colleague and myself volunteered to investigate the alternate route. Whereas I had more outdoors experience my colleague Damian was a serious weight lifter and stocky in stature. We were the same height but he had perhaps another half of my own body weight.

As the rest of the group waited at the side of the river Damian and I edged our way into the rapids. Damian was upstream, I was down; we interlocked our arms between our backs and our packs, providing extra stability.

The riverbed was rocky, and the turbulence of the water made it impossible to see beneath. Our feet were forced to search for footholds amongst the river stones which provided little traction. Yet, while swift, the water was not so deep – only up to our thighs. We made slow but steady progress, one step at a time: balancing, positioning, taking another step. Approaching half way across, and I began to feel confident that we would easily make the other side. It was here that we encountered the unexpected.



Figure 3.2: A member of the hiking group poses for a photo early on the final day. (Source: author.)

While the widening of the river had allowed water to spread laterally, this was deceptive. Below the surface, at the centre of the river, a trench had formed in the riverbed, channelling a significant volume of fast-moving water. It was this flow that my left foot encountered as I took a step forward. Expecting to find some rock beneath, instead I found nothing. The drop was not great – perhaps only a foot or so – but enough to take me by surprise and unbalance me. And the force of the water was considerable.

The events of that moment seem surreal – almost dreamlike. I remember stepping; feeling nothing where something solid should have been. I remember feeling the force of the water immediately push my foot sideways, forcing me off balance. I remember uttering the words “I’m gone” quite matter-of-factly. I do not recall how I managed to land on my back – perhaps it was because my feet went first – but it was fortunate that I did.

As the water took me I felt a surge of panic like I had never experienced. I was riding atop a churning, racing flow of water. The extreme cold only added to the shock. As clichéd as it sounds, images of my life raced through my mind: time seemed to slow down.

My instinct was to try and stand but my feet found no traction. The force of the current was too strong. The pack on my back gave me buoyancy – and protection – but I battled to keep control of my orientation. I attempted to ground my feet again and find some footing but my boots simply slipped off the river stones. Then: ‘thwack!’ The shin of my right leg hit a large river boulder and glanced off. My gaiters – canvas lower-leg coverings – gave me some protection, but it hurt.

I was moving too swiftly; the middle of the river was too deep and fast-flowing. Better, I thought, to try and manoeuvre to the edge where the water would be shallower – hopefully. I knew that not too far downstream the river ran into the rock face of a bluff – the beginning of the gorge – then made a sharp turn to the right, after which both sides became soon became sheer rock walls. At the moment, though, there was still a flat riverbank and bush to the right – a possibility of escape.

Using my feet to fend off boulders, I used my hands to ‘paddle’ towards the riverbank. Unsure if such effort was actually effective, or whether it was the skew of the current, I nevertheless found myself closer to the side. Thrusting my right foot down it made contact and held. My other foot caught and I stopped. Grasping a boulder to my right I was able to pull myself up into a standing position. I stood, heart pounding, mind racing, shivering – both with cold and adrenaline – and looked back up the river. The rest of the group was out of sight upstream, and I saw no sign of my river-crossing companion. I had no sense of exactly how long I’d been in the water, or how far downstream I had come. It may have only been thirty seconds, maybe a minute, but it had seemed like an eternity.

In a moment, things can change. When the ground you know is swept from underneath your feet your sense of the world can be dramatically upended.

Surfacing

I had many reasons to return to this event. At the time, the experience was a profound personal one with significant disruptive and unsettling effects. In the years that followed I had not given any deeper consideration to the event beyond its immediate impact. My emerging concern in this thesis, and with exploring affective unsettledness and feeling ‘homeless’ in the world, led me to reflect back on this incident as one with ‘defamiliarising’ potentials: an experience to draw upon in reorienting my sensibilities in a world made unfamiliar by the Anthropocene. Encounters beyond our own human control, whether with cataclysmic forces of the earth, or confrontations with indifferent non-human others, can deeply unsettle our perception of the world, as well as our own sense of agency within in it. Here I consider instances where moments of crisis and trauma have been taken as coexistential prompts through which new insights about dwelling in the world can be rendered. Such examples provide useful insights moving to reflect on my own experience.

The immense earthquake that struck Lisbon in 1755, causing catastrophic tsunamis and subsequent razing of the city acted as a highly significant historical trauma. To date, the quake remains the largest recorded ‘natural’ disaster in Europe: considered the first modern disaster

(Dynes 2003). The loss of human life was large for the time: an estimated 90,000 deaths – more than one-third of the city's population. The impact of the earthquake, however, was more than physical, having reverberations within social thought, provoking philosophical examination in an effort to make sense of such cataclysmic force. The event is considered to be the most significant to have occurred in Europe since the fall of the Roman Empire, with impacts still being felt today (Neiman 2002). Phrases such as 'to shake (or rock) the foundations,' 'ground-breaking' and 'earth-shattering' summon geologic imagery; lingering resonances of the Lisbon quake within language and our cultural psyche. The event deeply unsettled the world rendered by Enlightenment thought, putting into doubt Descartes' argument for a 'harmonious and well-ordered universe' and, as Voltaire pointed out at the time, the existence of a benevolent deity.

Immanuel Kant also sought to make sense of the catastrophic event. Although he never visited the actual site, Kant sought to explain the quake's cause and postulated a purely physical mechanism for this, suggesting it was the result of molten rock moving in underground caverns.

While not entirely accurate, the theory laid foundations for the development of a 'scientific geography' and with it an emerging understanding of the dynamism of physical earth processes (Unwin 1992, 70). However, Kant's other philosophical contribution lay with comprehending such an immensely profound event entirely on human terms. Whereas disasters at the time were attributed to divine forces – of evil, heavenly retribution, and the like – Kant argued that any divine entity had better things to do with their time, and that the Lisbon quake lacked any 'ulterior motives'. For Kant, humans are very much on our own, and if we want to make meaning of such events we should do that solely on our own terms (Hamacher 1999; Larsen 2006).

Such an outlook divests moral meaning from events in the world: events outside of human influence such as those rendered by earth forces. An earthquake, therefore, is simply the result of a physical planetary process, there is no intentionality or malice, and the only meanings we might find in such events are the ones we ascribe.

Geographer and geophilosopher Nigel Clark (2011) returns to contemplating encounters with planetary forces as a way of grappling with our contemporary relationship with the earth. Where the Anthropocene suggests that human activity has grown commensurate with planetary forces, Clark is not wholly persuaded. The earth, Clark argues, is largely indifferent to us; adjustments and fluctuations are inherent within complex planetary systems. This is not to deny the impacts that wider human activity can have, but humans do not *dominate* the Earth as some would suggest: we are no way 'in control' – either individually or collectively. For humans, the challenge is coming to terms with our relationship to an inherently dynamic

planet, and one on which the conditions we have become familiar with are disrupted by our own influence.

Clark urges investigation by social scientists and humanities scholars into the “zone of interfixity of human and non-human and press on into regions *where we are absent*” (Clark 2011, xvii) – domains devoid of human imprint which have been predominantly a focus for the physical sciences. Moments of tumult, such as those rendered by fluctuations of the planet, confront fleshy and vulnerable bodies, exposing the asymmetries of the imagined divide between human and non-human (see also Instone 2015a). Experience of such events can expand an understanding of ourselves, and our relationship to the world:

A major upheaval of the earth, survivors tell us, not only takes the ground out from beneath your feet, but unravels the very fabric that holds things together and allows us to make sense of the world. (Clark 2011, xvi)

‘Unravelling’ and ‘fabric’ are apt metaphors for a concern with lines and pathways: the ‘fabric that holds things together’ is our set of ideas about what the world is and how it operates. While traumatic events may unravel our understanding of the world, significantly, they can reveal lines or pathways previously obscured; and also open up possibilities for weaving new threads together. Much like Nietzsche’s counsel to live on the slopes of volcanoes in pursuit of existential unsettling, the resulting disturbances provoke us to remain open to our world-ontology to being ruptured by forces beyond our control.

In considering an account of one person’s traumatic unravelling experience and subsequent reassembly, I revisited to the writings of Val Plumwood and her exploration of a personal near-death experience. Plumwood’s encounter was not with volatile earth forces but a fleshy confrontation with a non-human other which profoundly challenged her perception of the world. Plumwood was an Australian environmental philosopher and activist, active from the 60s until her death in 2008. Situated in ecofeminism, a key theme in her work explored what she argued as the ‘hyperseparation’ of the human/nature binary, which she sought to reconnect (see Plumwood 1993). Her later work drew on an experience of being attacked and almost killed by a crocodile while on a canoeing trip in Kakadu National Park in the northern part of Australia. The event caused Plumwood to reflect deeply about how she perceived the world, coming to the conclusion that her outlook had been inherently anthropocentric (Plumwood 2012). The trauma of confronting a predatory animal prompted her to see herself through its indifferent animal eyes, and led her to reconsider herself – and humans – as mere ‘pieces of meat’: simply a source of food for such predators. This unsettling existential revelation prompted Plumwood to reconsider the dominant narrative of human mastery over the natural world.

I have an affinity with Plumwood's arguments for an amplified animistic outlook, however my key interest is with how her experience is employed as an existential prompt for generating philosophical insight. For Plumwood, the near-death experience was not something to be bemoaned or repressed but in fact quite the opposite. By engaging with a rich, yet traumatic event, she was able to deeply interrogate her thinking about the world:

Some events can completely change your life and your work, although sometimes the extent of this change is not evident until much later. They can lead you to see the world in a completely different way, and you can never again see it as you did before. You have been to the limit, and seen the stars change their course. That extreme heightening of consciousness evoked at the point of death is, as many testify, of a most revelatory and life-changing kind—for those who, against all odds, are given a reprieve and survive. The extraordinary visions and insights that appear in those last seconds can be hard to reconcile with our normal view of the world. In the vivid intensity of those last moments, when great, toothed jaws descend upon you, it can HIT YOU LIKE A THUNDERCLAP that you were completely wrong about it all—not only about what your own personal life meant, but about what life and death themselves actually mean.

(Plumwood 2012, 11; original emphasis)

Plumwood wrote about the ramifications of her experience, connecting the personal with the philosophical, developing a narrative that we, as readers and humans, readily connect with. In so doing she engaged with the world quite differently to Kant's contemplation of the Lisbon quake. Such events can be contemplated from a distance¹, interrogating them rationally. Direct experience of such events, however challenging and unsettling, allows for different kinds of insights, as Plumwood explored. And, as separated as they are by time, culture, place, philosophical outlook, and event, Kant and Plumwood grapple with equivalent concerns: human vulnerability rendered by a world indifferent to us.

Experiencing our own corporeal vulnerability through traumatic events can be used to unsettle our existing ideas about the world, showing us that we are not as removed from its flows as we might think. Such events make visible unsettling lines between boundaries of human agency and agencies that are beyond our ken and ability to control. While existential themes are not directly invoked by either Plumwood or Clark, resonances can be found within the tracks they explore. Both grapple with the rift between humans and the non-human world; delving into the unsettling, uneasy, and ultimately vulnerable spaces rendered in moments of crisis and emergency. Such moments are extreme points on the continuum of existential experience; and the aim is to be unsettled, not to seek an end to one's life. Life-threatening traumatic encounters, however, become additional fuel for existential contemplation, which may be used not only to make sense of ourselves and our lives, and reorientate our own trajectories, but which can

¹ Kant subscribed to what is referred to as 'armchair investigation' (Haug 2013, 220).

prompt wider conceptual unravelling such as with the meta-relationship between ourselves and other non-human agents and agencies that constitute a wider worldly mesh. My own encounter with the river renders such a moment of unexpected unsettling, one which I explore to aid me in unravelling my own anthropocosmological ties.

Extraction

Extraction from the river was not the end of the ordeal. Leaving my pack on the riverbank I searched for my crossing companion. As it turned out, Damian had faced a similar fate, being swept off his feet and carried downstream. He had not managed to escape the river as I had but, luckily, had been able to grab hold of a large boulder in the middle of its flow not far from where I had exited. From the bank, all I could see were two hands grasping from behind the rock. I called out to see if he was okay. He said he was, but was unwilling to let go of his safety hold. Recalling that I had a rope on my pack, I grabbed it, tied one end around a small tree by the bank, the other around my waist and edged myself back into the river to help him out. We made it back safely to the bank, took stock, and then edged our way up the side of the river to find the rest of the party and let them know we were okay.

Assessing the situation with the rest of the group we decided to continue forwards hoping that the next crossing visible on the map would be passable – and the last – before the track left the river for good. Using the rope, we were able to help others in the party to cross to our side of the river. However, moving on to the assumed ‘final’ crossing point, we found a river that looked significantly more dangerous. While only half a kilometre further downstream, the river’s flow was intensified by the steep rock walls of the gorge, the turbulent water seething with concentrated energy. Concrete block foundations remained visible above the surface of the water: remnants of what had once been a tramway bridge, the rest of the structure having been washed away long ago. We briefly debated whether we could use these foundations and the rope as means of crossing the river but after the previous incident we knew that any error here would almost certainly be fatal and were unwilling to risk such an outcome. Thus, we were stuck on the wrong side of a now-impassable river.

Blocked from going forwards or back our only options were to either wait or create a new path of our own. We had no shelter and, unsure of long the rain would last, the first option was not appealing. With the second, we could navigate through the bush avoiding the river until we hit farmland and then make our way circuitously back to the vehicles – hopefully before dark – and then be on our way back to the city.

Navigating through lowland bush is challenging even under more hospitable conditions. The rain continued making progress slow as we cut our own path through difficult and unfamiliar terrain. We followed a steep ridge up and across a bluff and then down into the valley of a small tributary stream. Crossing the stream we climbed the other side of the valley hoping to find a track visible on the map. By late afternoon we were still searching as the light began to fade. Without enough working torches we wouldn't be able to navigate through the bush in the dark. We were all exhausted with some members of the group showing signs of hypothermia: moving slowly and having trouble speaking coherently. It was becoming increasingly dangerous to go on. Our only option, we decided, was to spend the night in the bush and resume the search for the exit track in the morning.

Fortunately, we had come across a small sheltered spot underneath a rock overhang during our search. We managed to backtrack and find it again. In the wet bush this small, dusty – but dry – ledge became a welcome refuge for what was still a cold and unsettled night (see Figure 3.3). The space was small, only ten or so metres long and perhaps one-and-a-half wide. We arranged ourselves tightly, shared gear so that everyone had dry clothes and something to sleep in, and ate what remaining food we had. It was far from a comfortable night but, considering the option of spending a night in the bush without shelter, we were extremely thankful.

The rain eased overnight and after resuming our search in the morning we managed to find the track we had been looking for. The walk out was still a long one – further than we had anticipated – and it wasn't until dusk the next day that we found ourselves back at the car park from where we had originally set out. We found a search and rescue ranger preparing to enter and search for us. Feeling somewhat foolish, we reported our ordeal and then began the drive back to Auckland.

The journey in the car was quiet. Everyone was tired. For myself, I spent the time reflecting on the events of the last few days. It wasn't until arriving back in the city, however, that the significance of the ordeal began to register. As we drove down Karangahape Road, the main thoroughfare on the ridge to the south of central Auckland, a sense of the surreal struck me. Looking out the car window, I saw roads and buildings, streetlights, people out socialising, having dinner – a 'normal' weekday evening in the city. I was familiar with such a scene, but now it appeared strange. How easy it seemed to be able to walk along a concreted pathway lit by streetlights, to shelter from the rain underneath shop awnings – and to drive on smooth roads at such high speed.



Figure: 3.3: Members of the group settle in to spend a night out in the bush. (Source: author.)

My mind interpreted the city landscape in the same way it had the outdoor landscape I had been in the past few days. Karangahape Road sits on a ridge that joins Ponsonby Road, to the west, encircling the lower city area. In the past, streams would have run down towards the harbour; Queen Street, the main road through central city follows the path of one of those streams. What would it have been like to navigate the city environment before all the infrastructure had been built? The human world suddenly seemed less real; somehow very strange and unfamiliar.

My sense of defamiliarisation remained for about a week and then began to dissipate. What continued to linger, however, were the memories of being swept away and the ensuing sense of panic. At times I would return to those events in the river and relive the powerful existential emotions that surfaced: feelings of panic and utter helplessness. Being thrown into turbulence, unable to control my situation, I felt completely vulnerable and thoroughly insignificant. Contemplating the residual emptiness from this moment challenged me to re-establish a sense of meaning in my own life – what I had done, what I was doing, what I planned to do. In response, I re-evaluated my relationship with spending time outdoors and in remote environments. Practically, I undertook training in outdoor safety and first aid, but I was also spurred to contemplate what it was to have such experiences.

Being in the outdoors may be pleasant under the right conditions but it can just as easily be fraught. Any meaning we take from experiences in places we consider ‘natural’ or engaging non-human others, however, needs to be our own terms: understood to be rendered by the



Figure 3.4: Turbulent water (series), 2015. (Source: author.)

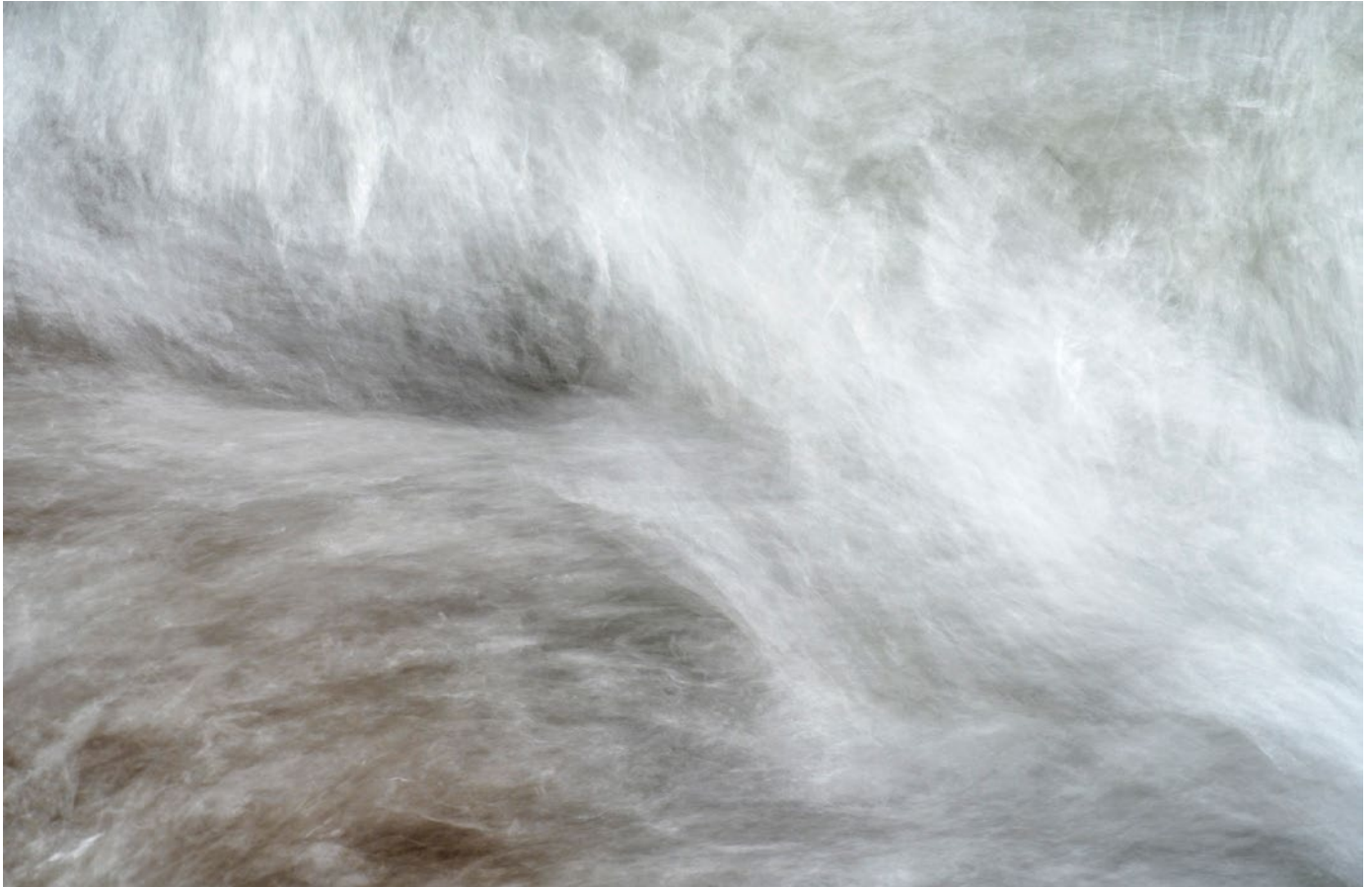


Figure 3.5: Turbulent water (series), 2015. (Source: author.)



Figure 3.6: Turbulent water (series), 2015. (Source: author.)



Figure 3.7: Turbulent water (series), 2015. (Source: author.)



Figure 3.8: Detail of the original Forest Parks map used during the trip with annotations, which were added after the experience to document the location of events along the exit route. Note that the coarse scale of the map (1:100,000) does not allow topographic features to be clearly defined. (Source: NZ Department of Conservation.)

cultural narratives which inscribe the world we believe ourselves to inhabit. Further, we should also be receptive to such narratives being rewritten: Plumwood's encounter is evidence of how such rewriting can be made potent through visceral experience:

Until that moment, I knew that I was food in the same remote, abstract way that I knew I was animal, was mortal. In the moment of truth, abstract knowledge becomes concrete. You gaze with dumb astonishment as your own death, known only as a shadowy, distant stranger, suddenly rises up right before you in terrifying, technicoloured detail and gasp in disbelief that some powerful creature can ignore your special status and try to eat you. (Plumwood 2012, 10)

My own encounter with a river remains a powerful personal experience, effectively reorienting my perception of the world within which I understood myself to exist. On a continuum of existentially unsettling experiences it sits at the top end of the scale – illuminating the transformative potential that may be found in outdoor activities or extreme sports (see Brymer and Oades 2009). To further explore the event's reorienting capacity I turn to a final experiment where I retrace the fractured lines of this memory. In the follow section I document my return journey to the point of encounter and reflect on the themes that emerge.



Figure 3.9: A screenshot the Google Earth map showing the extrapolated location of the ill-fated river crossing point. The map uses the latest satellite imagery available, January 2017. (Source: Google Earth/CNES/Astrium Image Landsat/Copernicus.)

Revisiting

The first task in planning a return was identifying the exact location of the river crossing. While I was still able to trace the route followed on the original park map we had with us at the time, the map scale was too coarse to allow accurate location. I had written notes on the map but these provided only rough cues of where the exact crossing-incident site was (see Figure 3.8: indication where ‘Damian and Justin have a go at river surfing!’). As well, I had not been back to the location – or to the Kaimai Park for that matter – since the event.

I turned to Google Earth, a mapping tool able to provide more detail. After some exploring, I was able to orientate myself in the region and locate the forest park. The Google Earth platform includes multiple layers of additional geographical information, but, for the Kaimai area, minor details such as walking tracks are not displayed. However, the stitched-together satellite imagery provides enough resolution to discern significant features, such as valleys and rivers, down to large individual trees, though nothing finer. I was able to locate the course of the Waitawheta River and follow its route inland. I identified Waitawheta Hut by the river, where we stayed the night before the exit walk, and was able to discern the hiking track which showed slightly darker green than the surrounding bush. I followed the line of the track along the river, finding the point where it makes a perpendicular crossing. Triangulating from the notes on the paper map I calculated a location on Google Earth that I believed to be the crossing point: a perpendicular crossing before a major hairpin turn in the river, followed shortly by another

crossing. The crossing point is further downstream than I had it marked on the paper map, and it may be that the track route differed slightly from what was shown. Panning and zooming the interactive map, I explored the area further, before I was finally convinced that I had accurately located the spot, setting a marker: 37°29'46.16" S 175°46'44.57" E Elevation: 234m (see Figure 3.9).

Exploring the area in more detail, I was surprised by the features I found. The first was the shape of the river. On the printed map the river was shown as largely straight with only minor deviations, but the satellite imagery showed a more complicated path, with a surprisingly sharp turn beyond the identified crossing point. Approximately 150 metres from the crossing the river meets a steep wall of rock on its left bank and cuts back almost 100 degrees, flowing another 170 metres to hit the base of a rock bluff where it takes a 90-degree turn to the left. These features mark the beginning of the gorge, and seeing them from above rekindled feelings of concern. Had Damian and myself not managed to extract ourselves before hitting the first bend there would have been little hope of surviving beyond.

Another feature was also visible at the first crossing point: what appeared to be a bridge of some sort, although the resolution was not detailed enough to clearly identify it. The use of bridges, especially suspension bridges, is common on popular tracks throughout New Zealand. Many hiking routes follow or cross rivers which, when in flood, become dangerous. It made me wonder how many other people found themselves in a similar situation to the one we did, and whether any lives had indeed been lost. A similar structure appeared to also span the second crossing on the other side of the hairpin turn.

A return to the location would be under quite different conditions but, as with many memorable events in our lives, the places in which they occur become significant. Geographers have had a longstanding interest with memory and its relationship to place (see Jones and Garde-Hansen 2012), but my concerns were more performative, taking memory not simply as a 'burden of the past' but rather a creative source for ideas and action in the present (Jones 2011). I was not entirely sure how I would respond to a revisit, however, evidence shows that, for those who have undergone some trauma, returning to the site of an event can be therapeutic (Murray et al 2015). In my case, I was not seeking resolution, rather I was hoping to 'stir up' and amplify any residual feelings and thoughts: returning to sensations of existential disruption.

I made plans to return the Kaimai-Mamaku Forest Park in early summer of 2014, over a period with settled weather. I spent just a day and half in the park, following the track up the river to the crossing point, camping overnight and then exiting the next day.



Figure 3.10: The 'Devil's elbow'. A point in the Waitawheta Gorge where the river encounters a sheer rock wall and is forced to make a 90-degree turn. (Source: author.)

I departed Auckland on a clear summer's day in the early morning and arrived at the Waitawheta track car park by mid-morning. The area looked a lot smaller than I remembered. The start – or end of the track depending on your route – passes through farmland before it reaches enters the park, and native bush. After 20 minutes of navigating across paddocks and through gates I reached the tree line and the track continued alongside the river. The river was a different one to that I remember, flowing gently, occasionally opening into large calm pools. Running through rich soil, the water picks up sediment, making the pools an impenetrable dark brown. The track was muddy most of the way, which is to be expected in damp lowland bush.

After an hour following the river, I saw a distinctive peak rising up above the treeline to my left, and which I assumed to be the rock bluff we had climbed making our way through the bush (marked 'The Bluff' in Figure 3.8). If correct, I could use this feature as a geographical marker, knowing that the incident crossing point would be some five hundred metres upstream.

Continuing, I reached my first river crossing and a suspension bridge. Stopping, I wondered whether it was the 'impassable' crossing point. I saw visible remnants of concrete pillars in the river below. For a moment, I was convinced it was the 'impassable' crossing, although it seemed too far from the rock bluff. I had a moment of complete disorientation. The mental map in my head placed me much further up the river than I should have been, but I had only come a short way. I told myself that I must have remembered incorrectly – besides, it had been over 15 years since I was there last. I readjusted my mental map of the terrain. Exactly what lay ahead now felt uncertain, leaving a gap in my map. The only way to fill it was to walk into what felt like an uncanny void.

I briefly left the path and made my way down to the river to explore the crossing area. At that point, the river elbowed and cut into a sheer wall of rock (see Figure 3.10). A deep black pool sat at the base, evidence of the river's power to carve through such hard volcanic rock. At the time the atmosphere was tranquil, but I imagined what it must be like in flood. This feature, I would later discover, is aptly named The Devil's Elbow. Standing at the river's edge I imaged a more turbulent flow, feeling deeply unsettled by what it would be like to encounter the river here under such conditions.

I continued on, across the bridge and back into the bush. I expected to go only a short way before I came to the next crossing which, I assumed, should have been my intended destination. But I had to travel further than I expected, and was again disoriented. I came to another crossing and suspension bridge but, again, not the one I was expecting. It looked very similar to the last, with remnants of concrete pillars in the riverbed. I had a sudden realisation: there were actually



Figure 3.11: The ‘impassable’ crossing point. The concrete foundations are all that remain of the old tramway bridge. (Source: author.)

more crossings after the ‘impassable’ one. The significance of this sank in: if we *had* managed to negotiate the crossing we had deemed unsafe the party would have been in an even more precarious situation. Unable to go on or back, we would also have been unable to find another route out – on the opposite side of the river a steep ridge acts as a hazardous natural barrier.

I continued on for another fifteen minutes and finally arrived at the crossing point I had been anticipating: the ‘impassable’ one (see Figure 3.11). My mental map realigned as I returned to terrain I finally recognised. Of course, conditions were quite different to the last time I was here. The concrete foundations that we had considered using as fording points were visible. However, I had not seen the river from the opposite side. I was able to see how sharply the gradient of the riverbed dropped – something that would be less discernible with the river in flood. Upstream I could see the sheer rock face into which the river runs, directing it sharply into a 90-degree turn, and marking the start of the hairpin bend. Our decision not to cross here was a smart one, I could see how dangerous it would have been to try.

Making my way across the bridge, I recognised that the next crossing would be the one I had come to find. After only a few hundred meters I encountered another swing bridge. I walked across half way and stopped. I looked up the river valley and then down towards the hairpin turn. I knew that I had found the crossing point, although the river did not look like I had expected it would. Making my way down to the river, I attempted to recreate the events of the day in my head. The previous route of the track had been altered to align with the new bridge, now meeting the river slight further downstream. I visualised where the old path would have run, attempting to extrapolate the point where it would have met the river. I considered how far downstream we would have scouted, looking for an alternate crossing, however, none of the features struck me as familiar. There were more rocks and boulders than I remembered, although most would not have been visible at the time because of the higher water level – only the very large boulders would have shown clearly. I made my way back across the bridge and to the other side of the river. Moving down to the river’s edge I searched for the point where I would have made my exit from the water. Again, very little looked familiar. I extrapolated where the river’s current would have taken me and searched for the large boulder on which I found Damian. I assumed that if anything has remained in place it would be this. While I managed to identify a potential candidate, there was no way to be sure it was the same boulder.

I was surprised by how different everything looked, and disappointed that I was not able to accurately retrace the lines of the encounter. I had assumed that returning to the location would provide some clarity to the images I had in my head, however I found none, only



Figure 3.12: The ‘incident’ crossing point from downstream. The newly installed suspension bridge, visible in the background, now allows for safer crossing. (Source: author.)

discordance. Perhaps it was just the effect of memory and time. Perhaps it was the nature of rivers and the flow of water: that the material arrangements change dramatically over time.

I climbed back up the riverbank and returned to the swing bridge where I was able to have an overview of the location. I surveyed the river and the array of stones and boulders in its path. Some were very large – tens of metres long – what appeared to be large blocks fallen from a rock face. Other debris was visible: tree branches, as well as large tree trunks stripped bare and wedged in odd locations, between and atop boulders. I contemplated what kinds of forces were required to move different materials. How much water flow would it take to move river stones; large boulders; and to float and carry logs weighing many tonnes? I was able to perceive the river not just as a conduit for water but as a mechanism for the transfer of matter: water, yes, but also soil, sediment, rocks, boulders, parts of trees, and anything else that found its way into the flow. At the same time this flow of matter eroded and reshaped the landscape. I considered what it might be like to record such a flow over time. If I were able to remain on the bridge, observing this section of the river over time – hundreds or thousands of years – I imagined perceiving the river of as a flow of rocks and boulders. Such thoughts were an opening into contemplating the boundaries of my own limited human sensibilities and agency: a humbling reminder of ephemeral human existence in relation to geological phenomena.

During my time by the river, I noted such thoughts and feelings as they arose. There were practical tasks to focus on: locating a camp site, setting up my tent, preparing food and the like. However, I continued to trace the area, scouting for other features which might usefully jog my memory; taking photos; and recording notes. My stay was short – just an afternoon, night and morning – but was enough time to allow for contemplation.

The visit did not reveal the kinds of things I thought it might. It gave me a better sense of the river's geography, which left me feeling immensely fortunate that we were not flushed into the gorge itself, which most likely would have been fatal. Standing next to the river and imagining it in full flow was the most unsettling moment from my trip: I experienced no re-lived sense of terror or anxiety from returning to the site. Given the clement conditions, the warm sunshine, the calming atmosphere, I only felt relaxed. There were visible signs that conditions could fluctuate dramatically: water-scoured rock faces, deep pools, eroded river banks, contoured and distressed vegetation were evidence of a different kind of river. Here I want to say more 'turbulent' or 'volatile' but this feels inappropriate – an imposition from my own human perspective.

Contemplating the river-crossing event, I imagine this as point or junction in an imagined mesh of my own life. Considering my personal trajectory as one line, I visualise the fabric of



Figure 3.13: The Waitawheta River in a more placid state. (Source: author.)

my life at the time of the event as a woven composite of the pathways and lines of others. My experience then, I can now perceive as weave of all the relationships, associations and orientations that surrounded me. Nearing two decades later, I contemplate the mesh of my life now and which lines from that moment remain a part of its weave. Key threads from that time in my life remain, notably family relationships, while others are less central, or are no longer entangled. I consider the other members of the hiking party, close friends at the time and important lines in my mesh, who now occupy peripheral threads. There are many other kinds of lines within the weave: beliefs, attitudes, interests, commitments, as well as threads of material attachment, but it is the lines of relationship that stand out as significant.

Tracing lines of relationship, Ingold (2005, 103) reminds us, is a concern for more than just social anthropologists. Maps of genealogy and kinship have longstanding social and political significance; science has also become concerned with mapping relationships – not just human ones, but tracing those between other entities.² My thoughts remain with my own meaning making and construction of narrative identity³, and I recognise the impulse which has led me to weave the river as a significant thread within my personal narrative. The lines of writing I have used are pragmatic, and informed by personal experience of place and culture. I am also aware of feelings of awkwardness and discomfort that arise in expressing my thinking, which I read as further evidence of my own internal conflicts between rational and non-rational modes of sense-making. I take such discomfort as a useful signal exposing the challenges that can come from deep reflection on – and the potential unravelling of – the personal stories we use to make sense of the world.

Having grown up in New Zealand, my own ontology has been influenced by ideas from Maori culture. Maori have a belief system in which features of the environment are taken to be an interconnected whole. The natural features of the world are intimately linked with the human world, and this allows for entities that can be human, non-human, spiritual, and material. Everything is infused with a life force (*mauri*) and connected by genealogical relationships through which humans trace their ancestry back to the original creators of life. Relationships may also be expressed with non-human material features of one's environment: a body of water (*moana*), river (*awa*), or mountain (*maunga*) (Royal 2007). Attachment to place, and to features of place, forms an important reciprocal relationship (*kaitiakitanga*) in which humans take on the role of guardians of their environment.

² Charles Darwin, for example, applied such mapping of relationships to evolutionary thinking, tracing species across temporal and generational spans.

³ Narrative identity is defined as the construction of personal identity through integrating life experiences into an internalised, evolving story of the self, which provides the individual with a sense of unity and purpose in life (McAdams 2011).

Box 3.1: Rivers as living beings

The Te Awa Tupua (Whanganui River Claims Settlement) Act was agreed upon in late 2012, and passed into law early 2017. The Act resolves a long-standing claim by local *iwi* (tribe) over land rights and confers legal identity to the river as a living being, affording it subsequent standing and rights, providing:

Recognition of the status of the Whanganui River (including its tributaries) as Te Awa Tupua, an integrated, living whole from the mountains to sea;

Recognition of Te Awa Tupua as a legal entity, reflecting the view of the River as a living whole and enabling the River to have legal standing and an independent voice;

(NZ Government 2014)

The river system will be managed by two appointees agreed by Whanganui *iwi* and the Government, who will function as the human face of the river acting in its name and interests. The legislation includes ongoing funding to support this activity, and also addresses the long-standing settlement claim against the New Zealand Government by local Maori in allowing them to traditionally manage their natural resources.

The legislation is founded on fundamental Maori concepts of relationship and, significantly, is written in Maori to adequately express concepts, alongside English translation. Recognition is given the river's *mauri* – 'life force' or spirit – and acknowledges its distinct character: unique 'personality'. The terms, though, do not interfere with current private property rights of the river: they are not applicable to the water itself – the river is understood to be defined by the river bed, not by its water.

The Act reflects lines of recent thinking within law arguing for the 'rights of nature' (Stone 1974) where 'natural objects' are conferred legal rights. Bolivia is the first country recognised with enacting such ideas, which were written within its constitution as the Law of the Rights of Mother Earth, in 2010 (see de la Cadena 2010). The New Zealand Government also passed legislation slightly preceding the Whanganui Agreement which afforded the Te Uruwera Forest Park, a nature reserve and traditional lands to local *iwi*, natural personhood (Ruru 2014).

The Whanganui legislation attracted international attention when it was passed into law in early 2017, prompting proposals for similar legislation for the Ganges and Yamuna Rivers in India (Safi 2017). The implications for natural resource management in New Zealand are many. There remain many legal issues to be resolved as the legislation presents a new and unfamiliar framework for the existing legal system (see Salmond 2014). It addresses the long-standing battle between Maori and the Crown in recognising the customary rights afforded to Maori in the historical Treaty of Waitangi negotiations. The legislation, it is hoped, will more fully recognise and implement Maori understandings of relationships between people and the nonhuman environment. Treating rivers as living beings unsettles dominant lines of modern thinking. The Whanganui River legislation performs an experiment in hybridity, effectively converging two different lines of thinking about the world. The effectiveness of the legislation remains to be seen; nonetheless, it provocatively maps out intriguing possibilities and relational configurations of the world.

Such ideas inform my understanding of the world and, at the same time, I am conscious of the asymmetries this admission renders, further amplifying feelings of discomfort. My understanding of Maori culture comes through fractured experience: varied exposure throughout my school, personal, and professional life. I have no Maori genealogical lines; neither do I identify culturally as Maori, or profess any expert understanding of the culture. Rather, my understanding is partial and hybrid, coming through a broad experience of ‘kiwi’ culture, which has increasingly incorporated Maori language and ideas. I have drawn lines within my personal narrative that link to features of place significant during my formative years in Auckland: the Waitemata (sparkling waters), the body of water that forms Auckland city’s harbour; my⁴ mountain, Rangitoto (bloody sky), an extinct volcano located within the Waitemata. Both featured prominently in my childhood and remain potent imaginaries of place inscribed into my personal narrative.

I have previously contemplated the Waitawheta River along such lines as a means to make sense of the events that took place. Such reflection came with conflicted feelings of whether it was entirely rational to ascribe a sense of agency to the river, as a ‘teacher’ – provoking a lesson to be learned; or, conversely, whether foregrounding my own agency in learning something *from* the river smacked of arrogance. I am less concerned now with such conflicting thoughts and appreciate that for any phenomenon there will exist multiple associative lines by which it can be traced, each providing alternative interpretations and potentials. Reading lines of thought as cultural narratives about the world, their bearing is never simply linear but diverse: meandering, curving, at times following and combining with other lines, and at other times diverging.

The lines of rivers remain an important feature of the New Zealand landscape, an important environmental resource to the agricultural sector, but one also facing threats from increased human impact, notably from pollution and ineffective management (Gluckman 2017). Debates of resource management in the country are inextricably entangled with those of Maori rights and governance. Shortly after my return visit to the river, landmark legislation was passed by the New Zealand Government which employed Maori environmental concepts within legislation dealing with management of the Whanganui River, a key North Island river system (see Box 3.1).

More broadly, water governance is a critical global issue for environmental resource management. Water is taken as ‘the bloodstream of the biosphere’ (Rockstrom et al 2014, 1250) and plays a central role in both ecosystems and society. However, the Anthropocene portends

⁴ Such phrasing is common, and expresses relationship rather than ownership, much like referring to a relative as ‘my’ cousin.

increasingly unsettled ecohydrological conditions: fluctuations in water dynamics which are forecast to result in increased flooding, droughts and changes in rainfall patterns (Kabat and van Schaik 2003). For New Zealand, along with warmer temperatures, the country is expected to experience more frequent extreme weather events such as droughts and floods, and a change in rainfall patterns which will impact North and South Islands differently (Ministry for Environment 2018). The Anthropocene's increased turbulence calls for governance strategies able to build socio-ecological resilience and with adaptive capacities responsive to complexity, uncertainty and surprise – a critical challenge to outmoded ways of steady-state thinking and incremental change (Scheffer et al 2001).

While the Te Awn Tepua Act is not designed specifically to respond the threat of Anthropocene conditions it has attachments to the kind of experimental environmental politics that has emerged in response to 'post-natural' and non-linear systems thinking: not in the same category, but having broader associations with the kinds of 'wild experiments' discussed by Lorimer and Driessen (2013). To bring personhood to a non-human assemblage (a river) asks us to transcend conceptual boundaries with uncanny consequences – certainly to those tied to rationalist ontologies. Is the river a man or woman? Can it vote? Can it be prosecuted, say in the instance where it harms someone? In short, no, the river's personhood does not afford it human rights, but merely performs a legal fiction which characterise the river in a political-legal narrative. Such a manoeuvre, however, offers an opening in how natural resources might be differently managed, and perhaps a glimmer of hope that political and bureaucratic structures may be amenable to alternative – even ontologically radical – governance frameworks

* * *

As a first empirical encounter in this thesis, my return to the Waitawheta River acted as an experiential proxy for feeling ill-at-ease in the world. Returning to and focusing on a personal encounter significantly reoriented my perception of the world in uncanny ways. Here, it constituted an experiment in interrogating individual bodily and ontic unsettling in light of Anthropocene dwelling. Retuning to memories of the event, and to the location itself, allowed me to reflect on feelings of unease and disorientation; to be drawn down 'strange pathways' of thought and contemplating 'nature' as a force to be reckoned with (Clark 2005). The exercise has also been one of remaining open to unexpected sensations, thoughts, and ideas: being attentive to non-linear and more-than-rational currents and vectors. And, while I approached the exercise being receptive to varied outcomes, the expectations I had at the outset proved to be confounded. Anticipated feelings of relived trauma did not materialize. Returning to

the event, both conceptually and physically, did have affective unsettling reverberations but these were moderated by an emergent wider appreciation of the incident. It may be that the time passed since the event has blurred affective lines; but also, returning with a philosophical framework as a contemplative aid provided a useful tool for sense-making.

To attempt to 'return' to a previous event in one's life – and in this case one involving a river – comes with both philosophical pertinence and irony. As pre-Socratic Greek philosopher Heraclitus is famed for saying, “you can not step twice into the same river”, while, “everything changes and nothing stands still” (Plato *Cratylus*, 402a). Heraclitus argued that the fundamental essence of the universe was to be in a war of ever-present change: fire would turn to air, air would become water, and water would become one with the earth. Correspondingly, life is followed by death, and with death comes an opening for rebirth and new life. Rather than being a process – which would suggest such activity was linear, proceeding only in one direction – Heraclitus argued the universe and its constant change was cyclical, perpetually shifting back and forth between states (Graham 2005). The river aphorism illustrates such ideas, meaning that the moment a person steps into a river water is displaced with new water taking its place. The river is therefore changed permanently and, similarly, the person stepping into the river is also changed: they lose skin cells, their skin is made wet by the river, and they have aged ever so slightly since stepping in the river. Thus, such small but unavoidable changes in both the person and the river make them different from the way they were before.

My attempt to return to the incident crossing point in the Waitawheta River, by such logic, is an impossibility: both myself and the river are very different. The feelings of discontinuity that arose undertaking the exercise were, therefore, fitting – and useful indicators towards contemplating ideas of fluidity and flux, which themselves are entangled within Anthropocene conceptions of the world. The planet on which we live is inherently dynamic, but this dynamism is difficult to discern across all the dimensions it operates. In consequence, the quality of fluidity became a significant theme for this thesis, and one which I return to within subsequent in-field encounters contemplating both physical and conceptual associations.

The temporal scale of geologic change requires us to recalibrate how we view and perceive the world around us; to reach beyond our own narrow individual human temporal awareness. Returning to this event also provides additional conceptual lines by which to reconsider those more material human boundaries. In comparison to Plumwood's encounter with a predatory animal which saw her as merely a 'fleshy' body-in-the-world and a piece of meat for consumption, in my case the river's 'interest' with me appears one of basic water flow and sedimentary

dynamics: I became a component of the material debris load to be carried and sorted by the river flow. The difference is seemingly a small one, but one which renders visible the unsettling anthropocosmological constitution of the world as a manifold elemental mesh; within circumstances that foregrounded the agential limitations of a self-aware – and potentially self-aggrandising – fleshy being. To the assemblage of material elements and energies of the river I was merely a bundle of matter – nothing more.

Such experience usefully illuminates key relational incongruities. The first comes from disruptive associations rendered by states of suspension. Becoming part of the river's material flow; being suspended in its watery volume, conceptually and methodologically frames this thesis' unsettling impulse. To be suspended is to stop, pause, or hang. This can mean to halt something from being active, either permanently or temporarily, but also to hang or float within gas or liquid. It is a concept that Choy and Zee (2015) bring to bear on Anthropocene atmospheres, but which I find pertinent to my own turbulent encounter. While suspension of atmospheric particulates is a key Anthropocene concern, the possibility of conceptual suspension is rendered through a potential phase-shift moment: between Holocene and Anthropocene. Similarly, the ethnographic method calls for undertaking suspension: "of assumption and disbelief, one that not only describes worlds but holds them in such a way as to allow them to settle into different arrangements, possibilities" (Choy and Zee 2015; see also Tsing 2010, 193). Thus, in the moment, my turbulent river suspension thwarted my own sense of agency; with the broader experience triggering expanded ontological dissolution.

Such dissolution, however, becomes a necessary result of coexistential unsettling. As Clark (2011, 50) reminds us, the asymmetrical relationship we have with the planet is one in which we stand as vulnerable geological subjects, dependent on an earth largely indifferent to us. We may be intellectually aware of such a relationship – as was Plumwood – but the profound implications may only be truly appreciated through visceral experience. Caught within the turbulent flow of river water I was, in some sense, dehumanised: I became nothing more than a material object acted upon by forces indifferent to my presumed 'unique' human status. The realisation that we may not have any special standing is a challenge not only to one's personal sense of self, but to dominant cultural narratives which elevate humans as 'masters' over the earth and other creatures – and for those Anthropocene narratives that want to cling to such associations.

Such revelations are not a necessary outcome of all traumatic events or near-death experiences, and in my case – as well as Plumwood's – such lines of thinking are only the result of reflective analysis undertaken after the event itself. It is debatable whether returning to

contemplate an unintended unsettling event strictly satisfies Nietzsche's existential incitement to 'live dangerously'. It would seem, however, that post-trauma contemplation and analysis can be beneficial. In psychological terms post-traumatic growth refers to positive psychological change experienced as a result of the struggle with highly challenging life circumstances (Calhoun and Tadeschi 2013). And, from my small experiment it would seem there are things to be learned from reflecting on, and even attempting to retrace and return to, traumatic encounters.

The point of living dangerously is not to die, but rather focus on the reorienting potential that can come from unsettling experiences to which we allow ourselves to be exposed. Such disruptions can take us outside our comfort zones, expose us to circumstances – physically, emotionally, conceptually – that we would not normally experience. They have the potential to shake the very foundations of our imagined world and aid us in appreciating its constitution very differently.

In this chapter, I have focused on a traumatic personal experience as a way of returning to and exploring feelings of unsettlement and displacement. Feeling unsettled, ill-at-ease, and not-at-home act as significant registers for worldly suspension, and subsequent orientation within Anthropocene conditions. Such themes remain a focus for the next chapter, although, the lines it traces are less personal and rather attuned to those collectively unsettled by traumatic experience. I focus on an event in which 'ground' is again shaken beyond recognition by unfathomable planetary forces, suspending normal modes of dwelling, and fracturing the individual and shared order mapped out on its surface: a site of both emergency *and* emergence.



Figure A: Rock drive, 2017. A computer storage device with a housing made of stone; a reminder that our own lives – and memories – are fleeting against the geological. (Source: author.)





Plain

Chapter 4 | Unfamiliar ground

Continuing an interest with disruptive and traumatic events, this chapter focuses on the unsettling rendered by geologic upheaval. I focus on recent events in the city of Christchurch, recently impacted by a series of powerful earthquakes which destroyed buildings and infrastructure, and disrupted hundreds of thousands of lives. I visit the city and survey traces of disruption. The focus is less autotopographical than in the previous chapter. I do not seek to revisit quake events themselves but rather examine immediate and ongoing responses to these traumas. Place remains important and I trace remnant lines of personal connection, as well as survey wider responses to events: social, political, and affective. Disruption to place through disaster events serves to disorient, rendering well-known ground unfamiliar.

For Christchurch, the familiar city landscape has been fractured by intractable earth forces. Exploring such ground has potential to give insight into dwelling with unfamiliar conditions.

I begin by locating Christchurch within the geologically dynamic landscape of New Zealand. Once in-field, I trace multiple lines through the city and through activities seeking to resettle and reshape ground. I survey sites of disruption and examine the generative potentials rendered, finding that these come with attached tensions and paradoxes: while novel community ties can emerge under such conditions, disruption comes with pernicious consequences. I consider the unsettling effects on those living in Christchurch. Like the earthquakes themselves, the immediate shock is followed by lingering resonances of ongoing disruption and disorientation.

The Shaky Isles

I gaze out of the plane window. The weather conditions are clear with only a light scattering of cloud allowing an impressive view of the topography of the country as I fly from Auckland to Christchurch. Although a large amount of originally forested area has been cleared for agricultural use the landscape remains visibly green – especially at this time of year, early spring.



Figure 4.1: The view from the plane, flying down the west coast of the North Island looking inland.
(Source: Author.)

And, from this height, the geologic forces that have shaped this landscape become clearly visible: fractured lines puncturing an otherwise even ground. Our route skirts the western edge of the North Island. The verdant agricultural landscape is eventually interrupted by the distinctive cone of Mount Taranaki which juts up, snow-capped and ringed with cloud. The mountain is a geological sign of the volatile history that has shaped the central North Island, a region which remains volcanically active.

Past Taranaki we encounter other geologic features which define this archipelago; a series of alpine ranges that cut diagonally across the lower half of the island: the Tararua and Rimutaka Ranges, followed by the Wairarapa-Masterton Basin. The rift responsible for these features continues onto the South Island, running diagonally across the top half of the island and down its western side forming in the Southern Alps.

The New Zealand landmass is a result of friction between tectonic plates; the country sits astride the convergence of two: the Pacific and Australian plates (see Figure 4.2). The Pacific Plate is subducted (forced below) the Australian Plate from close to the Pacific island of Samoa in the north, forming the Tonga and Kermadec Trenches, and the Hikurangi Trough to the east of the North Island, down to Cook Strait – the channel that divides the two main islands – and through the top half of the South Island. The plates then change to sliding past each other with a small amount of obduction (upwards movement) of the Pacific over the Australian Plate

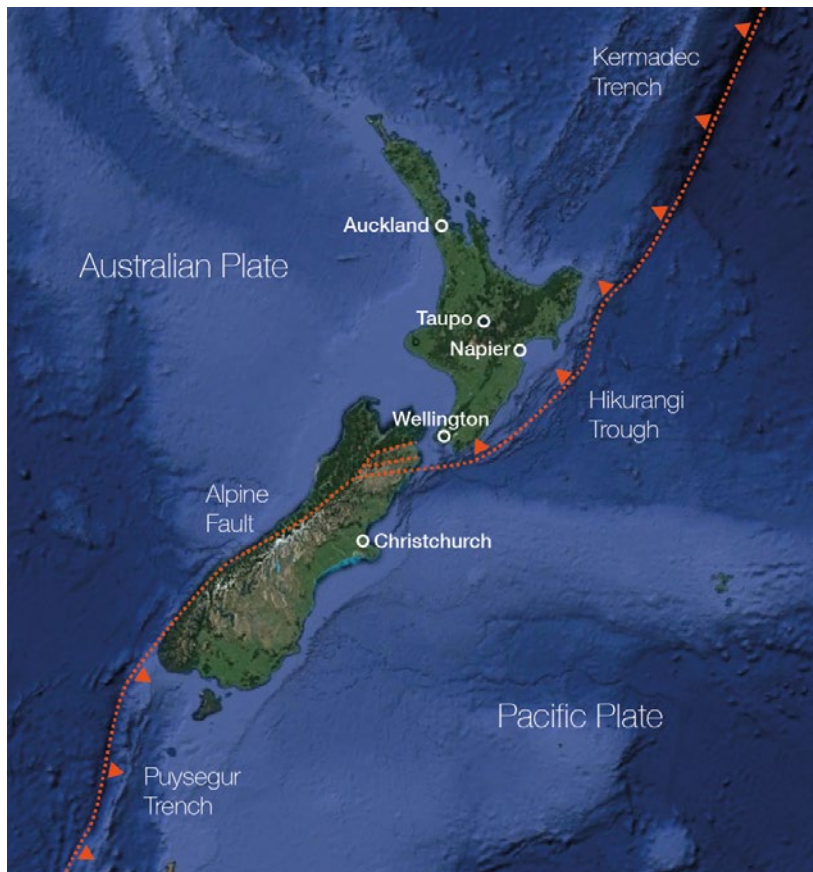


Figure 4.2: Map of New Zealand showing its position atop two tectonic plates. (Satellite imagery: Google Earth/CNES/Astrium Image Landsat/Copernicus.)

creating the southern Alpine Fault and, subsequently, the impressive Southern Alpine Ranges. From the bottom of the South Island the Plates return to subduction and form the Puysegur Trench which runs south towards the Antarctic (McSweeney and Nathan 2015).

The position of the plate boundary has moved over time. The North Island was the earlier result of such geologic friction, with the top of the Island formed at the plate convergence some 23 million years ago. The Coromandel Ranges, located in the eastern part of the North Island, were formed somewhat later around 10 million years ago, with activity moving further south and being responsible for the Taupo Volcanic Zone in the central North Island, which is still currently active. The Alps of the South Island are more recent having formed only in the last 10 million years (Graham 2008).

New Zealand's dynamic geology led to the country being known as 'The Shaky Isles.' Today the name is rarely used, invoked only tongue-in-cheek (Taylor 1997), yet it remains fitting. Over 14,000 earthquakes are recorded every year – although very few are large enough to be felt. Evidence of this dynamic history is visible in remnant landforms and geothermal regions. A number of notable events have also occurred within recent history, aside from events in Christchurch. The last 'Big One' was a magnitude 7.8 earthquake in 1931, which struck the east

coast of the North Island close to the city of Napier. The entire city was levelled by the quake and the more than 500 aftershocks, killing 256 and injuring many thousands. It remains New Zealand's deadliest 'natural' disaster.

Recent volcanic activity has shaped the landscape of the largest urban centre, Auckland, yet remains hidden in plain sight. The region is littered with the remnants of some 53 volcanoes: maars (explosion craters), tuff rings, scoria cones, and lava flows (Hayward et al 2011). My own formative years were spent (obliviously) exploring this volcanic landscape. I grew up playing around Taylors Hill (or Te Taurere), a small scoria cone in east Auckland formed about 32,000 years ago, historically used as a pa (hill fort) by Maori. A local recreation reserve, Glover Park, is situated on the site of a 50,000-year-old volcanic crater. The Auckland Domain, a destination for many weekend family trips, lies on the site of one of the oldest volcanoes in the volcanic field (Pukekawa). A lake formed by the large crater tuff ring was drained to create the current-day playing fields and parkland. The youngest and arguably the most iconic volcanic cone sits in the Hauraki Gulf to the east of the city. Rangitoto, a 250m-high circular 5.5km-wide shield volcano, was formed by eruptions beginning 6,000 years ago and continuing until 600 years ago (Tamzin 2015), making it one of the few cones whose formation humans would have witnessed (Nichol 1982).

Today the central North Island is the focal-point of current volcanic activity. The cones of Tongariro, Ngaruhoe, and Ruapehu are visible indicators of still-active volcanoes, while geothermal fields are spread across the Taupo region. The country's largest lake, Lake Taupo, at 619 square kilometres covers a series of calderas (collapsed volcanoes) as well as many underwater vents. The event that created the lake 26,000 years ago was big, the largest eruption event on Earth in the last 70,000 years. Taupo has erupted some 28 times in the last 27,000 years, with the most recent occurring just 1800 years ago (Froggatt 1997).

Given the country's dynamic history, a significant seismic event was expected. What was unexpected was where it struck.

The unexpected

Christchurch is the largest city in the country's South Island, situated on the east coast, just north of Banks Peninsula. It is New Zealand's third largest city with a population of just under 400,000, placing it behind only Auckland and Wellington (Statistics NZ 2016). The city – and wider Canterbury region – has been dealing with the after effects of a series of major earthquakes which struck almost six years ago. While earthquakes have occurred over Christchurch's

colonial history, the size of the recent quakes was far greater than expected (Elder et al 1991). Geologists predicted that an event would occur along the main Alpine Fault spanning the Southern Alps, with Christchurch only feeling reverberations. However, the 2010–11 quake events exposed the location of a previously unknown fault line running underneath the Christchurch region (NZSEE 2011).

The first quake struck on 4 September 2010 with a magnitude of 7.1, and with an epicentre just 40 km west of the city centre. Damage was widespread throughout the region and the central city was significantly impacted. Utility services were affected and many buildings damaged, particularly historic ones. A state of emergency was declared for the city and civil defence services were mobilised. There was no immediate loss of life from the quake due to its early-morning timing, meaning very few people were in the city.

As recovery efforts were underway, some six months later on 22 February 2011, a second large earthquake struck. This may have been just another aftershock (to date there have been approximately 13,000), although the quake may have been caused by another fault (Anderson 2011). In any case, the smaller-magnitude 6.9 quake hit the city even harder than the first. Closer and shallower than the September event, the forces exerted were far greater. New Zealand building codes specify capacity to handle a '500-year' event: the February quake equated to a 2500-year episode (SeSoc 2011). Buildings and infrastructure already weakened by the previous quake were further impacted. This quake struck at midday on a week day. Many people were at work in the city, and 185 lives were lost.

Damage to buildings in the central city was extensive. Many of the historic buildings already weakened collapsed. Impact was widespread across Christchurch's suburbs. Over 100,000 homes were damaged with at least 10,000 requiring demolition. In the east, there had been significant soil liquefaction (quake stress causing saturated soil to behave like a liquid) producing around 400,000 tonnes of silt. As a result, large areas have subsequently been classified as unsuitable for rebuilding. Tracts of previously urban residential land bordering the course of the Avon River which bisects the city were designated the 'Residential Red Zone', unsafe to occupy.

The rest of the country has also felt the impacts of events. The 2011 quake registered as far away as Tauranga (700km) in the North Island and as far south as Invercargill (460km). And, for a small country both in size and economic capacity, the event has reverberated in other ways. Safe accommodation became an immediate concern for Christchurch residents. Those able to remain in damaged houses often had to make do without electricity, water or sewerage

systems. Many were left homeless, resulting in a substantial population redistribution. The city centre became a 'no-go' zone, businesses were forced to relocate to suburbs, and there was an exodus of people to nearby regions. Many chose not to stay at all, moving to other cities around the country or overseas. The country's second-largest city at the time of the earthquake, Christchurch has since been eclipsed by Wellington (Statistics NZ 2013).

The quakes have also taken a financial toll. The estimated cost has ballooned to over NZ\$40 billion making it New Zealand's costliest disaster (Bennet et al 2014, 22); and it ranks as the third-costliest earthquake (nominally) worldwide (Wood 2012), due to the high rate of building insurance in New Zealand.

The reverberations of events in Christchurch are many, but I am interested specifically with how such large-scale disruptions unsettle and disorient people's lives, as well as both physical and imagined sense of home. To be clear, I do not argue that events in Christchurch are the result of the Anthropocene. Although earthquakes often result from large-scale human activity, such as mining or significant landscape modification (Witze 2017), the Christchurch events appear to be the result of fundamentally 'natural' causes, resulting from a complex interaction of up to seven geological fault lines (Elliot et al 2012). The Anthropocene, however, might be best approached as the 'disaster to end all disasters' (Clark 2014, 21); a kind of event which, following philosopher Maurice Blanchot (1995) – as well as the pathways explored in the previous chapter – marks a crisis of such extremity that it undermines our very capacity to make sense of the world. Such emergencies may overwhelm our quotidian senses and sensibilities, and provoke us to perceive, think, and act in new ways. Here, then, lies the parallel with moral and political imperatives emanating from the Anthropocene.

Within the field of disaster studies, the significance of place and human attachment to place has emerged as a significant theme in understanding disaster recovery and resilience (Cutter et al 2008; Scannell and Gifford 2017). The spatial disturbances of disasters powerfully affect one's familiar experience of place. The many losses that result – social ties, property and possessions, cultural practices, places of significance, orienting landmarks (Cox and Perry 2011, 164) – can create a profound sense of disorientation, resulting in feelings of loss and emotional distress (Greene et al 2011). Sense of self is psychologically attached to place: our homes and geographies are sites where we perform ourselves and create a personal narrative that coherently connects past and present events and behaviours. Severe disruptions to place threaten our sense of stability and, ultimately, our sense of identity (Fullilove 1996). For Christchurch, the disruptions to geography and to everyday life have been significant.



Figure 4.3: Descent into Christchurch. The Canterbury Plains are a mosaic of agricultural activity. (Source: Author.)

A city once well-known has been rewritten, fracturing familiar lines of connection and pathways. Those remaining in the city have been challenged to reorient and rewrite both their lives and conceptions of 'home'.

Such 'homelessness' in post-disaster scenarios becomes an existential moment: an emergency that disrupts quotidian life, subsequently allowing new social forms to unfold. The suspension of normal life was a focus for anthropologist Victor Turner (1969, 1974), investigating 'liminal', phase-change states 'betwixt and between' normal social conditions. Disaster studies scholars have applied such thinking to emergency contexts seeking to draw connections between disaster, liminality, and recovery (see Baker et al 2007). Most effectively, the anti-structure rendered within disaster scenarios can provide openings for citizens to break from restrictive ties to existing structures (Hearn 1980), and allow the formation of post-disaster *communitas*, where strong community ties are forged in response to challenging circumstances (Jencson 2001; Richardson et al 2014). Post-disaster Christchurch, therefore, provides an expanded example of suspended dwelling: an example of life paused or hanging within a disruptive or turbulent state, and with outcomes both generative and paradoxical.



Figure 4.4: Our City O-Tautahi, an important heritage-listed building in the city centre damaged by the earthquakes. Heavily braced with scaffolding, it awaits extensive repair. (Source: Author.)

Christchurch, 2015

As the flight begins its descent into Christchurch I peer out the window looking for some visible sign of the quake. We are making our approach across the northern stretch of the Canterbury Plains. The plains appear a picture of agricultural orderliness. The only features that stand out against the geometric patchwork of fields are patterns of braided lines faintly etched into the ground, but too delicate to be traces of recent tectonic ruptures.

After landing I take the bus from the airport located to the northwest of the city into the city centre where I will be staying. Weaving through the suburbs of Christchurch I'm immediately struck by a number of things: they are very flat and very quiet, and appear surprisingly normal. I see very little evidence that this is a city in recovery from a major disaster. One telling sign – and something I only pick up on later – is that most motels and hotels display 'no vacancy' signs: the influx of contract workers involved in the rebuild effort has created a high demand for temporary accommodation. As well, the north-western areas of the city have not been significantly affected, but it will be a few days before I am able to visit Christchurch's north-east which experienced more severe impacts.

I arrive at my accommodation located close to the city centre and decide to take a walk through the city to orientate myself. It has been many years since I was last in Christchurch – almost two decades. I spent a summer here, staying with my brother who was living in Christchurch at



Figure 4.5: View of Cathedral Square at the heart of Christchurch city. The Anglican Cathedral can be seen image-left, fenced off and braced by supportive scaffolding. (Source: Author.)



the time. I used the city as a base while planning travel excursions around the South Island. We spent a good deal of time in the central city, especially at the Arts Centre, a hub for arts, crafts, and entertainment housed in a stunning turn-of-the-century brick complex. Cathedral Square – the geographical heart of the city – was one of our main hangouts, and where we celebrated New Year's Eve with thousands of others.

I set out from my hotel and cross the Avon River heading towards the central city. The experience is immediately eerie; there is very little that I recognise. The city has become a patchwork of sites: some piled with rubble, some cleared and vacant, others being prepared for construction. Mesh-wire fences inscribe temporary boundary lines, and orange traffic cones mark transient roads and walkways. I am immediately disorientated. Very little appears familiar; the city landscape is unrecognisable from the one I remember. In an attempt to gain my bearings, I resort to using the map on my smartphone to navigate. A few key buildings remain, as do main roads, but I feel I could easily be in a totally different city.

My visit is almost five years after the first quake. During this time rubble from downed buildings has been cleared and structures deemed beyond repair have been demolished and largely cleared – though piles of debris remain on some sites. Over 1000 buildings have disappeared from the central city. Historically significant sites considered repairable have been cordoned off and buttressed to prevent further deterioration (see Figure 4.4). The fate of such buildings, however, remain precarious, subject to further engineering tests, and reliant on political and financial backing. Which buildings to demolish and which to restore has become a contentious issue within Christchurch.

The iconic Christchurch Cathedral sitting at the heart of the city has become the focus of such debate. Built in the late 1800s the cathedral has survived numerous earthquakes only experiencing minor damage. The recent quakes, however, toppled its 63-meter steeple and caused severe damage (see Figure 4.4). Subsequent debate on whether the structure should be demolished or rebuilt became contentious. Not only was the building heritage-listed, for many it is an important architectural feature as well as iconic symbol for the city (the Cathedral features prominently in the Christchurch City Council logo). Many parties became involved in the debate: the church, the heritage lobby, architects and engineers, as well as the public. After much legal tussling the issue was taken to the Supreme Court for resolution. At the end of 2015 the Court resolved that the Cathedral would be reconstructed (Wright 2015), but as of mid-2017 no work had begun prompting the Government to announce it was ready to intervene and initiate reconstruction (Gates 2017).

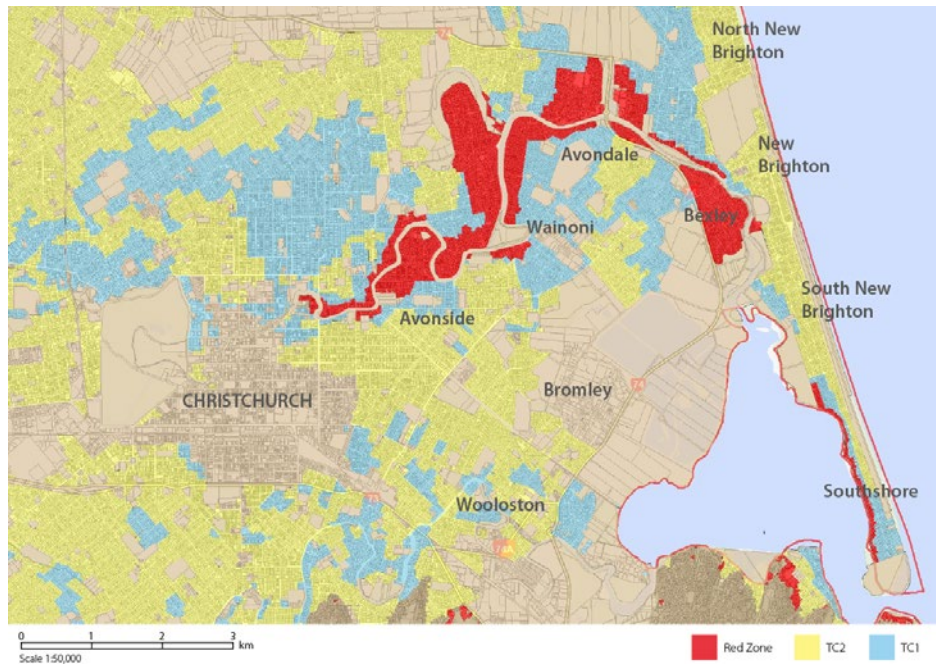


Figure 4.6: Map of the wider Christchurch area showing the zoning designation applied after the quakes. (Source: Environment Canterbury.)

The intensity of debate over just a single building suggests how potent the Cathedral is as both a structural and psychological feature of place. Without it I sense that many of those remaining in Christchurch would perceive an unsettling ‘gap’ in the city landscape. The church – an institution, a building, an enduring presence, is after all captured in the very name of the city. For the post-disaster task of reorientation – of remaking identity in a now-unfamiliar landscape – reconstructing familiar points and lines of connection is paramount (Cox and Perry 2011, 401). The concept of rebuilding is an important one and, while the Cathedral debate is reflective of wider post-quake concerns, decisions of what to restore, what to remake and what to change overshadows the crucial question rendered by the quakes: whether rebuilding Christchurch was in fact a viable proposition.

Unsettled ground

What has drawn me to Christchurch is the deep scale of disturbance. The visible impact we see is simply surface evidence of powerful geological shifts and readjustments which fundamentally unsettle deep ground. Disasters have the ultimate capacity to render ground uninhabitable, making rebuilding or a return to normal life – human or non-human – impossible. For most of us such ‘unthinkable’ scenarios (Kahn 1962) are difficult to envision, but they can and do happen.¹ For Christchurch, the magnitude of impacts was significant enough for proposals

¹ The Chernobyl nuclear power plant accident in 1986 forced the reallocation of 250,000 people; the Great Sichuan earthquake in 2008 in central China killed 70,000, left 4.8 million homeless, and required a town of 20,000 to be relocated (China Daily 2008).



Figure 4.7: The landscape of the residential Red Zone, with some buildings having been demolished and removed due to safety concerns (Source: Author.)



of relocating the city to a more geologically stable site to be seriously considered in post-quake discussions. Ultimately, rebuilding was chosen, and this meant geological instability would be issue not only for the immediate reconstruction process but will remain a lingering one for the city's foreseeable future.

A concern with ground and stability was a theme I noticed within many conversations I had during my time in Christchurch. Geology was a common topic when discussing life in post-quake Christchurch, especially in relation to homes. I visited a number of friends during my stay and all had experienced adjustments to their living situation, such as a house relocation or rebuilding. Knowing the geotechnical details of a property's ground conditions appeared to have become normal; and on a number of occasions conversations quite naturally turned to discussing the results of core sampling, soil types, and the size of building foundations.

For Christchurch, geology has always been important but largely of specialised, technical interest. The forceful unsettling of ground, however, has made the geological more visible and more relevant to everyone. If geological zones are spaces where humans are absent (Clark 2011, xvii) – existing only at the surface – then earthquakes cut across boundary lines, acting as a palpable and powerful reminder of the concealed planetary potencies always beneath our feet.

Surface marks are signals of different kinds of activity: cracks, folds, craters, and the like – those that I was able to discern as I flew over the country. Other marks can be subtle. Those faintly etched braided lines I saw on the ground as my plane descended over the Canterbury Plains are evidence of a different kind of ground-making. Christchurch is situated on the edge of a large floodplain and the ribbon lines indicate paths of old river channels. A braided river occurs in instances where there is a high sediment load and the waterway runs through environments that have dramatically decreased channel depth. The Plains consist of moraine gravels which have been deposited in glacial periods from 3 million to 10,000 years ago. More recently, as the Waimakariri and Rakaia Rivers have created alluvial fans, the topography of the region has been reshaped. When Christchurch was settled in 1850 the Waimakariri River was at the northern extent of the floodplain fan and ongoing river management has been required to prevent the river's return to old channels now obstructed by the location of the city. Appreciating rivers and their flows is therefore crucial in understanding the situation in Christchurch. And, outside of the central city, the land most affected by the earthquakes has been that bordering the path of the Waimakariri River, the city's northeastern suburbs now designated as the residential 'Red Zone'. After the quake Christchurch became a city of such zones. The Red Zone encompassed residential land that had suffered damage and was regarded as too risky to build upon. The Green

zone marked residential land considered safe. Additional zones indicated areas requiring more investigation. Immediately after the quake the central city precinct was classified a Red Zone and evacuated. Further testing led to a more comprehensive map of the region, and the Green Zone classification was divided into three technical categories (TC). The categories indicated expected ground response in future earthquakes, and thus requirements for building on Green Zone land: TC1 is considered safe; TC2, minor damage and liquefaction possible; TC3, moderate damage and liquefaction possible.

I was offered a tour of the Red Zone by Professor Eric Pawson, a geographer at the University of Canterbury whose research has focused on post-quake events in Christchurch (see Pawson 2014, 2015). In contrast to my mundane experience of the city's north-western suburbs, the Red Zone was decidedly eerie (see Figure 4.7). Most properties in the Zone had been vacated. Some houses appeared normal, apart from looking unkempt and having overgrown gardens, but others showed clear signs of earthquake damage, having fractured walls and missing windows. On other sites only piles of rubble remained. Evidence of ground displacement was visible in the fractured and uneven road surface. Most eerie in such a suburban landscape was the absence of any human activity.

In conversation during the tour Professor Pawson reiterated the significance of geology in understanding the situation in Christchurch and the post-quake response of choosing to remain and to rebuild on unsettled ground:

You couldn't think of a worse place to build a city with the risk of liquefaction. Parts of the city are old river channels, and other parts are old sand dunes. By 'old' I mean less than 10,000 years... extremely recent, geologically speaking. You've got areas until recently – up to 1900s – were swamps. So, one of the reasons the earthquakes caused so much damage to underground structures and buildings is because basically the city is built on a 'bowl of porridge'!

And, even with all the geotechnical assessment, mapping and zoning, Professor Pawson remained sceptical about ongoing security within 'safe-build' zones:

I'm just astonished that this sort of thing [the rebuilding in TC2/3] is going ahead in such vulnerable places because it entirely depends on the flood defences on the southern part of the Waimakariri river not exceeding their design limits.

Put more bluntly:

The underground topography of the city is totally fucked in comparison to what it was previously.

Such conditions make the decision to keep the city in place and to rebuild grate against the relocation proposal – as radical as that might have been. I posed the question to Professor Pawson: why then had the decision been made to rebuild? Cost, he suggested, was a significant



Figure 4.8: The Christchurch rebuild plan displayed in the Future Christchurch information hub. (Source: Canterbury Earthquake Recovery Authority, 2015.)

factor. Beyond psychological attachments to place, contemplating the scale of such a task on many fronts – social, political, legal, logistical, and economic – is daunting. The cost of purchasing even just the 7,000 properties in the Red Zone has cost the Government more than NZ\$1 billion (Scott and Carville 2016); there are over 100,000 homes in the wider Green Zone. Such a move would “probably bankrupt the State”, Professor Pawson suggested.

Wanting to rebuild one’s home in-place is understandable. For the process of reorienting after experiencing disruption reinscribing familiar lines may simply appear to be an easier task than relocating and rewriting new ones. Rebuilding on ground known to be unstable nevertheless poses deep geotechnical problems. For Christchurch, paradoxically, the ground was understood to be unstable *before* the quakes, and yet now, afterwards, the impulse to rebuild still prevails. I’m struck that such thinking has a similar tenor to hubristic ecomodernist Anthropocene strategies. Infused with an over-confidence in the human capacity to subdue and control natural forces, our species’ Holocene desire for settled life persists, even when encountering the more profound asymmetries rendered by planetary forces.

Plans to rebuild

The rebuild process has been more complicated than expected, being politically fraught, costly, and drawn-out. A background to the political process surrounding rebuild decisions is useful for contextualising ‘reorientation’ responses. In this section I briefly trace out political lines before focusing on themes emerging from rebuild responses. For Christchurch, the scale

of damage to buildings opened up possibilities beyond just simple restoration of the central city, allowing a more comprehensive reimagining to be contemplated (Pawson 2014). The New Zealand Government acted swiftly, establishing an entity responsible for overseeing the reconstruction process: the Christchurch Earthquake Recovery Authority (CERA). A Minister was appointed to oversee projects and legislation and was afforded powers to bypass existing New Zealand law to expedite the reconstruction process.

Christchurch City Council was charged with developing a new city plan to be submitted for Government consultation. The Council engaged Danish firm Gehl Architects, renowned for their innovative people-centric planning approach, and who had recently undertaken a liveability assessment of the city. Gehl organised a public consultation process in which anyone could submit ideas. The 'Share an Idea' campaign gathered more than 100,000 ideas from which five key themes were identified: a green city; an accessible city; a stronger built-identity; a compact central business district; a place to 'live, work, play, learn and visit'. The Council developed its draft Central City Plan (CCP) from the themes, opening it to public consultation.

The first stage was undertaken swiftly within six months after the February 2011 quake. After public consultation the plan was forwarded to the Minister for Canterbury Earthquake Recovery, Jerry Brownlee, for approval. After four months without comment the Minister finally responded supporting the principles of the plan but criticising it for lacking detail and being too restrictive. A few months later the Minister established a new unit within CERA, the Christchurch Central Development Unit (CCDU), comprising a team of urban designers who were then tasked with rewriting the plan for the Government. This was done in the frame of 100 days and was launched at the end of July 2012. To the surprise of many the next day it was approved without further consultation or review process.

The new Government plan included some ideas from the Council draft plan, such as a condensed CBD, a more centralised city precinct including a transport centre, and extended green urban spaces. However, it excluded others, such as a central-city road system redesign, and the implementation of light rail. But perhaps most controversially, the new plan took what many considered to be a heavy hand in reshaping the central city layout by excluding public consultation. Christchurch East Labour MP Lianne Dalziel (who had become mayor of Christchurch when I visited) slated the manoeuvre as undermining democracy, rather than supporting the important role of local government:

The solutions to all the problems we face in Christchurch can be found in strengthening the Council so that it can perform its proper function in collaboration with the citizens of Christchurch, not to usurp its role with a government department without any practical knowledge and experience of urban planning and design. (Dalziel quoted in Holden, Sachdeva and Hartvelt 2012, np)



Figure 4.9: View of the central city landscape showing the 'vacant' space created by building removal.
(Source: Author.)



The Government's proposal of precinct areas and anchor projects overwrote many existing structures: the 1930's Majestic Theatre would be demolished to allow for road widening; old council buildings would be replaced with a transport interchange; an arts and shopping precinct would be replaced with a new sports stadium; the existing Town Hall would be demolished to make way for a performing arts space. Such an overbearing approach proved unpopular with the public. For a city that had lost over a thousand buildings in the central precinct, proposals to remove more in what appeared to be a poorly considered way were not taken well and provoked widespread criticism. The Government plan treated the city as a blank canvas: an empty site on which to inscribe new lines. Far from being blank the city had many built-up layers of history, organic social flows, and existing infrastructure which residents of Christchurch felt were being bluntly overwritten.

The heavy-handed Government intervention with the rebuild process has been criticised as a form of 'disaster capitalism' (Klein 2007), where post-crisis response is led by right-wing economic ideology, using disruptive conditions to circumvent normal democratic process. The Government's rebuild plan was argued to be not just a spatial plan but a mapping of political and economic interests favouring those in power, and indifferent to the wider needs of the city and its citizens (Paton and Johnston 2017, 175; Miles 2017, 88). Where Christchurch's state of emergency had opened up new lines of possibility normative political forces have sought to steer such possibility along more mundane trajectories.

Stress points; fracture lines

From my conversations with people, I sensed that many were fatigued: tired of the ongoing disruption to their lives and wanting some semblance of 'normality' to return. Admittedly, my visit to Christchurch was during a period when the rebuild process was considered to be 'stalled' due to multiple issues such as on-going political wrangling, economic instabilities and lack of investment, and other unforeseen problems that have slowed down plans (McCrone 2014).

For all the time and energy that appeared to have been put into developing new plans, Christchurch did not have the feel of a city being rebuilt: visible signs appeared patchy and tentative. Only a small number of new buildings had been erected, largely on the central periphery. Construction appeared underway in only a few sites and much vacant space was visible. On the periphery, where whole blocks of buildings had been removed, empty grass plots sat looking like large playing fields, but having a more desolate atmosphere (see Figure 4.9).

Other indicators of ongoing stress and trauma were visible. I noticed placards and flags hung in protest against the Government, CERA, and insurance institutions. Some voiced anger at imposed decisions which had led to buildings being removed without consultation. Other signs expressed frustration with institutional process and ongoing delays, such as with receiving compensation for property damage. One sign affixed to the side of a badly damaged property read: “5 years. No rebuild. Still waiting.” The number 5 overwrote the number 4 beneath.

I also noticed posters for a mental health campaign. “It’s *all right* if you’re over it right now” was the key message on one. Another, more encouragingly, proclaimed “It’s *all right* to feel proud of how we coped”. Canterbury District Health Board and the Mental Health Foundation of New Zealand had developed the campaign as a response to increased mental health issues. Prior to the earthquakes the Canterbury population had a mental health profile on par with or better than the rest of the country, reflecting its comparative affluence (CERA 2014). But, post-quake, mental health issues had increased dramatically, with rising anxiety and depression, accompanied by marriage break-ups, drug issues, and school difficulties for young people (All Right? 2017). In the Canterbury area, there had been a 43-percent rise in adults seeking professional help, and a 69-percent rise for children and youth (Humphrey and Renison 2015). Post-traumatic stress after a disaster event is common (Galea et al 2005), and for those in Christchurch ongoing uncertainties and stresses have continued to be felt.

Five years is a significant amount of time to experience ongoing personal stress and unsettlement. However, it may be unrealistic to expect the rebuilding of central Christchurch to have been completed within such a timeframe given the complexities. Curious, I visited the ‘Future Christchurch’ office, situated in a temporary booth at the heart of the city rebuild zone. The service was created by CERA to provide information to the public about Christchurch rebuild plans. A staff member confidently explained to me that the central-city rebuild will be completed within the span of five years, and that everything was on track to get “back to normal”. His advice appeared highly optimistic in comparison to what I had seen from my own survey of the city. However, such claims need to be understood in relation to the organisational remit of CERA itself, which was governed by a five-year lifespan. I concluded that the ‘information’ CERA provided was better taken as aspirational and self-promoting rather than objectively accurate. The agency was disbanded in mid-2016 and by mid-2017 the rebuild process was still underway. An official assessment of CERA criticised it for poor project management and working ineffectively with Christchurch City Council (Auditor General 2017).

The stresses and frictions evident in Christchurch point to the challenging realities of reorienting, re-mapping lines, and rebuilding one’s ‘home’ at city and regional scales. The political discord

suggests that Government and institutional responses were not wholly effective and sympathetic to circumstances, and that alternative conceptual frameworks may be more appropriate.

The term 'rebuild', while appealing because of associations with agency and action, may be misleading and become counterproductive if action is not visible. A more tempered outlook is offered by Kit Miyamoto, an international structural and earthquake engineer working in Christchurch, who suggested that rebuilding of infrastructure at the scale required for Christchurch should be thought about over a 50-year timespan which would allow time for those parts of the city that were disrupted to be rebuilt more 'organically' (Macfie 2013). The short spans of political cycles can make longer-term thinking and planning difficult, but the scales attached to the conditions of Christchurch necessitate such consideration: not just in remaking the city, but also recognising long-term geological associations.

Miyamoto's recommendation also alludes to alternative ways in which the lines of city can be redrawn. Government intervention in the planning process sought to impose a particular ideological mapping: one not only attached to an exclusive political-economic agenda, but led by an idealised conceptualisation of how the city should function. Jonny Moore (2014a), a Christchurch writer, argues that the multi-layered complexities of the 'real' world can often be missed in such prescriptive visions:

The dirty underbelly of a city is never imagined in utopias. But the goal should not be to manufacture a better city; it should be to create an environment in which a better city can emerge.

Once governments start dreaming about an imagined future it becomes apparent that utopia is a place mainly inhabited by an exclusive group. There's no crime, no traffic jams, no homeless people sleeping on park benches... Reality gets engineered out in grand plans and one person's paradise is another person's hell. (p161)

In contrast to a blueprint or masterplan an 'organic' approach allows for relationships to emerge over time.

Design futurist Stuart Candy (2014), invited by the Christchurch City Council to comment on the rebuild, was also critical of the Government's singular planning strategy. Drawing on systems theory, Candy used an analogy contrasting the way in which a cathedral is built against that of a market bazaar. A cathedral is constructed following a top-down design strategy, conforming to a master plan. The process is centralised and controlled, defined by clear objectives and outcomes, and working within known and knowable parameters. In contrast, a bazaar is a collection of smaller entities, an 'organic' assemblage that is flexible, scalable, and mobile. Such an approach is effective in situations without clear parameters or when they fluctuate. Bazaar frameworks are used for open-platform software development, such as with Linux and Wikipedia.

For Candy, Christchurch should not plan for the future, but allow bazaar-like structures to emerge through participative, collaborative and distributed processes. In this way there is no ultimate plan or map for the city; rather, its shape develops from the points and lines that emerge responsively from circumstances.

Numerous examples of self-organising emerged from the post-quake disruption. Following disaster events, the turmoil that ensues can, surprisingly, arouse responses of caring, generosity and innovation (see Jencson 2001; Clark 2005; Solnit 2010). Such activity is evidence of the concern and empathy we have for others facing shared adversity. As physical lines are broken, less perceptible social lines become more clearly rendered, serving to reweave a renewed map of shared space. A reinvigorated sense of community was mentioned by many of the people I spoke with, and also evidenced by the formation of neighbourhood support groups (Paton et al 2013, 12). Other groups mobilised in response to the quakes at local and regional levels. The Student Volunteer Army used social media to coordinate thousands of students with local disaster-recovery (SVA 2016), and farmers within the wider Canterbury organised the Farmy Army to help those impacted (Pidcock 2011). Additional groups formed driven by a concern with remaking Christchurch's urban space, wanting the city rebuild to be responsive to local needs and informed by public ideas. Following bazaar-like lines, projects emerged responding to ground-up concerns seeking to explore ways to expediate both physical and social place reorientation. Gap Filler was one such project.

Filling the gaps

Gap Filler has focused on creating installations in the many cleared, vacant building spaces around the city, developing an assortment of temporary, creative, and community-minded designs and activities: a dance stage, a sonic art installation, a mini-golf course, a pizza oven, temporary meeting spaces, and many others. The group's formation was, in part, a response to the Christchurch Arts Centre, along with other gallery, practice and creative market spaces being badly damaged in the quakes. Concerned the closures of art spaces would force artists to leave the region and, at the same time, wanting the creative community to have an active voice in the reshaping of the city, Arts Voice Christchurch was formed as an advocacy group to officially represent arts organisations (Parker 2014). A number of self-organising creative initiatives were developed with Gap Filler being one. Initially structured as an informal collective the organisation has developed into a small not-for-profit operation allowing for some paid staff, but heavily reliant on volunteer involvement.

I organised a meeting with Coralie Winn, Gap Filler co-founder and director, to discuss the organisation's work. Our conversation took place at the Gap Filler's headquarters, a small shed cobbled together from salvaged materials. The walls were an assortment of re-used timber: the porch steps made out of wooden pallets, the coffee table a small wooden cable drum – the aesthetic reflective of the outfit's 'make-do' ethos. The shed sat to the side of a recent project: a grassed plot with a small temporary performance space.

Winn explained that Gap Filler was started with a simple idea: "how can we use some of the vacant spaces? There may still be some life in them." A quintessential bottom-up initiative, it was initially self-funded. The aim, simply, was to "do something", and not wait for bureaucracy and funding cycles. With everyone having decamped to the suburbs the city was left "lifeless", Winn told me. There was little to do and a sense of helplessness. As well, Winn and colleagues were concerned there might be a rush to rebuild the city too quickly. In 2011 the Rugby World Cup was being hosted at venues throughout New Zealand, which included Christchurch, and expectation was that the Government would "bulldoze through" plans to get the city back into shape for holding such sporting mega-events.

After five years Gap Filler has helped to develop many dozens of successful projects using a simple community-grounded participatory design approach. Christchurch City Council has become a sponsor over the years, recognising the value that projects have in community building, and other funders have similarly come on board. Over this time Gap Filler has won a number of awards, as well as being employed in consulting on other city council's place-making projects – not just in New Zealand but internationally from as far afield as Denmark and Nepal. (Winn, herself, also made the New Zealand New Year's Honour list in 2015, being awarded the Queen's Service Medal for Service to the Arts.)

On the face of it, an outdoor lounge, an open-dance space, a time-exchange store, can seem almost frivolous against the more 'serious work' of engineering infrastructure and erecting buildings. But the work being undertaken is significant, just subtler. Winn talked about "the desire for the gap" – the need for an 'open' space in everyday life, especially in our highly homogenised and globalised everyday lives.

The 'gap' is an important concept for understanding the work of the organisation; work which is informed George Simmel's ideas about early twentieth-century urban experience (see Reynolds 2014). For Simmel, living in urban spaces was individually constraining and depersonalising, and necessitated responses to liberate and reinvigorate space (Simmel 1903, 338). Within cities gaps are everywhere. If buildings and formal structures define the 'positive' space



Figure 4.10: One of Gap Filler's most popular projects, the Pallet Pavilion. Constructed from shipping pallets the site acted as a community performance space, which remained for two years. (Source: Kristen Wilson/ Outlandish Landscapes.)

of the city, the 'negative', empty spaces in between become voids full of possibility – not just spatially but also temporally and politically.

The potential of gaps comes from their seeming insignificance: they are everywhere and often disregarded. For Gap Filler such indifference, combined with the impermanence of projects, means that gaps are spaces where radical experiments can be undertaken. A project with limited lifespan poses minimal threat to established ideas but, by allowing unconventional forms to emerge, gaps become sites for alternative political expression.

In some cases projects are so-well liked they remain as permanent features. Winn described such an instance, where a public space project in the neighbouring town of Littleton became a permanent fixture due to its popularity. While rewarding, Winn hoped that Gap Filler's more substantial impacts would come through affecting the processes through which public space gets produced:

We're interested in... being able to provide opportunities for people to be involved in the city more directly ...[and that] changes them long term, in terms of what they want from the city... We're trying to create – through what we're doing, in a very small way – the kind of city that we think people want to live in.... Permanent?... We think of some of the projects that we're doing as experimentations that can feed into things. So, like, as an example, how do maybe some of our projects change how public space might get developed in the future?

While Gap Filler's projects have been popular with local residents, and praised for their contribution to community building, entertainment, and more broadly “the energy, vibe and positive perception of the city” (CreativeNZ 2017, np), the political asymmetries of place-making remain, especially as the 'more serious' building work of recovery had begun:



Figure 4.11: Living with ever-changing flows marked by traffic cones has become a part of life in post-quake Christchurch. (Source: Author.)



There are a lot of people that do regard this kind of activity – as a quake response – serving a purpose. But internationally... whatever you want to call it, whether it's DIY urbanism, or adaptive urbanism – or whatever – it's getting more and more attention... and interest. But within Christchurch it's not seen in that global context, it's very much seen just as a quake response. And I totally identify with the sense that we're just kids, kind of playing in the sandpit, and we'll [the Government] will 'take it from here'... I feel it's a bit of a wasted opportunity, because the Government does own so much land, and there could have been many more things enabled on some of their land. But because there's this sense of it only being a 'feel-good' thing – and difficult to control in terms of quality – and our actual content ... there's been a reluctance to enable that to happen.

Winn's admission suggests that projects like Gap Filler have been viewed as temporary 'relief' during disruptive post-quake period; providing a kind of 'soft' reorientation. But, with official lines being more clearly defined, those emergent and rendered from below were being viewed as inconsequential.

The place-making politics of Christchurch is inordinately complicated – a tangle of national, local and regional, and public concerns – and multiplicity of attitudes are evident.

Christchurch City Council, for example, have remained supportive of participatory decision-making processes, and supportive of projects such as Gap Filler. The conservative National Government, in power at the time of the quake and through the recovery period, by contrast employed a traditional managerial approach.

The work of Gap Filler is a reminder that Christchurch was not a 'blank slate' as the Government had claimed. The map of the city, while fragmented, was not completely erased: lines remained visible, though distorted and broken, and the number of 'gaps' increased. Gap Filler's projects show that there are more inventive ways of connecting broken lines than a straight rule. Imaginative connections may prove fruitful, but require being open to difference, and remaining with registers of uncertainty and unsettledness. Such ideas are useful beyond just contemplating the rebuilding of Christchurch, but translate through to considering response to wider, unsettled modes of dwelling, and with ground neither stable or familiar.

Impermanence

Impermanence was another theme emerging from my experience of Christchurch, and here I consider three examples where this quality is used for the purposes of reorienting and place-making: sketching out new but temporary points and lines on the fractured map of the city.

The temporary barriers and markers I observed within the central city were indicative of the constantly shifting lines being drawn and redrawn within the city. How people coped with



Figure 4.12: Re:Start City Mall, constructed from shipping containers, in 2013. (Source: Wikipedia Commons.)

such ongoing fluctuations was of particular interest: not only had the familiar map of the city changed, it was undergoing continual readjustment which called for ongoing reorientation.

The orange traffic cone emerged as an evocative visual symbol for life in post-quake Christchurch (see for example Spink 2016). Associations with hazards, boundaries, and impermanence are fittingly encapsulated in this simple object. Such markers allowed guiding lines to be clearly traced and adjusted. In Christchurch, traffic cones have been employed for marking out revised walking paths and roadways. Trips by car – especially those across the city – had become something of unknown quantity, with drivers needing to adjust to constantly reconfigured routes. People relayed their everyday strategies of coping. One person explained to me, matter-of-factly, that she just allowed much more time to travel. On one day a trip might be fine but on the next, due to changed layout, the same trip might take twice as long, perhaps more. After almost five years, those I spoke with appeared to have developed their own unique strategies. Obtaining current information was important for planning, as was timing, and being aware of daily traffic dynamics. So, also, was knowing the ‘good’ routes and potential alternatives. But, more than anything, developing an attitude of being flexible appeared to be key; accepting that life now involved dealing with constant change: best approached by taking things in one’s stride and learning to live with ongoing disruption.

Traffic cones are temporarily positioned objects that we associate with hazardous conditions, but other impermanent markers were designed to perform in more reassuring ways. Much



Figure 4.13: The Cardboard Cathedral. (Source: Wikimedia Commons.)

larger in size, two features were developed to act as quite different temporary focal points for the new city map: the Re:Start City Mall and the Cardboard Cathedral.

The Re:Start City Mall was a temporary shopping venue formed largely from metal shipping containers, and intended to replace the damaged City Mall shopping precinct previously at the city's centre. The initiative was developed by a trust set up to find ways to bring people – and retail activity – back to the city centre. The city Red Zoning had forced businesses to relocate into the suburbs, giving little reason for people to visit the central city. The project was funded with an initial loan of NZ\$3.36 million from the Christchurch Earthquake Appeal Trust and temporary shops were fashioned from standard shipping containers: strong enough to withstand the threat of further quakes, but modular and moveable, allowing the mall to be relocated as reconstruction of the inner city progresses. Re:Start was officially opened less than a year after the first quake in October 2011 with 27 shops.

During my visit the Mall continued to act as a central-city hub as very few other shops had reopened. The site provided a convenient place to meet with people and buy food or a drink. The atmosphere was pleasant with a mix of young bohemian types and overseas tourists. The shops catered more to the tourist market and, apart from food, offered arts, crafts, souvenirs, and name-brand apparel. The Mall appeared busy throughout the day, though given my visit was in early spring, it was not peak tourist season.

The Mall had been relocated just before my visit, and its previous location was being built upon with more permanent structures. Originally not intended to remain active for so long, there had

been debate as to whether the Mall should remain at all. However, strong public support and additional funding had led to the installation being relocated rather than disbanded. Additionally, the slow progress of the inner-city rebuild meant that the replacement retail precinct was unfinished. The Re:Start Mall remained in operation at that location until mid-2017 when it was finally closed, although the containers were moved to a new location and a new rebranded mall was opened (Mathews 2017).

The Cardboard Cathedral, like the Re:Start Mall, was designed as a temporary structure to be quickly erected in the central city, and a replacement for the severely damaged Anglican Cathedral which previously had served significant social function. The Cardboard Cathedral was designed by Japanese architect Shigeru Ban, known for his 'disaster architecture' which uses paper and other traditional Japanese building materials. Ban has a minimalist philosophy and the use of simple materials dovetails with his interest in architecture for humanitarian purposes. He has worked on numerous other projects, developing housing and structures for post-disaster situations such as refugee shelters and other temporary community buildings (Barrie 2014).

Ban was approached shortly after the quakes by Rev. Craig Dixon, the cathedral's marketing and development manager. Dixon proposed the development of a temporary space that could also host civic events and concerts. It was hoped that a replacement cathedral could be erected in time for the one-year anniversary of the quakes; however, development took more time and the building was opened in August 2013. The Cardboard Cathedral was one of the first significant non-commercial buildings to be constructed as part of the inner city rebuild.

The cathedral is nowhere near as grand and imposing as the one it temporarily replaces. A simple triangular-shaped building, the cathedral rises 21 metres, with it being wider at the front and narrowing to the rear. The front is comprised of a wall of geometric stained glass, and the roof and other walls are covered in sheets of translucent plastic core-fluting. The interior is light and airy during the day as the translucent cladding allows natural light to filter through. The 'cardboard' moniker is slightly misleading as, while materials are technically classified as cardboard, the products are formed from wood pulp and have the structural integrity of timber. Cardboard tubes 60 centimetres in diameter form the structural skeleton of the building, running vertically up to the apex. Other materials include timber, steel, and plastic.

My visit to the cathedral was on an overcast spring day. Entering the building gave me the feeling of a space that wasn't entirely solid or permanent: much like being inside a large fixed tent marque. The space had an open, airy feeling, and was cold inside. The structure is built to

130 percent of the current earthquake standard, and while it was initially intended to be just temporary the cathedral's popularity and architectural significance has resulted in changes to plans; it will now remain once the central cathedral is rebuilt. The building was designed to have a life of 50 years but it will remain to be seen just how 'temporary' the cathedral will be.

Both the mall and the cathedral fill gaps left in the city map. And, although they operate at a larger scale than the projects of Gap Filler – in size, cost and application – there are traces of emergent thinking. Although the use of space is clearly prescribed – civic and commercial – the impermanent qualities of the installations expands thinking about how building and spatial arrangements can function. I'm also struck by the way in which both the impermanence of the mall and cathedral has become more solidly rendered, reflective of some of Gap Filler's projects. While many factors will have influenced the desire to retain these temporary structures beyond their intended life, I wonder if this is symptomatic of how we readily draw new lines to remap place, and how easy it is for that new map to become familiar to us. Any point on our map that remains appreciably fixed – event for just a few years – becomes inscribed into our mental map of place, itself requiring additional effort to be rewritten.

Living with uncertainties

On my final day in Christchurch I was invited to dinner by long-time family friends. Alice and Max (not their real names) had recently retired and have lived in Christchurch for the last 10 years. Alice grew up in the city and Max is originally from Australia where they met some 30 years ago. They lived west of Sydney close to the Blue Mountains but decided to return to Christchurch for family reasons, but also, as Alice tells me sardonically, because of concerns about the increased risks of bush fires in Sydney.

We talked about their experiences of the earthquakes. Alice was in the central city for the first event and witnessed its damaging impact. "At the time I went into shock, and my heart just 'banged' so hard – I thought I was going to have a heart attack there and then on the spot!" she said.

The story she tells, of feeling the ground shaking violently, not being able to stand, and seeing buildings crumble, conveys a discomfiting anxiety. But when it came to discussing the experience of post-quake life, her response was less emotionally dramatic, somewhat offhand:

I'm sure some people would say some cheerful things about the earthquake and the aftermath... but I can't imagine who really. It's just disrupted so many people's lives... but anyway, I suppose lots of things disrupt people's lives.

Alice had family in Christchurch and she described the many ways in which the quakes had negatively affected their lives, including ongoing trauma – especially in children. She and Max considered leaving the city themselves but, in the end, decided to stay because Alice still considered Christchurch home. Some four years on their approach to coping appeared pragmatic.

Alice explained:

Nowadays I don't think about earthquakes any more. I can't live each day thinking 'oh, my god, is there going to be another earthquake?'. I just put it out of my mind really.

To which Max responded supportively:

You have to.

Not thinking about phenomena beyond our control is a very practical response: there are everyday tasks that still requiring attention. But, later in the evening, when I was casually chatting with Max alone, he returned to discussing the quakes in a more reflective mood. He admitted that experiencing the earthquakes motivated him to contemplate existential questions. The experience was akin to “looking up at the stars” he admitted, “and made me contemplate how extremely small and insignificant humans are in comparison to such large forces.”

Max's confession is one of the few existential reflections I encountered during conversations with people. I have little doubt that events in Christchurch have also profoundly affected others, yet the focus of surface activity now appears to be largely practical. In some ways Alice and Max's coping strategy echoes the Government's pragmatic response to events, seeking to rewrite familiar lines in an effort to return to 'normal' life. Wanting to return to a state with which we are familiar or comfortable with is understandable. To remain in a condition of not-knowing, of being disorientated, and not able to perceive what the future has in store induces deep psychological anxiety within an individual (Evans 2005, 11). How we respond will depend on a range of factors such as our previous experiences and the outlook we have developed about how the world 'works'. This does not mean all coping methods will be effective: to ignore events in the world, or the affective responses they trigger within us may provide a temporary solution, but will be ineffective longer-term. Similarly, to reimpose our own ordered map onto the world is ultimately condemned to eventually fail – both for individuals and for larger human dwelling, such as in cities. And, although Nietzsche's inducement to build one's home on the sides of volcanoes was intended as a metaphorical provocation, those who actually do so might be best to pay heed to such exhortation. For those living in the 'shaky isles' of New Zealand this would lead to dwelling more consciously on the inherently unstable ground underfoot. The ultimate folly of living on a volcano is so doing unconsciously, and being ignorant to the very reality that the ground on which you have built can at any moment throw your world into chaos.

* * *

In this chapter I have taken the circumstances of Christchurch as a rough analogue for Anthropocene emergency. Both are disasters (though at different scales) and rendered by geologically attached, asymmetrical planetary forces with the capacity to make well-known conditions of 'ground' and of 'home' unfamiliar. Such comparison has limitations, but the geological asymmetries found in Christchurch render profound disturbances; impacts not just surface, but that run deeply: a reminder that 'ground' is more than the visible surface on which we stand, extending down beneath us many layers. For Christchurch deep physical disturbance has agitated, fractured, and liquefied the ground of the city, profoundly transforming it both above and below.

When ground is disrupted undergoing elemental transformation the solid world for a while becomes fluid. The ensuing disorder within emergency gives rise to liminal antistructural states (Jencson 2001, following Turner 1969) in which established social forms are effectively suspended allowing new associations and relationships to emerge. For Christchurch, severe ground disturbances had multiple reverberations to the existing order. For the central city, inscribed lines were erased presenting an almost-fresh canvas on which a new map could be redrawn. Initial efforts employing participatory map making were evidence of a 'flattened', more egalitarian approach to place making, inviting input from all those living in the region. Similarly, emergent projects such as Gap Filler or Greening the Rubble performed as non-standard actors fulfilling roles of place-making where those formally tasked are stretched beyond normal capacity. The Key Government's later commandeering of the remapping process signals an associated politics, not just of placemaking but that ideologically attached to a problematic hegemonic control in times of emergency, precisely because new structural possibilities are opened up.

The reorienting work of placemaking is influenced not only through politics but by deeper ontological attachments. A tension exists between that of rewriting and reinscribing place lines: whether 'rebuilding' should follow the previous image of the city or whether a new and unfamiliar map should be drawn. Previous lines – both physical and affective – remain, and to overwrite these takes both effort and time. The need to reorientate ourselves on ground made unfamiliar may compel us to reinscribe – 'rebuild' – what was once there in an effort to reestablish those lines and patterns familiar to us. But, this may not always be possible. The friction created by debate over Christchurch's Cathedral rebuild is evidence of such conflict, where reinstalling damaged city structures becomes a potent symbolic act in the process of restoring cognitive order to one's imagined sense of home.

I am similarly struck by the conflict in the structural line forms visible from above Christchurch and the Canterbury Plains. Straight, cutting lines and boundaries of human activity and dwelling jar against softly etched branched and flowing traces of fluvial activity. The contrasting forms are evidence of very different structural compositions rendered by human and planetary agency. Sharp linear cuts and boundary marks defining ideological human space seek to overwrite those seemingly soft and meandering traces. Paradoxically the soft organic aesthetic belies the potency of forces responsible, and the depths – both terrestrial and temporal – through which such lines permeate.

Christchurch events are also a reminder of the Earth's dynamic qualities, following Heraclitus. Seismic events are merely punctuated moments marking the ongoing movement and flow of the planet's crust. Significant phase-change energies can reverberate through strata transforming both material and structural conditions. Christchurch's ground soil, as Professor Pawson noted, is comprised predominantly of alluvial gravels which the quakes severely agitated. Large areas of ground soil become liquefied due to its silty composition: a form of liquefied suspension as increased subterranean pressure mixes ground water and sand grains, forcing the silt mixture to the surface. Surface traces are therefore visible signs of the depths to which such energies affect: material disturbances reverberate deep through the dimensions of ground, as other impacts resonate through changed social and political structures, as well as profoundly affecting human lives.

The social disruption felt within emergencies can result in the formation of post-disaster *communitas*, where strong community ties can be forged in response to challenging circumstances² (Jencson 2001; Richardson et al 2014). While this was certainly evident in post-quake Christchurch, reflected on as one of the positive aspects of events by those that I talked with, such *communitas* must be tempered with more damaging impacts such as ongoing psychological stress. 'Corrosive community' (Freudenburg 1993, 1997) is a term originally applied to debilitating processes that can result from technological disasters – an event caused either by human error in controlling technology or the malfunction of a technology system (Shaluf 2007). Technological disasters are commonly more psychologically stressful than natural disasters (Norris et al 2001), however impacts from natural disasters can continue to damage individuals and communities over a long period of time (Freudenburg 1993, 1997). In Christchurch this was evident in the ongoing stresses for many people dealing with convoluted bureaucratic

² I'm also reminded of the sense of solidarity that emerged during the river-crossing incident and subsequent trek and night spent in the bush discussed in the previous chapter. The experience was grim and challenging, but affected by a sense of shared purpose driven by very basic needs.

processes, and those additional challenges affecting daily lives and relationships. For those who chose to leave the region after the quakes such disturbances became too great. Yet, even amongst those who stayed and persevered with techno-political traumas, such as Max and Alice, this meant also learning to live with the ongoing visceral threat rendered by an unsettled and uncertain ground, and ultimately accepting a home not as it once had been.

Periods of liminality or suspension must eventually settle, returning to a more stable and normalised state³. For Turner (1969) either the individual returns to the surrounding social structure or 'normative communitas' emerges, by which liminal communities develop their own internal social structure. Christchurch's recovery phase seeks to return the city to a stable but renewed state. Yet, it is poignant to consider how affective unsettling remnants can be continue to be employed. The themes of emergence and impermanence touched upon show existential attachments to remaining in uncertainty and disorder. A creative intervention such as Gap Filler is not explicitly an existential project, but it encourages novel kinds of spatial and temporal engagements allowing new and innovative forms to emerge: 'situations' of a kind, which expand the possibilities of space – and place – making; and which have potential to open us up to remaining unsettled in living our lives.

The Anthropocene-as-disaster is fundamentally one extended over geological timescales, suggesting a 'slow' emergency (Rickards and Kearnes 2016), and while it may be true that some effects will continue to accrue and be felt over tens-of-thousands or more years, this is not to say that impacts will emerge gradually and subtly but rather precipitate through fluctuating hazardous conditions (Dominey-Howes 2018). Christchurch's geological and planetary associations act as a reminder of the asymmetrical forces that will shake and disrupt the collective homes we have built. Urban locations – towns, cities, mega-cities – are all rendered vulnerable on the surface of an unruly planet. Whether impacted by changed climatic conditions, fluctuating weather events, or rising sea levels, each location will face its own challenge. In contrast to my reflections in the previous chapter of the city as a safe and orderly haven from the raw, chaotic tumult of 'nature', urban spaces offer no absolute refuge from Anthropocene planetary fluctuations (McCarthy et al 2010; Pereira and Freitas 2017). Dwelling in the Anthropocene compels us to accept that we are collectively living on the side of a volcano, and we are best to do so consciously.

The unsettled ground of the Anthropocene requires attention to the many lines written

³ In chemical terms suspended mixtures, as opposed to colloids, are unstable once formed; suspended particles will seek to eventually settle out of their medium (Choy and Zee 2015, 213).

through it. Within this chapter I have focused on reorienting work responding to large-scale disruptive trauma, seeking to remap and reinscribe sense of place, and home. I have considered the challenges such reorientation renders, both individual and affective, as well as collective and political; and complicated by the significant asymmetries rendered by geological agency. The paradox of disaster is that subsequent rupturing and suspension of quotidian life results in open space within which new lines and pathways can be reimagined and rewritten. The affective reverberations are significant, undeniably unsettling, and challenging – but also paradoxically opportune for new relational associations to be forged. Christchurch's geological attachments bring a depth to contemplating Anthropocene impact. Affectively this suggests that lines of emotion and psychology resonate through multiple layers and across scales – spatial as well as temporal. Such thinking can also be applied to political response, suggesting that attending to the emergency of the Anthropocene requires moving beyond surface attachments and delving within the material depths that it draws us into, both dimensionally and volumetrically (Clark 2015, 31; see also Dalby 2013). That is, attending to a politics of the Anthropocene necessitates us to contemplate the planetary 'geo' beyond a horizontal and synchronous globality. Concerned with such themes, and with moving beyond the largely human-scale concerns focused on, the next chapter expands investigation through to a case that further troubles the scale of relationships and dependencies within a planetary Anthropocene mesh. Following the trajectory begun inland, along river paths and across plains, I move into the ocean: a vast space confoundingly fluid and unsettling, and through which myriad lines of relationship and interconnectedness are made visible.



Figure B: Radioactive boar glowing toy, 2017. A glow-in-the-dark toy intended for the Japanese market; a reminder of ecological entanglement, and the consequences of radioactive contamination. (Source: author.)



A wide-angle photograph of a vast, flat landscape, likely a salt flat or a desert, under a clear sky. The ground is a mix of light and dark tones, suggesting different mineral compositions or perhaps a thin layer of water reflecting the sky. The horizon is low, and the sky is a pale, clear blue. The word "Ocean" is overlaid in white, sans-serif font in the center-right of the image.

Ocean

Chapter 5 | Fluid lines

In this chapter I follow lines into the oceans. The oceans are the principle component of the Earth's hydrosphere and integral to all life. They are an important resource for humans but face many anthropogenic threats which critically affect ocean health, including pollution, ecosystems disruption, over exploitation, ocean temperature-rise, and acidification (Rudd 2014).

I focus on oceans because they are troubling spaces in many ways. Disturbances to ocean systems have profound implications not just for humans but all planetary life. Ocean systems are complex, having internal and external dependencies, relationships and interactions which makes understanding and managing them inherently challenging (Cosgrove and Loucks 2015). For geographers, the volume of oceans problematises terrestrial conceptions of space, introducing expansive and dynamic qualities of depth, fluidity, and transience.

Seeking a focal point amongst the vast expanse of oceans, I concentrate on an intrinsically interconnected feature: The Great Barrier Reef. While the Reef may appear an odd substitute for dynamic ocean space the site is significantly entangled, not just with oceans but with biological life as well as planetary geologic processes – alongside multiple anthropogenic influences. Reef ecosystems are highly sensitive to anthropogenic ocean threats, and recent climatic conditions have severely impacted life on the Great Barrier Reef leading to claims that its 'death' is imminent (The Washington Post 2017). Such assertions have garnered international attention, and not just by marine biologists; the Reef's potency as an environmental symbol arouses strong emotional responses for many, with the threat to such a monumental marine feature triggering deeply-felt concern, despair and, for some, rage.

In this chapter I use the Great Barrier Reef as a case within which to explore a different dimension of emergency to those considered so far, moving from encounters where 'nature' is seen *as* a risk, to one where 'nature' is seen to be *at* risk. In so doing, I focus on the condition of ecological emergency that saturates Anthropocene experience, summoning weirdness, uncanniness, and monstrosity (Morton 2013), and where any idealised 'natural' order is obliterated.

The foreboding ‘death’ of the Great Barrier Reef is reflective of Bill McKibben’s (1989) percipient pronouncement of the ‘end of nature’ which encapsulates the ultimate perturbation of the Anthropocene: that there is nothing left in the world-mesh but us humans. The implication for planetary coexistence, through our fundamental reliance on the complex interconnected ‘web of life’, and non-human others, is deeply troubling.

Such thinking steers my investigation of the Reef and its prognosis. I begin by considering current concerns with ocean health before surveying the geography of the Reef, including cultural and political associations. I then travel to Cairns and trace my journey onto the Reef itself, seeking visceral encounters both above and below the water as an aid to ‘flesh out’ and bring depth to my sense of this expansive object. Returning to themes of water and fluidity first encountered within my river-crossing experience leads me to contemplate further ontological unsettling that ocean phenomena bring to understanding planetary being, revealing a dimensionality and fluidity beyond surface and fixed readings. In concluding, I return to contemplate the asymmetries rendered by agencies beyond human control, finding that oceans, reefs, and corals are enmeshed by fluid, geological, and temporal lines: a reminder that stable and fixed conceptions of the world prove wholly unsuited for the tempestuous churn of Anthropocene dwelling. The Great Barrier Reef’s myriad entanglements with planetary systems, timescales, oceans, and ocean life, as well as human life, make contemplating its ‘death’ profoundly concerning, yet something we are ultimately compelled to do.

Locating the Reef

My interest with the Great Barrier Reef was drawn by news reports in early 2016 that the Reef ecosystem was experiencing extreme stress, resulting in widespread coral bleaching (McCutcheon 2016; Slezak 2016). The event was front-page news, not just in Australia but internationally, provoking public debate about wider issues of ecological disruption and environmental politics. The fate of the Reef was discussed in dire and foreboding terms (Carr 2016; The Washington Post 2017), evoking strong emotional responses, and highlighting powerfully-felt attachments to the site (see Box 5.1). Beyond its physical and biological constitution, the Reef is understood in human terms as a cultural and political object, significantly attached not just to the Australian place-imaginary but as a planetary environmental imaginary.

Having lived in Australia since early 2011, I had become familiar with the kinds of climatic challenges faced by the country given global warming forecasts. Increasing weather pattern fluctuations are expected to continue across the continent, which includes reduced rainfall in

Box 5.1: ‘Death’ of the Great Barrier Reef

Does it ever seem like our planet is being controlled by a kid who was as bad at SimCity as I was? (Owlbynight 2016)

The comment by ‘Owlbynight’, although said largely in jest, crystallises imagery of the planet as a game being played poorly. The reference will be well-known to those who enjoy computer games. SimCity is a long-running series in which the player acts as the creator and developer of a virtual city or other complex site (farm, theme park, habitat, etc) managing all aspects of operation. Owlbynight, though, admits his own childhood inability to adequately manage the game’s complexity: an ineptitude reflected in our own collective human ability managing planetary resources.

The comment is one of many that forms a thread on the social news aggregation and discussion site Reddit. The site is a popular destination for the sharing of information and opinions, ranking as the fourth most visited website in the US, and seventeenth in the world (Alexa 2017). The thread responds to an article posted on another website, weather.com, a weather and news information service. The article, titled ‘Great Barrier Reef Undergoing a “Complete Ecosystem Collapse,” Scientists Say’ (Carr 2016), reports on scientists’ concerns over a reduction in fish species on the Great Barrier Reef, suggesting that a 2016 coral bleaching event has contributed to the ecosystem decline of the Reef. Coral reefs are vitally important to life in the oceans:

One-quarter of all marine life lives in or around a reef... What happens when these reefs disappear? Current predictions are that coral reefs worldwide could be gone within 25 years. How much will be left after this global bleaching event? How much will be left for future generations?

And:

This is a worldwide coral bleaching event – not just Australia. (Carr 2016, np)

Politics emerges as a critical issue throughout the Reddit thread – global as well as local. The top post in the thread by SanityInAnarchy (with 3262 upvotes) responds to the political tussle with the Great Barrier Reef’s status as a cultural-environmental object (it was awarded UNESCO World Heritage Site status in 1981):

It’s okay, the [Australian] government is doing something about the reef being in danger! They’re taking it off all the “in danger” lists, so they can say things like “Under my leadership, the Great Barrier Reef is no longer endangered!”

I wish I was joking.

Other comments follow a darker and more despairing themes. They rightly point out that the problems of the Reef do not have a single localised cause. Enigmasaurus says:

The thing that gets me about this is the general failure of humanity to act. It’s truly getting scary.

When we hear about these localised effects of early climate change, we’re often hearing demands for localised solutions. Things like “Australia needs to do something about this” or “Australia shouldn’t have opened a mine/fished the reef/put chemicals into the sea” ... and hey, I’ll be the first person to admit Australia’s action on climate change has been

beyond pitiful, but we need to get something fucking straight...

This bleaching event is caused by extreme ocean warming.

The ocean circulates around the **entire** fucking planet.

(Original emphasis)

Sibma chimes in:

I have kinda accepted that the planet is going to be in horrific state 20 years from now. Be mentally prepared people for the worse. [sic]

Though things are going on to save the planet, rather the life on the planet, I'm pessimistic that we will be able to do much and it kills me :(

I stumbled upon the Reddit forum thread as I began investigating the state of the Great Barrier Reef, looking for public responses to news reports of severe ecological threat. Parsing through the 3752 posts in the thread showed people grappling not just with the tangled politics of the situation, but with surfacing emotions expressed through frustration, anger, sadness, and despair. The news reports may have been playing up the catastrophic character of the situation in an effort to generate traffic but the general theme of severe ecosystem stress was accurate. The threat to the Reef was – and remains – real and deeply concerning. It comes with a scale and complexity which challenges our ability to make sense of and to easily perceive workable solutions.

The thread discussion provides a snapshot of non-experts grappling with emerging environmental impacts that can be mapped on to ideas of the Anthropocene: warming climate, extreme weather, ocean acidification, environmental management and land-use discord and, of course, politics. All this clusters around a potent cultural imaginary: the Great Barrier Reef, considered one of the world's natural wonders.

The collaborative nature of the forum-style interface allowed me to trace the thread's progression as discussion sought to make sense of the situation – admittedly in a piecemeal and ad hoc manner. Ideas appeared only partially informed – some well, others not. Some contributors took a flippant tone, some were cynical, and many were despairing. Some appeared to be closer to the issue than others – both geographically and in their understanding. Comments were made by people from all over the world, with those submitted by Australian residents helping shed light on the local politics. Others living in Queensland brought personal reflections from their own first-hand experiences of the Reef.

Ultimately the thread was driven by opinion and emotion, evidencing lack of a critical rigour common to such platforms. But what was clear within the discussion was a sense of deep caring and concern sparked by the issue; and a desire to discuss and make sense of the situation. For my purposes the thread provided evidence of more 'everyday' and non-intellectualised responses to Anthropocene-attached currents; evidence that beyond the boundaries of systems science and deep theory, people respond as best they can given their concerns for events in the world. Emotions appeared as part and parcel of responses, whether by expressing frustration, anguish, despair, or humour – possibly as a mask to counteract feelings of anxiety. Quite simply, the thread shows people being affectively moved – and through to an activity of fraught sense-making.

Box 5.2: Ocean impacts

Oceans account for the majority of water on the planet: some 97 percent; and cover a little over 70 percent of the planet's surface. They are a key component of the planet's hydrosphere which is integral to the carbon cycle and driving both climatic and weather systems (NOAA 2017).

Oceans are a critical resource for humans. An estimated 1 billion people rely on seafood as a primary source of protein (Garcia and Rosenberg 2010). Oceans provide a range of other resources and services, which includes a source of materials such as manganese, limestone and carbonates used in industrial processes (Maribus 2010). They are a means for shipping goods, which is integral to the global economy (Kaukiainen 2014); a resource for tourism and recreation (Orams and Lück 2014); ecosystem services that include mangroves, lowland forests, barrier islands and coral reefs, and contributions to coastal protection (Conservation International 2008).

Oceans face multiple threats as a result of human activity. The over-exploitation of marine life is key (Lewison et al 2014). As much as 85 percent of the world's fisheries may be over-exploited, depleted, or in recovery from exploitation (FAO 2014). The transfer of invasive 'pest' species has significant impact on local ecosystems, as introduced species outcompete native species (Bax et al 2003). Coastal areas are locations of concentrated human activity (Small and Nicholls 2003; Crossland et al 2005) resulting in marine pollution (Dahms 2014), specifically eutrophication from agricultural land use (Camargo and Alonso 2006), as well as the degradation of coastal areas and estuaries (Lotze et al 2006). The accumulation of plastics has become a significant recent concern (Cole et al 2011; Derraik 2002), with an estimated 165 million tonnes of plastic pollution in the ocean (Knight 2012). Plastics decompose slowly, releasing chemical components which can interfere with biological processes, disrupting growth and causing defects, impacting the entire marine food chain (Gregory 2009; Thompson et al 2009).

Anthropogenic global warming affects ocean conditions (Heip et al 2011; Doney et al 2012), with rising sea levels just one of many impacts (Church and White 2006). Oceans have absorbed a significant percentage of atmospheric CO₂ – an estimated 30-40 percent. The resulting increase of water acidity is extremely harmful to marine life; it disrupts metabolic rates and immune responses, and causes bleaching in corals (Caldeira and Wickett 2003; Achterberg 2014). Over 90 percent of the thermal energy generated by global warming has been absorbed by oceans (Balmaseda et al 2013), additionally impacting marine life (Bijma et al 2013). Warming may also impact ocean thermohaline circulation, the mechanism by which heat is distributed through ocean currents. Changes to this system have the potential to precipitate major climatic shifts in the northern hemisphere (Bryden et al 2005; Curry and Mauritzen 2005).

Coastal zones have similarly experienced intensified stress (Glavovic et al 2015). The narrow band where ocean meets land is an important area in which humans live, work, recreate, and access coastal and marine resources. Some 23 percent of the world's population lives within 100km of the coast, a figure projected to increase this century (Neumann et al 2015). Increasing demand for space and resources have exacerbated human impacts on these coastal margins which, in tropical waters, is home for corals.

Corals are found predominately in tropical regions, growing in warm and shallow waters. Corals are colonies of small animals that live in calcium carbonate shells formed for protection. Over

time, accretion of limestone forms unique shapes distinctive to particular coral species. Reefs are formed over long time periods as corals slowly form layers of sedimentary limestone. Depending on size, reef formation can take anywhere between 100,000 and 30 million years (Barnes and Hughes 1999; Veron 2017).

Coral reef structures create a unique environment for marine life. Reefs are biologically diverse, supporting more species per unit of area than any other marine environment. Some 25 percent of all marine species live in coral reefs, including an estimated 4,000 species of fish, 800 species of hard corals, and hundreds of other marine animals (Mulhall 2009; Fuchs 2013). Reefs are also important for sea and marine birds, as well as reptiles such as snakes, crocodiles and turtles. Importantly, reef formations serve as a protective breeding ground for many ocean-going fish and marine life.

For humans, coral reefs provide a range of services. They are an important source of food, and their biological diversity makes them a significant genetic resource for medical research (Bruckner 2002). The physical reef structures provide coastal protection from wave action and storms, and they are used as sites for recreation and tourism activity.

some regions while increased rainfall in others along with more severe weather events. Stress on fresh water sources and infrastructure pose major issues to urban centres as well as agriculture and forestry sectors. Coastal areas, where the bulk of the population live, are vulnerable to sea-level fluctuations and inundation from short-term weather cycles and extreme events. Increased temperatures bring threats from heatwaves, as well increased fire risks (Department of Environment and Energy 2018). When I arrived Melbourne in 2011, the decade-long 'Millennium drought', considered the worst regional Victorian drought since European settlement, had just abated. Tropical Cyclone Yasi had just hit northern Queensland resulting in significant damage and flooding to coastal areas, including severe damage to the Great Barrier Reef's coral ecology (Beeden et al 2015). Seven of Australia's ten warmest years have occurred since 2005, with the one cooler-than-average year being 2011. 2017 was the third-warmest year on record (since national observations began in 1910) (Bureau of Meteorology 2018). And, spurred by developing El Niño conditions, the Great Barrier experienced three consecutive years of severe coral-bleaching events starting in late 2014 and continuing through to 2017. Such anomalous events attracted my interest as this project developed, especially when the Reef's dire predicament became an international – and controversial – talking point. In this section I briefly outline the Reef's geography and significance in political-economic terms before moving to discussion of my in-field experience.

The Great Barrier Reef is the largest of the world's coral reef ecosystems. It is made up of more than 2,900 individual reefs and some 900 islands that border the coast of north-eastern Australia



Figure 5.1: map of north-eastern Australia showing the location of the Great Barrier Reef Marine Park. The reef systems show as dark against the blue of the ocean. (Satellite imagery: Google Earth/CNES/Astrium Image Landsat/Copernicus.)

(see Figure 5.1), and spans over 2,300 kilometres – from Torres Strait in the north stretching to Lady Elliot and Fraser Islands in the south – covering an area of approximately 344,000 square kilometres (GBRMPA 2017a). The Great Barrier Reef is big: hence the name; and accounts for 70 percent of the world's designated World Heritage reef area. It is also the single largest structure made by living organisms.

The Reef has formed over hundreds of millions of years in different stages, but the current configuration emerged approximately 2.6 million years ago (Veron 2008). Human interaction with the Reef environment began an estimated 60,000 years ago, with Australian Aboriginal and Torres Strait Islander peoples inhabiting the region and accessing the site's natural resources (GBRMPA 2017b). European explorers formed impressions of the Reef as a 'wild' and 'unnavigable' space (see McCalman 2014) and modern utilisation of the area's natural resources and amenity has been a very recent undertaking. Recreational use of the Reef began only in the latter half of the twentieth century with the formation of management bodies such as the Great Barrier Reef Marine Park Authority (GBRMPA), which now manages the marine park in conjunction with the Government of Queensland.

The Reef's attraction as a tourist destination was boosted when it was awarded World Heritage Site listing in 1981 by UNESCO. This status is awarded to sites deemed to have "cultural, historical, scientific or some other form of significance", and "as being important to the collective interests of humanity" (UNESCO 2016, np). Such status puts the Reef on a global stage alongside other landmark sites, which includes the Giza Pyramids in Egypt, Serengeti National Park in Tanzania, Machu Picchu in Peru, the Taj Mahal in India. The Reef therefore operates as a top-tier tourism imaginary. It has been listed as one of the Seven Natural Wonders of the World (CNN 1997; Seven Natural Wonders 2014), and regularly features as a 'must-do,' 'bucket-list' travel destination (Spiegel 2015; Condé Nast Traveller 2016; The Telegraph 2016) – even voted the number-one 'World's Best Place to Visit' by US News (US News and World Report 2016). Reef-related tourism activity is worth almost A\$7 billion to the Australian economy (Deloitte Access Economics 2013), and as an Australian imaginary the Reef is ranked third overall in visitor surveys after Australia's beaches and its wildlife (Tourism Australia 2015).

The recent management and status of the Reef, however, has remained problematic. Beginning in the early 1900s, Ted Banfield's (1908) book 'Confessions of a Beachcomber' brought the Reef to wider public attention, prompting interest in the site's unique marine ecology. However, through the twentieth century development in the region continued, including farming, fishing, mining, and industry. The Reef was considered a large natural resource available for exploitation and it was only in the 1960s and 1970s that campaigns urging better management and protection emerged. The result was a unified Reef management plan and instigation of the GBRMPA. Even with increased Reef protection measures, the conservative tenor of Queensland politics has continued to show a disregard for environmental concerns, instead supporting development and increased urbanisation of the Queensland Coast. Poorly managed agricultural land use, continued coal mining, as well as the location of industrial plants and regional port expansion have provoked ongoing debate about effects on Reef health.

Such dismissive concern by the State Government for the environmental health of the Reef reveals a strategy of avoidance. Official recognition of significant environmental threat has the potential to affect the Reef's World Heritage status and would require it to be reclassified as 'in danger'. Such a change would not only impact the tourism status of the site but would require changes to current government policy preoccupied with regional economic development (Valentine 2015). The issue was addressed by the UNESCO World Heritage Committee in May of 2015, and a decision was made not to reclassify the Reef's status (UNESCO 2015). The outcome was criticised, however, due to Australian Government tactics of lobbying World Heritage Committee nations to support this decision (Hasham 2015; Taylor 2015). The Reef

remains officially under watch, and although the ‘in danger’ classification was avoided after assessment again in June 2017, the World Heritage Committee voiced concerns about State water quality targets and land clearing policies (ABC News 2017).

The Australian Government’s response to the current status of the Reef is outlined in the *Reef 2050 Plan Annual Report* (Commonwealth of Australia 2015). The Plan is intended to be a comprehensive framework for protecting and managing the Reef through to 2050, with the vision of improving its “Outstanding Universal Value every decade between now and 2050 to be a natural wonder for each successive generation to come.” (p1) However, such measures face criticism for not being clear or rigorous enough (WWF-Australia/AMCS 2015), and importantly failing to address the larger issue of climate change (Australian Academy of Science 2015).

Recent coral bleaching is a direct consequence of the planet’s warming climate. While it is possible to manage localised environmental stresses, an increase in ocean temperatures is influenced by impacts to planetary systems, and ungovernable at a local scale. Coral bleaching is tied to an increase in global mean temperatures, with 2016 recorded as the warmest year on record (NASA 2017). Ocean temperatures also received a boost by a particularly strong El Niño weather pattern in the Pacific. The 2016 bleaching was on a scale never before seen, with 93 percent of coral in the GBRMPA being affected (Arup 2016; Normile 2016). One prominent marine scientist, from the University of Queensland, suggested that the event was likely the “biggest environmental disaster” to affect Australia (Kennedy 2016, np).

‘Bleaching’ describes a condition where coral tissue turns pale or white. It is not a disease but a stress response, where the coloured zooxanthellae photosynthetic algae that live in the coral wall are expelled. Under adverse conditions, such as increased water temperature, the algae produce excess oxygen which is toxic to the coral. Bleached coral is not dead: coral can survive for a short period in a bleached state and recover if the stress is removed (Dove and Hoegh-Guldberg 2006). However, prolonged bleaching will kill the coral. Coral bleaching is not unique to the Great Barrier Reef; all corals experience bleaching under adverse conditions. The phenomenon was first recorded in the Caribbean in the early 1980s, with bleaching events at the Great Barrier Reef occurring during 1997–1998, 2001–2002, 2005–2006, 2008–2011 (AIMS 2016). Coral bleaching appears to be a recent (and anthropogenic) phenomenon, given that bleaching events have killed coral shown to be up to 500 years old (Veron 2008, 58). Reef recovery from coral bleaching die-off takes decades, but it appears likely that continued bleaching events will interrupt recovery (Ainsworth et al 2016). Indications are that the frequency of bleaching events will increase, leading to events being an annual occurrence by

2030 (Veron 2008, 59; Veron 2009, np) – certainly if the causative factors of global warming are not addressed.

Cairns

I travelled to Cairns in winter 2016 to undertake a week of field research, allowing me to observe and viscerally experience the Reef environment. Cairns is one of the key access points to the Great Barrier Reef, located almost at the midpoint of the Reef's span. Established in the late 1800s during the gold mining boom, Cairns later served as the main port for export goods, and more recently has become a tourism hub as the industry has grown over the last 50 years. While the Reef can be accessed from other locations along the Queensland coast, Cairns continues to act as the major entry point for Reef-related and other tourism activity. It is the largest city in Far North Queensland with a population of 150,000, and hosts a major international airport.

My visit was in early August (mid-winter in Australia), which is peak tourist season due to more settled and appealing weather conditions. Day-time temperatures sit in the mid-twenties (Celsius) and the climate is drier and more settled than other times of the year. My first few days in Cairns were spent familiarising myself with the city and talking with people. I chose to stay at a family-run hostel, as opposed to larger franchised accommodation. The hostel environment allowed me to more easily socialise and strike up conversations with staff and other travellers. A day trip north of Cairns provided an opportunity to experience the wider coastal landscape. The organised trip took me through Port Douglas and up through the Daintree towards Cape Tribulation, making multiple stops: a short hike in the forest, cassowary viewing, a river trip to see birds and crocodiles, sampling locally-produced foods. The trip was also a chance to meet other visitors and gauge impressions of the region.

Speaking with other visitors, the Great Barrier Reef was a key draw card for visiting Cairns, and people then considered wider outdoor adventure offerings of Far North Queensland. Everyone I spoke to had either 'done' the Reef or had plans to. Most, did not appear to be serious divers, but were rather content to do snorkelling day-trips. For more serious divers, their time in the region was specifically to spend time on the Reef, often on extended diving trips allowing them to spend multiple weeks – for some their entire stay – on a live-aboard dive boat.

The visitors I met during my stay came largely from Europe: a large number of Germans, and Brits, with a smaller mix of French, Dutch, Irish, and Americans. I also encountered two large,

organised high school groups, visiting as part of a holiday educational programme, both from North America. I met very few Australians as travellers in Cairns, but there were many working within the tourism sector itself.

What emerged from conversations was that people's understanding of the Reef was relatively modest. Key perceptions appeared to come from news media and documentaries. The recent BBC documentary *Great Barrier Reef* (2015), narrated by David Attenborough, was mentioned a number of times, evidently fresh in people's minds. People appeared aware of the Reef as a unique marine environment – a 'must do' when visiting Australia – however, there seemed to be less understanding of its broader ecological significance. Most understood the Reef was facing environmental threats, and that these were the result of human activity. However, I was surprised that not everyone was aware of the recent mass coral bleaching event.

For my fourth and fifth days in Cairns I organised a Reef trip. I opted for an overnight stay on a dive boat, but to snorkel rather than dive. Staying overnight gave me more time on the Reef than would a single-day trip. While not allowing me to dive as deeply, snorkelling was a simpler and more flexible option, and meant I would not be encumbered by technical concerns. After researching the many dive operators, I chose one operating small-scale trips. A smaller number of people on-board would make it easier to strike up conversations with other divers, and with crew.

A shuttle picked me up the next morning and took me to the dive operator's office where I met the other divers. The group was small – only five – and all were travellers from the UK. All were experienced divers and had some awareness of the Reef's environmental issues.

After undergoing a trip briefing we were taken to the transport boat to take us out to the Reef. With an air of excitement, conversations focused around people's reasons for being in Australia – whether travelling or working – and people shared their experiences diving in other locations. For all, the Reef was the main reason for their visit to Cairns, and some, Australia. During one-on-one conversations, I asked people to reflect on their reasons for visiting the Reef. Those I spoke with mentioned having conflicted feelings about visiting, although this was not always a foreground concern. Unease sat at back-of-mind.

A well-travelled Brit living and working in Sydney, when asked why she had come to dive, admitted only half-jokingly that: "Well, I'd like to see the Reef before it's too late!" She was an experienced diver, having dived in many other locations. The Great Barrier was a site she had been waiting to cross off her dive list, and she was well-aware of the serious environmental

Box 5.3: Two Reefs

During my research I noticed two contrasting images of the Great Barrier Reef being employed. Tourism marketing and Reef promotions predominantly used imagery showing a pristine and vibrant underwater environment (see Figure 5.2). Images depicted water that was clear and blue; people were diving or snorkelling around colourful sunshine-lit coral formations; fishes, turtles and other charismatic marine life were shown in engaging compositions. Such upbeat representations jarred against those images showing coral bleaching, found largely in articles and reports on the issue. Depictions of bleaching similarly showed underwater coral landscapes, but the images are eerie and unsettling. Devoid of other signs of marine life, the bleached corals look almost frozen rather than warmed; decidedly anaemic and unwell.



Figure 5.2: A comparison of typical Great Barrier Reef imagery. Vibrant underwater landscapes (top) are used to market the Great Barrier Reef, contrast against more unsettling images depicting coral bleaching (bottom). (Source, top: GreatBarrierReef.org; bottom: XL Catlin Seaview Survey.)

Such contrasting visual representations prompted me to consider the Reef having a ‘split’ identity. The Reef imaginary that we are familiar with is one of an iconic natural landmark, full of diverse life, vibrant and vital. Such an imaginary suggests a site brimming with life, and which exists for the enjoyment – and consumption – by humans. The other Reef imaginary is less familiar, emerging only recently as bleaching events have intensified. Darker, more sombre images of a disturbed Reef show a worrying pathology: one reflecting ominous repercussions

of human activity and disturbance, where life appears extinguished. The tone is deeply unsettling.

Contemplating the contrast led me to consider associations with dissociative personality disorder, where two (or more) disassociated personality states are present at the same time within an individual. Human sense-making of the reef appears to be increasingly inchoate in exactly this manner. Awareness of the discord appears to have filtered through the wider public imagination, as people have become aware of the Reef's pathology. Recent research into why people had chosen to visit the Reef indicated that 69 percent of tourists wanted to visit 'before it was gone' (Piggott-McKellar and McNamara 2016). Reef visitors were found to be more environmentally conscious, and have a high level of concern about the overall health of the Reef. Ironically, such 'last-chance tourism' encourages people to travel further distances to the region, which has greater environmental impact in the longer term. Notably, Piggott-McKellar and McNamara's survey was also undertaken before the 2016 bleaching event became international news. My sense is that the perception of 'two reefs' has only further deepened since.

threats the Reef faced. Another younger visitor from the UK was visiting her father, himself an enthusiastic scuba diver living in Sydney. She had been offered the choice of a camping trip to New Zealand, or a diving trip to the Great Barrier Reef. Conscious of the environmental implications of her trip – both the long-distance travel and the plight of the Reef – she confessed that she felt “a little guilty” in making her choice, but followed this up with an admission: “but I really wanted to see it.” A traveller on the last leg of a round-the-world trip, and on his way back to Scotland, while aware of the Reef's threatened conditions, discussed the importance of its management. His assumption was that we wouldn't be allowed to visit the Reef if it wasn't safe to do so – safe for the health of the Reef that is.

Arriving at the live-on reef boat, we transferred aboard. The reef boat remains permanently out on the Reef, and is resupplied by transfer vessels coming daily from Cairns with passengers. The live-on boat was not large; small in comparison to vessels run by other dive services. It had room on board for 50 or so dive passengers, plus a dozen crew. Accommodation was tight, but comfortable. The boat was not moored in place but sailed around a circuit of different dive reefs, allowing divers to explore different reefs over the course of a stay.

The schedule on board the dive boat was constant, with up to five dive sessions per day: from first light, regularly throughout the day, finishing with a 'night' dive in the evening. Each dive required a short briefing session, equipment preparation, diving time, post-dive checks, and eating. During the intermission, the boat would sail to the next dive location, anchor, and the process would be repeated.

The crew was familiar with each dive site, and were able to point out individual features for divers to investigate: a hidden channel; a large clam; the site where clownfish could be found; the habitual swimming path of a sea turtle. Animated post-dive discussion centred largely around notable encounters with charismatic marine fauna – fish, turtles, sharks – and the ability to cross these off a diver’s ‘list’.

I noticed that, for all the concern with seeing particular species of marine life, there was no formal time spent discussing any aspect of marine biology, or the Reef ecosystem. During our introductory tour, we were shown the location of the boat’s ‘library’, a small collection of reference books which could be used to identify marine species if needed. Additionally, there was no discussion had about current issues affecting the Reef, and no mention at all about the recent coral bleaching event.

Diving the Reef

This section traces my observations and reflections from my time in the water. The text is complemented by a subsequent gallery of images which visually document my time in the water, and the kinds of activity I encountered (see pages 174-191).

* * *

I’m feeling excited as I prepare for my first underwater experience on the Reef.

At the back of the dive boat everyone is preparing their equipment: wetsuits, masks, fins and SCUBA gear. This is the first dive for us newcomers and there is a sense of anticipation. Although I’ve snorkelled in many other locations, as well as dived a number of times previously, there is something about being here at the Great Barrier which feels distinctly special.

The dive crew largely ignore me, and are focused on assisting those scuba diving to go through pre-dive checks. In fact, I appear to be the only person on the boat snorkelling: everyone else is diving. Snorkelling affords me much more freedom and flexibility, which suits me better given my role as an observer. And, while I’m here to experience aspects of the Great Barrier Reef and the life on it (or a small fraction of it), it turns out that human activity is just as fascinating to observe.

Ready to snorkel, I stand on the diving platform at the stern of the boat. I am wearing a short wetsuit, fins, and a mask, and have a snorkel around my neck. I jump into the water. It is warm – a pleasant 24 degrees Celsius – but I am glad to have the wetsuit. I adjust the mask on my face and lower my head to look below the surface. The water is blue – a very deep, hazy blue –

which limits visibility. I can see maybe about 20 metres before details blur into a blue haze.

The weather is overcast, so no direct sunlight illuminates the water today.

I swim around the side of the boat towards the bow. The water, I estimate, is about 15 metres deep and I can see very little apart from the blueness surrounding me. Underneath the boat I see a stream of bubbles rising from divers below. I continue out in front of the boat towards the features of the current reef site, Miln Reef. From within the blue dark shapes emerge as I approach a coral bommie, one of the reef structures. Moving closer I start to make out individual coral structures, and I can see fish clustering around the bommie. This first sighting of Reef life is particularly moving. It strikes me that I am finally swimming over *the* Great Barrier Reef – a place built up in my mind through many years' exposure to books and documentaries. Despite my current immersion in more challenging narratives of the Reef, I feel deeply moved floating just above a small part of it, experiencing it in person.

The bommie rises up from the sandy floor, a rocky hump comprised of layers of coral and other marine life. Floating right next to it, I can see a myriad of corals and different fish species. Almost a meter of water covers the top of the bommie, which makes it possible for me to swim over it. I spend the next half hour simply floating in the water and observing life on this small part of the Reef. There appears to be much activity even in the afternoon, which is not a particularly active time for reef life. I find it fascinating just to watch what unfolds. Small fish manoeuvre themselves close to the coral, likely for safety, while larger ones slowly navigate over the surface somewhat indifferent to my presence. A Parrot fish approaches a coral branch and takes a bite. I observe smaller fish perform what I interpret as territorial behaviour, chasing any approaching fish away. I imagine this coral cluster as a community of creatures, some just passing through, others making permanent homes amongst the coral formations.

After finishing my observation, I make a circuit of the bommie, duck diving below to explore its edges. I'm looking also for signs of bleached coral, although I have been told there is not much of a chance of seeing it in this location. The worst of the 2016 bleaching event occurred in the northern reaches of the Reef, and the coral is in recovery now that temperatures have normalised. Remnants of dead coral are scattered around the bommie, but these are more likely to be the result of storm damage rather than bleaching die-off.

I continue to explore the reef site, swimming from the bommie through the channel to the edge of the main reef and follow the wall of coral. After about 45 minutes I begin to feel cold, and decide to head back to the boat. My initial feelings of excitement have been tempered by the conditions. The experience is not beyond those I have had snorkelling and diving elsewhere.

The lack of sunlight and murky conditions are disappointing, making the corals less vibrant than I had imagined. It is, nevertheless, a stirring experience. Even in this ‘average’ spot on the Reef, which I take to be but a small reflection of that across its entirety, I am left with fuller appreciation for the dynamic assemblage of life that constitutes this complex ecosystem.

* * *

Staying aboard the dive boat allowed me to snorkel again a number of times throughout that day, and each session gave me different experiences and insights. I encountered different creatures – many kinds of fish, clams, turtles and, of course, many different types of coral. As well, I was fascinated by the human activity. Scuba divers streamed bubbles from below as they explored the lower reaches of reefs. Snorkelers – mostly day trippers – arrived in large numbers to view reef life from the surface; kids and adults alike. Many, obviously not confident in the water used brightly-coloured flotation devices. Younger people carried cameras: I noticed a young girl with a selfie stick and a GoPro camera recording experiences with a group of friends. For some, such a once-in-a-lifetime experience needed to be documented and shared with others.

Above water, the flat ocean landscape was broken by boats whichever way I looked. These were either ferrying people to reef dive sites, or moored ships or pontoons which, similar to the boat I was on, were semi-permanent fixtures on the Reef. Occasionally a helicopter would buzz overhead, transporting visitors to one of the more exclusive on-reef accommodations. Admittedly, it was peak season at the time, but there appeared to be a constant buzz of activity.

What continued to surprise me during my stay in Cairns, and across the different activities I undertook, was that there being no mention whatsoever of the recent coral bleaching on the Reef: not in any of the tourism literature, not during a marine biology talk I attended, not during my Reef diving experience, or in other activities. This, again, reinforced my sense of the dissociative character of the Reef: the narratives and images of the tourism experience appeared to be markedly different from those within scientific and political discourse.

I put my concerns about coral bleaching to someone who worked on the Reef as a tourism dive guide, and was also a qualified marine biologist. His response was that the Reef was extremely well managed as a marine park – “the best in the world” – and that tourism operators had to comply with strict guidelines of operation. To him, the current level of park management was enough to mitigate concerns. His answer appeared to be genuine, and he demonstrated observable concern for the Reef environment. However, after my conversation with him questions remained. I was left with the sense that bleaching was certainly a concern for those

whose livelihoods are attached to Reef health, but perhaps the issue was an uncomfortable one to openly discuss, especially with those outside the Reef tourism community. Indeed, the idea that tourism acts as a geophysical force significantly impacting the condition of the planet critically challenges existing ideas of sustainable tourism management's ecological and boundary governance attachments, but one that Anthropocene scholarship has stimulated (see Gren and Huijbens 2014). Undoubtedly it will take time for such thinking to percolate through to areas of practice.

Visiting the Great Barrier Reef left me with a range of mixed emotional registers. My perception of the Reef, built up through years of exposure to representations, led to initial feelings of excitement, which were tempered with a sense of trepidation after reading about the effects of coral bleaching, and wider ocean threats.

Box 5.4: An experiment in existential marketing

On my return from Cairns I continued grappling with the sense of unease that emerged from encountering contrasting images of the Great Barrier Reef: upbeat tourism promotions jarring against bleak images of bleached coral. Taking cues from Situationist *détournement* I contemplated what alternative representations of the Reef experience might look like and how these might be employed to prompt reflection.

I decided to experiment with 're-making' tourism marketing, exploring Great Barrier Reef promotional messages and imagery that avoided obscuring the environmental realities, and carried a more appropriate sense of pathos.

I took a sense of loss as starting point, avoiding the confronting concept of death. Loss retains an emotional potency without being overbearingly despairing, and is an emotional register already evident within 'last chance tourism' and visitor perceptions of the Great Barrier Reef (Piggott-McKellar and McNamara 2016).

I emulated the visual styling of Great Barrier Reef tourism marketing: scenic imagery of a coral landscape, and charismatic marine life. I developed appropriate supporting messages suggestive of pending loss, that implore the viewer to: 'see it while you still can'; 'come and say goodbye'. The messages were not intended to be expositional but rather prompt the viewer to reflexively decode them.

The risk of these marketing experiments, I am aware, is that they are not completely unreasonable in light of capitalism's capacity employ emotionally shocking strategies. Indeed, such tactics have been used in conservation efforts, such as for Gorilla tourism (Butynski and Kalina 2009), and Komodo dragons (Walpole and Goodwin 2001). I am also reminded of my experience in Christchurch where the ambivalence of 'disaster tourism' resonated.

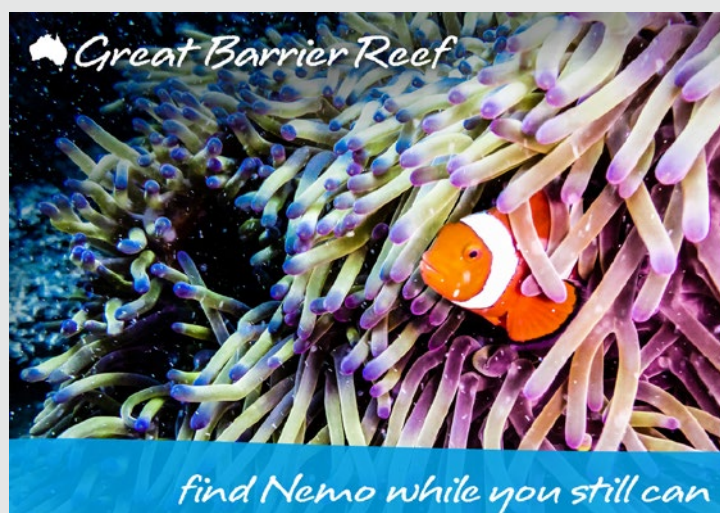
I produced a series of Reef marketing images over a number of weeks and posted them on Twitter: a strategy which publicly broadcasted the images and allowed me to observe responses. The tweeted images were supported with simple text: "Rethinking #GreatBarrierReef promotion #1: pathos required #ClimateChange #LastChanceTourism #auspol". Hashtags made the tweets

more visible within the Twitter ecosystem (#auspol is the hashtag for Australian politics). The tweets achieved a small number of likes and retweets but found no great purchase.

I could have persisted in pushing the images out through social media for longer, and found other ways to attach them to other political or environmental issues and moments. Some conflicting doubts emerged about the appropriateness of the images. On the one hand, I felt they may not be unsettling or shocking enough; and too close in style to being mistaken as real tourism promotions. I was also uncomfortable with potential attachments to cynicism. The point of engaging feelings of anxiety and unease is ultimately to prompt movement and change, but a danger lurks with becoming stuck and potentially acclimatised to a seemingly hopeless situation. I'm aware also that environmental behaviour-change messages benefit from having a positive frame in prompting effective change outcomes (Morton et al 2011). The experiment, however, was not a campaign, and not intended to produce tangible results. Rather, it served as an additional reflexive exercise: a way of re-encoding and exploring ideas in a more performative way.



Figures 5.3: speculative Reef marketing image #1, 2016. (Source: Author.)



Figures 5.4: speculative Reef marketing image #2, 2016. (Source: Author.)



Figures 5.5: speculative Reef marketing image #3, 2016. (Source: Author.)



Figures 5.6: speculative Reef marketing image #4, 2016. (Source: Author.)

Gallery of Reef images



Figure 5.7: Divers are given a pre-dive briefing on the top deck by the crew, 2016. (Source: author.)





Figure 5.8: Shot from rear of the dive boat. Divers and day-trip snorkelers prepare to enter the water, 2016. (Source: author.)



Figure 5.9: Shot from beneath the water, snorkelers prepare to leave the dive boat, 2016. (Source: author.)



Figure 5.10: Snorkelers viewed from below, 2016. (Source: author.)



Figure 5.11: A group of snorkelers float over the top of the bommie, 2016. (Source: author.)



Figure 5.12: Snorkelers observe the reef life. Air bubbles stream from divers below, 2016. (Source: author.)



Figure 5.13: A snorkeler duck-dives to explore the side of the bommie, 2016. (Source: author.)



Figure 5.14: Snorkelers at the surface swim over the top of the bommie, 2016. (Source: author.)



Figure 5.15: A pair of divers perform pre-dive checks preparing to descend, 2016. (Source: author.)



Figure 5.16: Air bubbles rise from a pair of divers below, 2016. (Source: author.)



Figure 5.17: A snorkeler swims overhead, 2016. (Source: author.)



Figure 5.18: View of the coral assemblage; top of bommie, 2016. (Source: author.)



Figure 5.19: Close up of coral branches (*Acropora millepora*), 2016. (Source: author.)

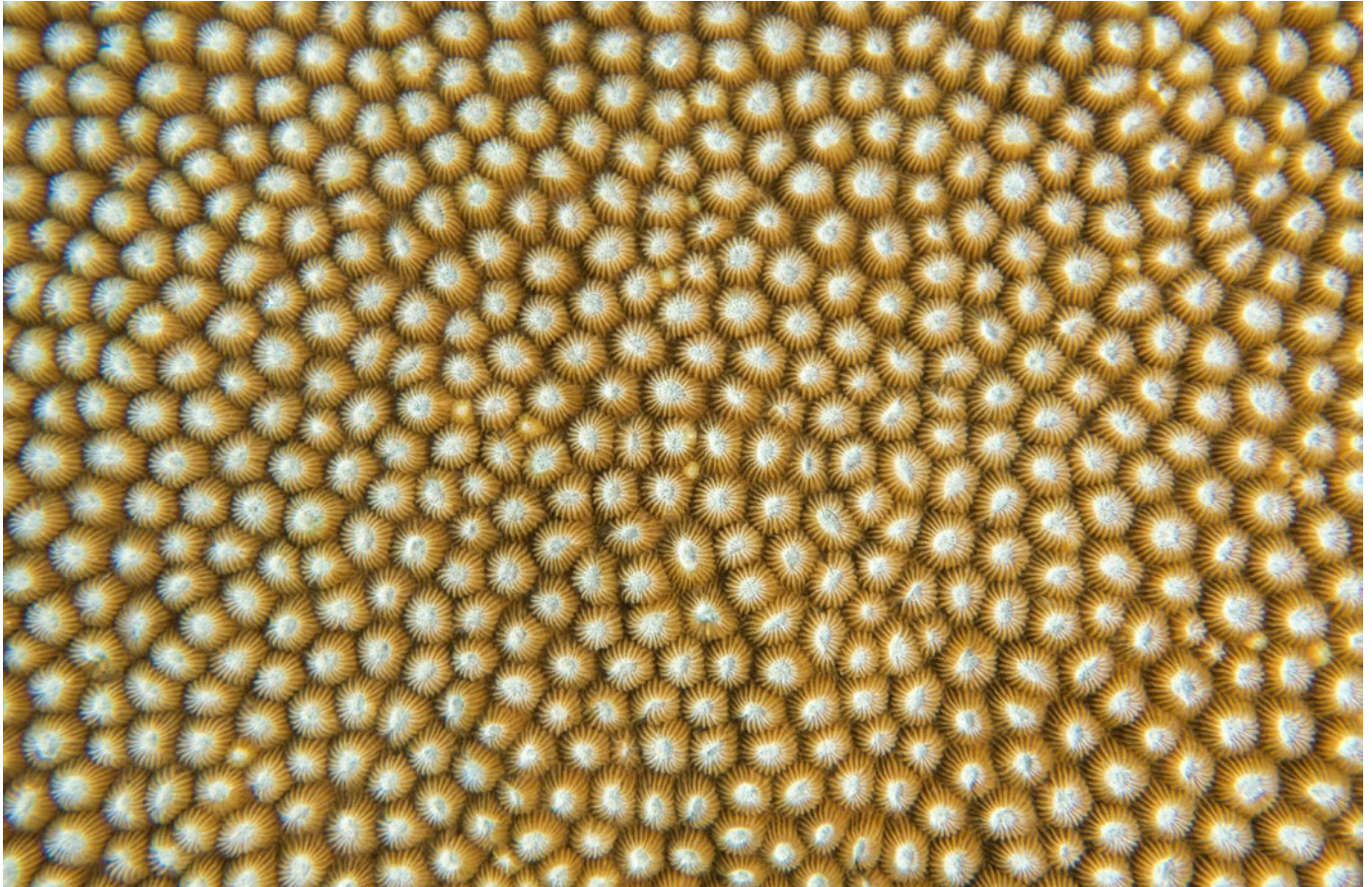


Figure 5.20: Close up of coral polyps, 2016. (Source: author.)



Figure 5.21: Divers viewed from above the surface, 2016. (Source: author.)



Figure 5.22: The view from the dive boat bow. A crew member acts as safety guard, observing snorkelers at a dive site, 2016. (Source: author.)



Box 5.5: Fluid ontologies

Geographers have turned recent attention to the qualities of oceans which, historically, has been of lesser interest than terrestrial space. A focus on human activity, which rarely strays far from the coastal margins, has resulted in oceans being perceived as a vacant or empty space (Steinberg 1999b). In the modern era oceans have been approached as voids to be traversed in the pursuit of capital gain (Steinberg 2001), or an unruly space to be controlled for the purposes of imperial terrestrial expansion (see Law 1986a; Ogborn 2002).

The turn to oceans follows renewed interest in material qualities – the ‘material turn’ – which understands matter as fundamentally vibrant and vital (see Bennett 2009; Whatmore 2006; Bingham and Hinchliffe 2008; Anderson and Wylie 2009). Euclidean notions of space, rooted in linear and mechanistic conceptions of the world, are argued to constrain thinking about matter and the meanings applied to it (see Massey 2004). Space is reconceived as more than simply a flat surface or as plot of points and lines, and inherently dynamic. A ‘fluid’ or ‘liquid’ conception of space has volume, unevenness, and irregularity, and its boundaries are often not well bordered or defined, both physically and ideologically; space is therefore far from being empty or vacant.

The terrestrial bias in geographic thinking has resulted in a categorical divide between land and sea, conceptualised as opposing binaries. Land is the default position, the ground or bedrock of knowability:

Man [sic] is a terrestrial, an earthling. He lives, moves and walks on the firmly-grounded Earth. It is his standpoint and his base. He derives his points of view from it, which is also to say that his impressions are determined by it and his world outlook is conditioned by it. ... And since we found out that our earth is spherically shaped, we have been speaking quite naturally of the ‘terrestrial sphere’ or of the ‘terrestrial globe’. To imagine a ‘maritime globe’ would seem strange indeed. (Schmitt 2014, np)

The ocean, by contrast, is the opposite of firm ground: distant and ‘other’; a non-space; expansive and inherently unknowable (see Shields 1992). Such an epistemological divide can be found in everyday speech: we talk of our thoughts being grounded, firm, or secure, whereas uncertainty becomes ungrounded, without foundation, wavering, or ‘at sea’. Such thinking informed dominant practices of knowledge production which sought to classify the world as fixed, static, and durable (Bourdieu 1977, 1991). Reliant on a ‘sedentary metaphysics’ such classification sought to divide the world up into clearly defined territorial spaces, undertaking a place-making driven by spatial politics, and transforming space into private property, secured through the construction of fences and boundaries (Cresswell 2006). In contrast, the fluid space of oceans is difficult to inscribe and control. Qualities of immateriality, impermanence, and fluidity make such space chaotic and ungovernable (Schmitt 2003).

Ocean space is unequivocally dimensional: water occupies volume. On land the flat surface of territory is easily divisible, but Cartesian thinking is problematic when applied to the governance of ocean spaces such as fishery certification zones (Bear and Eden 2008); the cartographic division of arctic sea space (Strandsbjerg 2012); or marine territory treaties (Steinberg 1999a, 2011). Importantly for oceans, it is *within* and *through* the water that most activity occurs – not above

its surface. Water is also a medium in constant motion, having an ability to move and transform that solid matter does not.

The sea is manifestly fluid: it is moving in terms of its location, it is unstable in terms of its form (from still calm to waves, to tides, to storm surges and tsunamis), and changeable in terms of its chemical state (as either solid (ice), liquid, or water vapour). The water world is therefore in a constant state of becoming; a world of immanence and transience. The water world has a fluid ontology (Anderson and Peters 2014, 11).

Turning to the ocean's 'wet' (Steinberg and Peters 2015) or 'fluid' ontology (Anderson and Peters 2014) suggests a useful pathway in moving away from terrestrially grounded thinking. Thinking 'from' or 'through' the ocean – its three-dimensionality, its dynamic and liquid qualities – opens up spatial conceptions of the world that, far from being static and bounded, are fluctuating, changeable, processual, and in a constant state of becoming.

Although I did not focus directly on oceans themselves, I found that ideas of fluidity and liquidity found an emergent resonance with the encounters and phenomena explored, being highly appropriate for thinking about conditions, matter and states in the Anthropocene. Initial reflections on my river-return experience assisted me with imagining flows beyond just water and through to geophysical processes where 'solid' rock and stone are perceived as fundamentally fluid. Visualising the essential dynamism of Earth processes requires an augmented temporal imagination. Attending to geological phenomenon brings an appreciation of expanded material, spatial and temporal dimensionality and fluidity. For Christchurch, the concern with ground led me to consider lines and fractures running not just across the surface but deep beneath it. Such vertical and dimensional thinking brings an unsettling intricacy to contemplating phenomena beyond the surface, where energies and impacts reverberate through ground in all directions, materialising in unexpected locations and forms.

Contemplating an Anthropocene world requires attention to planetary systems and the attached complex dynamics, as well as considering the 'vibrant' flow of matter within such systems. I begin to visualise such a world comprised of lines, threads, and pathways which extend through different spatial, material, social, political, and temporal dimensions, having varied concentrations, velocities, and attachments.

Conflicted feelings remained with me during my time on the Reef. I felt tremendously grateful for the opportunity to visit but, similar to the other divers I spoke with, I was conscious that my being on the Reef was having some impact and, even though that might be small, I couldn't help feeling unnerved. Although I was able to rationalise the lesser impacts of managed tourism against more concerning climactic threats (even though I was not fully convinced by the answer given to me by the dive guide), I still felt attached to, and a responsibility for, my own contribution. Such an awareness was a reminder of obscured Anthropocene lines (Cook and Balayannis 2015), where attachments to, or through, complex phenomena, or 'hyperobjects' (Morton 2013), is unclear and highly unsettling. That others shared similar

unsettling thoughts was evidence that such faint and uncertain lines, while not clearly visible, can usefully be traced to inform understanding of such disturbances (for example, Piggott-McKellar and McNamara 2016).

The images and sensations I have of being on the Reef and in the water act as visceral reference points. Although I was unable to witness direct signs of coral bleaching its absence only acted to increase a sense of uncanniness given my understanding of the full scope of disruption.

Allowing people into areas impacted by bleaching would be ineffective environmental management and undoubtedly provide a disappointing tourist experience, but the circumstances led me to reflect on not just what was visible but what remained obscured. During my time in Cairns I had noticed a lack of visibility of coral bleaching in either conversations, or representations of the Reef. Images of the Reef were intentionally upbeat, and a jarring contrast against those showing the effects of bleaching. The discrepancy led me to consider the implications of such dissociation (see Box 5.3), as well as contemplate what 'authentic' representations might effective look like (see Box 5.4).

My observations felt decidedly limited in scope at the time. In contrast to encounters in previous chapters where attachments to place have existed, I was conscious of a more nascent understanding of the Great Barrier Reef's complexities, not only ecological but cultural; and with relying on a brief tourism-focused experience. And, while the Reef may perform as a significant global environmental imaginary, what became evident in-field was the absence of Australian Aboriginal narratives within surrounding activity, which appeared wholly dominated by tourism or ocean-environmental discourses. Such reflections are difficult to reconcile or resolve, apart from highlighting my own positional limitations as well as being indicators of the broader colonial and imperial currents argued to inform the Anthropocene (Instone and Taylor 2015) or, more critically, the 'Anthropo-not-seen' (de la Cadena 2015). I offer no simple remedies within this thesis beyond recognition of such frictions and, rather, take them as reminder of inherent unevenness and disparity.

In the end I came to appreciate the mundane qualities of my in-water experience. Having visited the Reef seeking to encounter and 'bear witness' (Dewsbury 2003; Rose et al 2017) to the deeply troubling disruption of a unique ecosystem I had hoped to find clear signs of distress and more viscerally encounter lines of trauma, such as those I had explored returning to my river-crossing experience, and visiting the fractured ground of Christchurch. Rather, from my time in the water, what remained poignant were the experiences of observing seemingly mundane and quotidian activity of life amongst the coral. Observation of very simple

and unremarkable acts such as fish foraging for food, scouting territory or hiding amongst coral fingers, and even the less-discernible activity of clams and corals themselves, left me with an expanded empathy to the significance of those simple traces of life on the Reef.

Such coexistential experience expands my own sense of the anthropocosmological. While reading books and watching documentaries about Reef life promotes intellectual understanding, the experience from in-situ observation brings an intimacy to the experience of encountering such strange others. Where previous encounters have explored frictions between human and material-geologic agencies, within the Reef environment it is difficult to disregard and be unaffected by the 'other' – non-human – forms of life and organisation that constitute the ecological mesh of Reef life. While still alien in many ways, animal marine life retains recognisable and relatable qualities due to its 'fleshy' constituencies – a fleshiness which makes shared vulnerabilities to unsettled existence more tangible. An acceptance of an intimate interconnectedness of coexistence would itself be enough to establish a sense of being-with others, but within an Anthropocene world we become equally exposed by uncanny disruptions to our shared planetary home. In a much less dramatic way than Plumwood's reorienting encounter, I am able to better conceive my relationship with the lives of these beings living on a small bommie amidst a vast reef. Amongst the larger mesh of the Reef I am also struck by how fragile such lines appear, and how precarious the fabric of the Reef seems.

Corals. Change. Fluidity.

In this final section I interrogate the constituent qualities of the Great Barrier Reef and the corals that form it. I seek to clarify the Reef's prognosis and better understand if my lingering sense of unease remains appropriate, or whether claims of the site's 'death' are simply dramatic exaggerations. Given that the Reef has endured for many millions of years, does it have the capacity to adapt to changing conditions? Perhaps also something can be learned from reefs' capacities to endure unsettled and fluctuating conditions.

To better understand the potential fate of the Great Barrier Reef requires looking beyond the visible present and examining geologic attachments and to deep time. The Reef we know today has been shaped by ongoing geological processes also responsible for current continental land formations and oceans (Veron 2008). Fossil remains of corals that grew from 120 to 30 million years ago are found in the Reef's present location. The corals grew during geological epochs with favourable warm conditions but were interrupted by periods of glacial climatic conditions. Stable conditions only returned 2.6 million years ago, at the beginning of

the Pleistocene, allowing corals to grow and again form reef structures. Formation of the Great Barrier Reef we know today appears to have begun at around 600,000 years ago (Pandolfi and Kelley 2008, 40).

Even within the recent stable period, ongoing natural oscillations have altered the shape of the Reef. Climatic fluctuations – notably ice ages – impacted the Reef’s biological composition due to cooler water temperatures but, more dramatically, changes in sea levels forced the relocation of coral formations (Pandolfi and Kelley 2008, 41). For around 50 percent of this recent period sea levels were much lower and the area of the Great Barrier Reef now covered with shallow water was above sea level, existing as a dry plain covered in scrub. The coast lay further east than it does presently and corals survived in the coastal waters. As sea levels subsequently rose over thousands of years¹ and reclaimed the plain, corals re-established and continued to form reef structures. For the other approximately 30 percent of time, the Reef site was a mix of coral reefs and islands in an interstitial state. For only 10–20 percent of the Reef’s recent history would it have looked like it does now.

Thus, the Reef that we see today is the result of very recent sea level stabilisation. Sea levels reached their most-recent low – 130 meters below today’s levels – 20,000 years ago. It then took over 10,000 years for sea levels to return to present-day height (a level that last existed some 120,000 years ago) and thousands of years for current coral formations to re-establish themselves (Veron 2008, 156). The present configuration of the Great Barrier Reef is, therefore, very recent (in geological terms): only some 6,000 years old (Wallace 2008) and, significantly, it is far from being either stable or permanent.

Corals, over their 500-plus million years of existence, have had to cope with constantly changing conditions: periods of boom and bust. Long periods of favourable conditions have been followed by mass extinction events during which many species of coral did not survive. Those existing today are the survivors of half-a-billion years of extreme planetary fluctuations, and have managed to do so only because of an evolved genetic plasticity. Corals have not only been shaped by such ongoing environmental stresses but by the fluid medium in which they live, relying on ocean currents for reproductive dispersal (Todd 2008). A coral species may ‘break apart’ if ocean currents are insufficient in dispersing coral spawn widely enough, having the ability to become many different species due to a hybrid genetic composition. Conversely, a species may also ‘reform’ when currents are favourable, bringing together spawn of the same

¹ The habitation of Australia some 50-60kya means that coastal shifting was witnessed and experienced by humans, and stories of coastal changes can be found in the oral traditions of local Aboriginal people (Nunn and Reid 2016).

species. The genetic re-packaging process is termed reticulate evolution and differs markedly from traditional Darwinian evolution. While such hybridisation is not completely unique, it provides a mechanism by which a bounded population is able to make the most of a limited genetic pool, and adapt to new conditions more effectively than by random mutation alone² (Arnold 1997). The mechanism has allowed corals to survive ongoing fluctuations by, in effect, mimicking the unstable and fluid qualities of their environment, meaning that, if stressed, corals are able to respond to changing conditions and, over time, adapt.

The biological fluidity of corals has not been lost on those concerned with marine life and coral reef health. Researchers have actively investigated coral's genetic plasticity hoping to increase resilience to adverse environmental conditions. By stress-testing corals to identify favourable characteristics, such as heat tolerance, one proposal seeks to develop coral hybrids with enhanced adaptive capacity which can be used to artificially seed reef environments (see van Oppen et al 2015; van Oppen et al 2017). Such human-assisted evolution accelerates corals' ability to hybridise and adapt given that environmental changes are occurring at a much faster rate than normal.

Assisted evolution and reef seeding may not, however, be enough (Edwards et al 2015). There are additional critical pressures on coral: ocean acidification, increased storm frequency and intensity, and the spread of pest species (Hughes et al 2010). Combined, such threats look to be a significant challenge to all coral reef systems, and marine biologists predict Great Barrier Reef health to be severely diminished over the next few decades (Veron 2008, 221).

Disturbances to the Reef continue. In early 2017, continuing warm climatic conditions resulted in another severe mass coral bleaching event (GBRMPA 2017c). An aerial survey of coral damage undertaken by the ARC Centre of Excellence for Coral Reef Studies showed that the 2017 bleaching footprint extends further south in the Great Barrier Marine Park than the 2016 event (ARCCECRS 2017). And, on 28 March 2017, tropical cyclone Debbie crossed the Reef and struck the Central Queensland Coast causing additional damage. The cumulative impact of these disturbances suggests severely diminished resilience across the majority of the Reef north of Mackay. And, while such continued stresses are concerning for the plight of Great Barrier Reef, we should also be mindful that the Great Barrier is just one reef ecosystem of many globally; others show far greater vulnerability to environmental impacts³ (WRI 2011).

² Such hybridisation also comes with negative consequences to a genetic pool: it can allow undesirable genes into the pool, or reproductive sterility.

³ The Great Barrier Reef is relatively well managed in comparison to other reef systems around the world, and is rated at 'low risk' from local factors, whereas reefs in southeast Asia and the Caribbean show much higher levels of risk – 80 percent or more of reefs are at medium to very-high risk. (WRI 2011).

The prognosis for the Great Barrier Reef therefore remains concerning, however, those geologic and genetic attachments of corals offer other lines of possibility. The material-cultural qualities of corals suggest productive openings for varied outcomes – not that the predicament of the Reef will necessarily become favourably resolved. At best, I imagine ‘ustopian’ responses – unevenly mingled utopian and dystopian ‘fixes’ (Atwood 2015) – with life on the Great Barrier, as well as other reef systems, potentially being ‘held together’ by ongoing human intervention but ultimately in highly ‘patchy’ and ‘fractured’ ways (Tsing 2015b, 2016). Conditions, however, will remain precarious. Other trajectories I take to be more clearly dystopian, leading towards outcomes with ‘unthinkable’ consequences: namely severe depletion of life within the oceans over the longer term.

Experiments with coral hybridisation and reef seeding may prove effective in boosting resistance to diverging conditions, however, such an interventionist strategies follow the kind of problematic technological managerialism proposed through planetary geoengineering, reliant on continual human adjustment and intervention and ultimately failing to address causative factors. Such an approach conjures images of a dark Sisyphean future where the work of managing coral health ecosystems becomes unceasing labour for humans and human inventiveness. Given the extreme conditions already being felt by reef ecosystems such experimentalism may be the only viable option given the absence of any comprehensive political accord. But, even if coral hybridisation proves effective, the Great Barrier Reef will remain dramatically changed, becoming compositionally altered. The shape and location of the Reef will also adjust in response to additional factors outside our control: climate and weather fluctuations, as well as rising sea levels.

Heraclitus’ river aphorism is again worth returning to; a reminder of ongoing flow and flux. As its geology shows, the Great Barrier Reef is a site of constant change and churn, and currently exists in an interstitial state making it inherently unstable. While we may view it as a site to be preserved – disregarding complications rendered by wider environmental planetary stresses – the Reef is far from static and efforts seeking to stabilise or maintain its current composition would ultimately be misguided. And, now being acted upon by additional planetary-scale anthropogenic forces, the Great Barrier is thrust into a post-natural state beyond the normal operating boundaries of planetary dynamics and fluctuations.

The Great Barrier Reef is therefore caught within an intractable existential paradox: structurally dynamic and resilient but pushed beyond normal limits to face an inevitable ‘death’. Such a death is far from an ending – and certainly not a ‘natural’ one – but rather, as McKibben (1989)

presciently suggested, one in which human agency comes to dominate the very mesh of being. But, within this paradox lies an answer to the deep affective disturbances that reports of the Reef's death provoked and, for me, helps to untangle key lines of Anthropocene unsettling.

At one level the Great Barrier Reef acts as a unique place and environmental imaginary. Yet while it continues to be represented and promoted as abundant and lively, at the same time jarring counter imagery shows growing discolouration and death. The 'death' of the Great Barrier Reef implies loss of the most extreme kind: the loss of a significant and ultimately irreplaceable 'natural' feature, extending through to the troubling extinction of species – unique marine life living within, or dependant on, the Reef ecosystem. To face the death of the Great Barrier Reef confronts us with a rupture to an accepted world view and way of being. Forced to consider the demise of amicable Holocene dwelling, with its geological and ontological security, we respond with shock and denial (see Head 2016). Although I take Morton's (2013) idea of 'hyperobjects' useful for contemplating the large, dispersed, and fluid qualities of the Great Barrier, the Reef is a phenomenon easier to discern than other more dispersed and abstracted hyperobjects (such as global warming or Styrofoam). The clearly visible and visceral disruption to the Reef acts a dark mirror which compellingly signals profound changes to planetary conditions wrought by humans. A disturbed Great Barrier shows us what an Anthropocene world may be like and witnessing such a world is terrifying because, even though it may be that of our own making, it is ultimately a world beyond our ability to control. In this way, the Reef renders Anthropocene asymmetries similar to those geological, but emerging through other planetary agencies. In the case of climate, temperature, and ocean systems, humans may have the capacity to affect these but lack the capacity to actively restore or manage such complex systems with any confidence. In the unfamiliar, uncharted waters of the Anthropocene we are way out of our depths.

The resulting affective tumult presents a quandary in how to respond. There are many options, including indifference, denial, despair, and rage, for example. But I want to return to my concern with experientially witnessing/wit(h)nessing phenomena, and with the different kind of emergency conditions to which the Great Barrier Reef exposed me. Beyond paradox and unsettledness, threats to the Reef provoke feelings of loss – not just for individual creatures or indeed species – but for a condition of the world. Where, for example, in post-disaster Christchurch we can contemplate reorienting to a new mapping of place, what makes this possible is that cities are sites of (largely) human design. The Great Barrier Reef is not: its biological complexity, structural scale, and geological temporality exists far outside human ability to simply 'rebuild'.

The Reef's ominous predicament therefore becomes a portend for an irreconcilable phase-change. On one hand it signifies an end to a familiar and amicable Holocene dwelling and, at the same time, reifies McKibben's (1989) prescient invocation of the 'end of nature'.

Loss appears to have become an integral component of experiencing the Great Barrier Reef, indicated not only by the admissions of those I spoke with but through wider evidence of associated 'last-chance' tourism (Piggot-McKeller and McNamara 2016). Both psychologically and culturally such disquieting affective resonances are useful indicators helping to orient us within a relational world-mesh.

Attending to contemporary experience of death and species loss has been a key focus for scholars in extinction studies grappling with the bioculturally complex and entangled phenomena of mass extinction (van Dooren 2014; Rose et al 2017). Bringing visibility to such events or sites becomes a mode of witnessing/wit(h)nessing: telling multi-species stories and inviting "readers into a sense of curiosity about the intimate particularities of others' ways of life" (Rose et al 2017, 4). While such work avoids focusing on the human dimensions of the problem, it unabashedly poses poignant questions for the anthropos, and what it means to live ethically in the Anthropocene.

Recognising and responding to loss is important in effectively dealing with significant traumas and disruptions in one's life (Attig 1996); and highly appropriate for attending to the subsequent challenges emerging from Anthropocene experience (see Head 2016). Freud's (1917) seminal work on mourning and melancholia argues that both are similar but different responses to loss. Melancholia is a state of grieving in which a person is unable to consciously comprehend or articulate loss, and therefore therapeutically unproductive. Mourning, on the other hand, involves a more deliberate and constructive process of grieving. Both individually and collectively mourning allows us to 'work through' experiences of loss. For Attig (1996):

As we grieve, we appropriate new understandings of the world and ourselves within it. We also become different in the light of the loss as we assume a new orientation to the world. (p 107)

Thus, in therapeutic terms, mourning is a process of learning and transformation which can aid us in accommodating to a changed reality. Mourning moves us to dwelling on a loss and coming to appreciate what it means; as well as how the world itself has changed, and how we must then alter and renew our own attachments and relationships if we are to move forward (Rose 2013, np). In this way, the act of genuine mourning helps to foster a coexistential awareness of our dependence on and relationships with the many imperilled others.

Crucially, a sense of loss should not be taken as an endpoint in itself. A visit to the Great Barrier Reef resulting only in a sense of deep melancholia would not be beneficial. A sense of mourning acknowledges loss and at the same time brings the potential for movement by opening up fresh pathways of thought and action. However, this is not to say such pathways are clear or easy to navigate: the entangled complexities of the Great Barrier Reef make the situation highly fraught, reflective of the Anthropocene's inherent paradox and uncanniness. Such experience is fundamentally unsettling not only because it asks us to remain open to difference and strangeness, but because it requires us to navigate a subtle trajectory between poles of hopefulness and confidence against those of despair and uncertainty. As Head (2016) argues, a sense of grief will increasingly become an important component of our experience of living within the Anthropocene. It will not be something we can just deal with and move on from but, rather, we will be compelled to acknowledge and hold on to registers of loss and grieving as key constituents of effective Anthropocene politics.

Reflecting on my river experience and resulting contemplation on New Zealand's onto-political reconceptualisation of natural forms, I pondered if such thinking could productively inform management of the marine environments and the Great Barrier Reef. Within such a scenario, perhaps oceanic industries, tourists, governments, and environmental managers could more fully engage with the registers of loss and grieving, and thereby come to accept the fluidity of changing coasts, oceans, and reefs. Only months prior to my visit to Cairns, Patrick Nunn and Nicholas Reid (2016) published their epic, and prize-winning, analysis of Aboriginal adaptations to coastal inundation events over thousands of years. In it, a physical geographer and linguistic anthropologist in collaboration documented physical changes to the Australian coast throughout the Holocene, and listened to Aboriginal oral histories of country. Their results revealed a consistent pattern of adapting and sense-making, living amidst uncertainty on an ever-changing earth-ocean interface over thousands of years. By contrast, my visit to the Great Barrier Reef, just like news reports of this unique ecosystem under threat, captured only a moment in time at the onset of the Anthropocene. Although alarmed and disturbed by the Reef's impending fate, I was reminded that corals morph, coastlines change, and that there are humans in this very place who have already shown how to dwell with oceanic unease across the longer term.

* * *

The qualities of the Great Barrier Reef are a reminder of dwelling on unstable and unsettled ground, and among the fluid turbulence of ocean. While we might look at the Reef's structure and see a largely solid and static assemblage of accretion, this belies its relational complexity and fluidity: coral reefs are anything but fixed. Corals are both agents of geologic assembly and responsive to geologic processes, and vast planetary and temporal dynamics. The genetic 'fluidity' of corals is perhaps their most surprising feature. While not fully oceanic, corals are shaped by the movements and dynamics of oceans. Far from existing in a world that is fixed, they have resourcefully navigated their way through the 'rhythmic turbulence' of an inherently dynamic world.

The fluidity of the Great Barrier Reef is a reminder of the world's eternal flux. The Reef of today is different from yesterday, and will be different again tomorrow. Problematically, human influences force uncharacteristic conditions which provoke unprecedented outcomes. Accelerated disturbances to marine life threaten to 'end' the Reef familiar to modern humans. I have taken the 'death' of the Great Barrier Reef as an affective signal for attendant loss attached with Anthropocene experience. Such loss requires our attention. We need to accept and process the challenging end-points punctuating the unsettling transition to a new planetary state. Grieving and mourning can help us to productively process that which has been lost and help move us forward, readying us for those challenges yet to come, and helping develop emotional and psychological resilience.

In the next chapter I follow concerns with fluidity, structural emergence and affective unsettling, but in a quite different way by looking to activity that explores novel modes of unsettled dwelling appealing to simple relational and generative potentials.



Figure C: Dead coral stuffed toy, 2017. A child's toy in the shape of a coral polyp; a reminder of Anthropogenic damage to biotic life currently underway in the oceans. (Source: author.)



An aerial photograph of a clear blue sky filled with white contrails from an aircraft. The contrails form a complex, overlapping pattern of lines and curves, creating a sense of motion and depth. The word "Air" is written in white, sans-serif font in the lower right quadrant of the image.

Air

Chapter 6 | Buoyant atmospheres

In this final field chapter I am drawn into the air. The path I explore is somewhat different to previous chapters, being less about an event or site of emergency but which nevertheless appeals to conceptual emergence and reorientation. I focus on imaginative and productive responses to the challenges of unsettled dwelling, looking to artistic interventions seeking to trace alternative trajectories through the Anthropocene.

I consider the work of artist Tomás Saraceno which experiments with spatial relationships and elemental forces, harnessing the potentials of atmosphere in response to social, political, and energetic challenges of the Anthropocene. The artistic outputs offer novel encounters and experiences. Decidedly experimental, the creative activities engage multiple relational sensitivities: material, energetic, social, and political. Saraceno's art moves beyond representational expression, being overtly performative and interactive, showing traces of the disruptive and unsettling spirit found in existentialism and Situationism. Themes of emergence and impermanence are also visible. Saraceno is clear about the political attachments of the work's trajectory which is propelled along utopian lines – though only lightly traced. Beyond clear attachments to challenges rendered by Anthropocene dwelling, I consider the affective potentials that such work brings to Anthropocene investigation.

I start with an overview of Saraceno's artistic practice, introducing ideas which inform recent Anthropocene-related work. Relational sensitivity and attunement are essential to the work, which becomes a multi-layered collaborative performance of energies, materials, and imaginative potentials. I draw on my own experience of his aerosolar work, documenting a 'launching' event in Berlin organised by Saraceno which provides visceral insights into the work's qualities. While the work offers generative Anthropocene trajectories, I find problematic attachments to technological solutionism, as well as to unrealistically composed and settled future conditions.

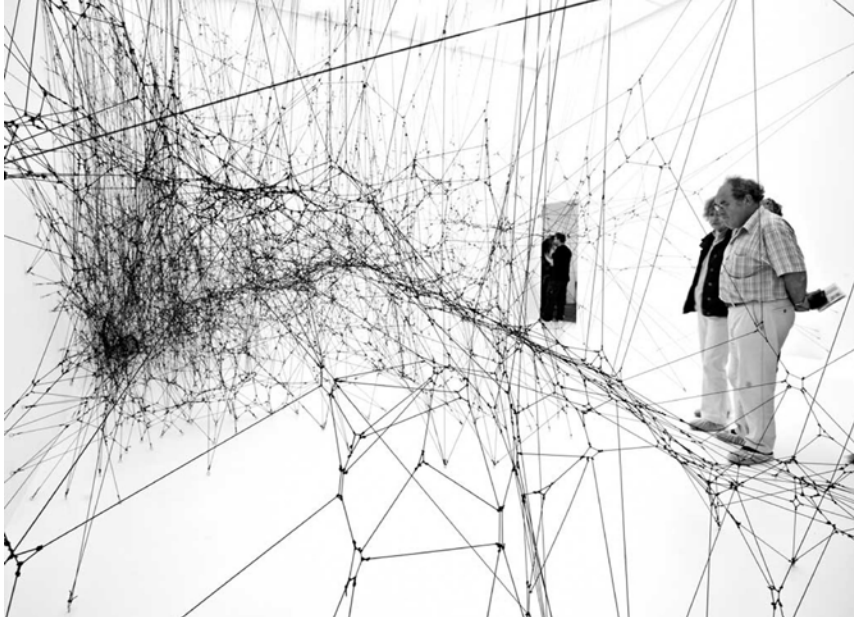


Figure 6.1: 14 Billions (working title), 2010. A large-scale installation depicting a Black Widow spider's web at a scale of 1:17. The sculpture is composed of 8,000 black strings connected by over 23,000 individually tied knots spanning 400 cubic meters. (Source: Studio Tomás Saraceno.)



Figure 6.2: On Space Time Foam, 2012. Based on a cube, the geometric form often used by scientists to represent the concepts of space and time, visitors' movements in the installation enact the time variable, thereby introducing the concept of the fourth dimension within the three-dimensional space. (Source: Studio Tomás Saraceno.)

Becoming Aerosolar

Saraceno's art is difficult to categorise and strays across disciplinary boundaries. Although he has been called an 'eco-artist' (Obrist 2010, 4), and his work draws on ecological-environmental themes, such a label is limiting. Spatial connectedness is an unmistakable concern, but projects grapple with more than just ecological issues. Architectural training informs Saraceno's interest in how space is used and how relationships are formed through spatial experiences.



Figure 6.3: In Orbit, 2013. Layers of safety nets installed at a height of 20 metres. Inspired by network relationships, neural pathways, and synchronous communication, the work is designed to allow visitors to experience these phenomena as a physical geography. (Source: Studio Tomás Saraceno.)

Such ideas are explored within structural forms and through novel relationships. His work with spiders, for example, investigates the structural qualities produced through web building, ideas expanded to the human scale in his work ‘14 Billions (working title)’ (Figure 6.1). Other projects take the form of large-scale installations, such as ‘On Space-Time Foam’ (Figure 6.2) and ‘In Orbit’ (Figure 6.3), where structural membranes form suspended openings, allowing people to become aware of their own spatial relationships, as well as experiencing a ‘radical togetherness’ with others (Engelmann et al 2015, 68).

Saraceno’s more recent work, employing what he calls ‘aerosolar’ potentials, takes the concern with connectedness to another level, investigating ways of both sensing and collaborating with elemental forces. The work explores technologies able to harness the power and capacities found within air and space: kites, balloons, kitoons (hybrid kite balloons), and tensegrity structures (forms made of floating compression elements). An aerosolar sculpture is a structure able to become airborne, using only air and solar potential (see Figure 6.4). The buoyancy developed by a thin membrane enveloping air and warmed by the sun provides an understated potential; apart from providing lift for the structure it opens up many other possibilities for reconsidering relationships with the world: relationships to others, to space, and to power.

At the outset, becoming aerosolar is about “the engineering of a certain affective capacity: the capacity to be affected by the elemental; about the coming into being of responsiveness to the circumstantial variation of an elemental medium” (Engelmann et al 2015, 73). To engage with aerosolar technology requires one to be cognisant of, and sensitive to, raw elemental qualities. At its most basic these are physical properties: of materials, and of structural and thermal dynamics.



Figure 6.4: Aerosolar sculpture. (Source: Studio Tomás Saraceno.)

'Affective capacity' is an attunement to circumstance, a theme explored by philosopher Michel Serres (2008). For Serres, attunement is the gathering together of the local, in ways formed and shaped responsively by – and to – the contingent set of variations from which it emerges.

Affective capacity involves being responsive and being shaped by the environment, and the qualities and potentialities that they afford (Instone 2015b). Following such ideas, becoming aerosolar is an attunement which avoids forcing, being forceful, or 'in control'; rather, it is an approach of working *with* qualities and circumstances presented, and of being accommodating towards these. To become aerosolar, therefore, requires letting go of the desire to control.

Additionally, being aerosolar is an orientation foregrounding a blended relationship of elemental properties: material, dynamic, associational. Aerosolar potential draws on the generative power of the solar – a force on which all life on the planet is beholden – as a capacity with elemental, earthly potential:

[Becoming aerosolar] reminds us that the refrain of the wind emerges from the relation between solar and earthly milieus, between radiation, rotation, gravity, and fluid dynamics. At the same time, as a concept that favours a mode of emergent organisation defined by the movement between clustering and dispersal, scattering and gathering, the refrain of becoming aerosolar is a call of sorts: a call for new forms of associative elementalism, an invitation for us to imagine and invent forms of novel togetherness. (Engelmann et al 2015, 65)

Saraceno's concern with the potentials of air is one shared by cultural geographers, who have taken interest in the qualities and capacities of air and atmospheres – an 'aerography' (Jackson and Fannin 2011; see also Adey 2015). Concerns range from hybrid interests between physical and cultural examinations of climate and weather – 'cultural climatology' (Thornes 2008; Thornes et al 2010); phenomenological accounts of air, providing more 'immersive'

accounts of the medium (Forsyth et al 2013; Elden 2013; McCormack 2008); examining the ways in which the ‘virtues’ of air affect spaces – notably cities – and the health of inhabitants (Rabinow 1995; Driver 1988; Schaffer 1983), as well as their control (Legg 2007; Nieuwenhuis 2013; Theophanidis 2013). Adey’s (2015) concern with air, however, seeks to move away from human-centrism to explore how the elemental properties of the medium come to the fore, and ways in which an ‘affinity’ for these qualities and their affects can be better demonstrated. Others explore ways of approaching an ‘elemental affinity’, such as Derek McCormack’s (2014) circumstantial narratives, Tim Choy’s (2012) poetics of air, or Sasha Engelmann’s (2015) research on artists and their practices working with air as a medium.

Air, atmosphere, and energy are properties indelibly attached to current planetary concerns, entangled within anthropogenic environmental impacts such as air pollution and climate change. These are issues that Saraceno’s elementally aligned aerosolar experiments are effectively attuned to explore. Artistic experimentation expands the kinds of sensibilities able to be drawn into conversations with environmental, as well as Anthropocene, politics. Creative and unconventional responses open up the potential for new kinds of relationships, not just between elemental agencies and technology, but through novel spatial relationships and political arrangements. Saraceno explores such potential through a series of projects under the name ‘Aerocene’.

Aerocene trajectories

Aerocene takes many different forms, and is realised as more than a just an artistic project. In this section I focus on different expressions of Saraceno’s Aerocene, showing the different lines explored. The project’s attachment to Anthropocene themes is of key interest, as well as the way in which project outputs innovatively respond to different concerns: energetic, spatial, and political.

Saraceno defines Aerocene as:

...a multi-disciplinary project that foregrounds the artistic and scientific exploration of environmental issues. In the wake of the Anthropocene, the project promotes common links between social, mental, and environmental ecologies. Inflated only by air, lifted only by the sun, carried only by the wind, towards a sustainable future. (Saraceno 2017, np)

What first strikes me about the Aerocene project is the simplicity that propels it: elemental constituents regulated by basic thermodynamic laws. The uncomplicated combination of a holding membrane, air and sunlight, with its potential to create lift, opens diverse possibilities.



Figure 6.5: Museo Aero Solar, 2015. (Source: Studio Tomás Saraceno.)

Aerosolar ideas provide the means for the inhabitation of other-dimensional space, opening up potential for exploring new socio-political configurations. The ability to reclaim and occupy atmospheric space is, from an ecological standpoint, a counterproposal against planetary geoengineering schemes focusing technocratic fixes to anthropogenic climate forcing – such as through the release of chemicals, micro particles, or other technological interventions.

The fundamentals of aerosolar technology is not new. The use of solar can be traced back many thousands of years to the Egyptians and Greeks. Today, interest focuses largely on the conversion of solar potential into electric charge. However, the ‘passive’ use of the aero-solar energy relationship was first explored by the French National Space Agency (Centre national des études spatiales – CNES) for balloon-powered flight in the 1970s. InfraRed Montgolfiere (MIR) was a balloon technology developed for autonomous meteorological research (Letrenne et al 1999). A balloon with instrumentation was able to maintain an altitude of between 18km and 32km flying through day and night. The balloons could remain aloft for many weeks on end, being steered by vectors of high-altitude currents with the only limitation being aviation laws.

Additionally, such aerosolar technology unsettles the technological associations that have come to dominate modern life and the reliance on petrochemical power. Aerosolar technology provides an alternative means of propulsion that removes Saraceno’s Aerocene devices from the grip of the petrochemical industry, both physically and politically. The aerosolar is more than just a technological gimmick, it is a configuration which provokes a rethinking of relational engagements with energy, elemental forces, space, and each other. Aerocene’s areolar potential allows us to:

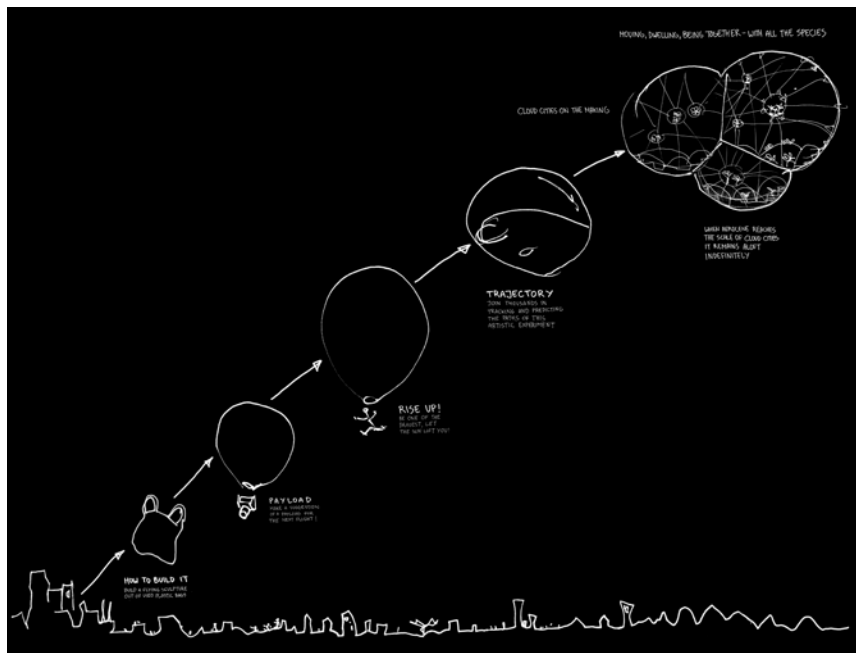


Figure 6.6: A map of Aerocene trajectories. The progresses through increasingly more ambitious stages of aerosolar experimentation towards the potential of atmospheric dwelling. (Source: Studio Tomás Saraceno.)

...imagine a metabolic and thermodynamic transformation of human societies' relation with both the Earth and the Sun. It is an invitation to think of new ways to move and sense the circulation of energy. And, it is a scalable process to re-pattern atmospheric dwelling and politics through an open-source ecology of practices, models, data—and a sensitivity to the more-than-human world. (Saraceno, Engelmann and Szerszynski 2015, 59)

Aerocene projects explore many configurations. Museo Aero Solar is one project which mobilises aerosolar ideas as public art (see Figure 6.5). Taking the form of a large sculpture, the skin is constructed completely from used plastic bags. The project has been circulated around different countries with groups being invited to contribute to the sculpture, each adding to the skin with their own collected plastic bags. Museo Aero Solar is therefore a collectively assembled artefact and an archive of poignant Anthropocene objects. Each addition alters the sculpture in texture and size, but also through collective narrative, expanding the constitutive stories of the object.

Beyond the material outcome, the Museo performs as a collective experience of experimenting and making: a process which galvanises local inventiveness, bringing this into a conversation with others globally. Additionally, the collective action of making brings people together locally, inviting them to engage with the ideas of the Aerocene project. Through the Museo people become actively involved in the artwork rather than being simply observers. They bring their own stories into the work, stories that mingle with the larger collective narrative. The process, therefore, allows for people's stories to be affected and altered, allowing new performances to emerge in the world.



Figure 6.7: Becoming Aerosolar. Free Flight, 2015. (Source: Studio Tomás Saraceno.)



Figure 6.8: Aerocene launch with human payload at White Sands Dunes, 2015. (Source: Studio Tomás Saraceno.)

At the end of each new addition to the Museo it is launched. The launch becomes an intimate performance between the elemental, the atmospheric, the self – and the social. More than just public or community art, the experiment functions as a global collective and proof of how technology can be collaboratively assembled. The project is intended not to be confined as an ‘artwork’ or be categorically limited:

“[Neither] a brand, [nor] a copy-righted artwork [...] neither a flying sculpture, nor a symbol or an aesthetization of some good, politically correct eco-sustainable practice”, Museo Aero Solar is firstly a community. (Chabard 2015, np)

The labour involved in the Museo’s assembly is distributed globally across international and political borders, but is simultaneously collaborative. The collaborative form of the project is realised beyond the physical configuration of the sculpture, extending through online networks and platforms: through a blog, website, social media groups, hashtags and shared cloud

services. The ‘shape’ of the project can therefore be understood as more than just a single object: the sculpture acts as a focal point for the many relational lines enmeshed in the work.

The Aerocene navigates an iterative pathway ultimately towards reconfiguring the ways in which humans collectively dwell (see Figure 6.6). After proving that aerosolar technology has practical application the plan follows multiple exploratory phases, each increasing in ambition. The first stage experiments with payloads, and sensing instruments such as cameras have already been successfully tested (see Figure 6.7), as have human payloads (see Figure 6.8). Controlled solar-powered human flight stands as the next challenge. Atmospheric habitation is the ultimate goal: development of aerosolar platforms that break free of terrestrial entanglements, harnessing the currently untapped potential of air-space for longer-term residency.

The challenge of atmospheric dwelling is one informed by Saraceno’s previous experimental work with networked spatial structures. Additional stimulus for the design of platforms allowing different configurations of living and community comes through lines of radical politics. Ideas for Aerocene dwelling draw on a lineage of spatial experimentation exploring political autonomous communal forms. Temporary Autonomous Zones (TAZ) (later expanded to Permanent Autonomous Zones (PAZ)) are spaces designed to escape formal structures of control (Bey 1991; Bey 1994). PAZs can take different forms: a commune with its own distinct organisation and social rules; the occupation of a site, such as to protest or block development; a festival site which temporarily reconfigures space and social rules, such as the Burning Man event; online spaces and virtual worlds in which people can congregate and interact.

Aerocene aims have an air of off-beat boldness, somewhat reflective of aviation’s own rebellious tradition (see Anderson 2004). Early balloonists and aviators were viewed at best as adventurous and worst as oddball: innovators willing to experiment in quite radical ways to explore possibilities of the then-unimaginable idea of human flight. Saraceno’s work has a similar character but engagements with quite different political, technological, and relational concerns propel it in a novel direction.

Before interrogating Aerocene ideas I turn to describing my own visceral encounter with Saraceno’s work, which helps to illuminate the affective and felt sensitivities engaged.

Getting off the ground

In this section I document my experience encountering Saraceno’s aerosolar work. The event was organised as part of the Anthropocene Campus held in Berlin in 2016. Germany’s national

centre for international contemporary arts and culture, Haus der Kulturen der Welt (House of the World's Cultures), organised the Campus as a component of the Centre's longer-term project investigating the Anthropocene. The Campus was the Centre's second forum for early-career researchers with interests in Anthropocene themes. Saraceno's work was used as a case study for the session 'Knowing (in) the Anthropocene'; an example of art practice employed to investigate and respond to Anthropocene conditions.

The invitation to the launch was given with a proviso: it was very much dependent on the weather. We would have to check our emails late in the evening for confirmation, and then again early in the morning before sunrise. If conditions were clear, we would need to collectively organise and navigate the Berlin underground system to find the outdoor meeting point south of the city.

* * *

Disorientated already from flying from Sydney to London, and from London to Berlin, my body is still out-of-kilter, unadjusted to the timezone that puts it twelve-or-more hours out of sync with its natural rhythm: this early-morning wake up makes little difference. I'm up and out of my hotel room shortly after my alarm. It is dark outside, cold, and very quiet.

I make my way to the hotel nominated as meeting point. Only a small group congregates – perhaps a dozen or so of the total 50 participants in the session. The cold early start appears too much of a deterrent for some.

Leaving the warmth of the hotel lobby we walk to the nearest underground train station and navigate our way on different route lines. I have no sense of direction as to where we are going; I only know that the launch site – a large recreational area – is south of the city. As we walk there are introductions and conversations begin. Only later do I realise that such relaxed sociality is an integral component of the event's 'affective atmosphere'. The animated conversations that develop at such an early hour are evidence of a shared air of anticipation about the event. I feel the excitement of being in a foreign city: a city with longstanding creative and artistic associations. Such place attachments only amplify the atmosphere of expectation.

When we finally arrive at the venue the sun has already risen. Tempelhofer Feld is a large recreational park in the borough of Tempelhof-Schöneberg in south-central Berlin. Now retired, it served as an airport from 1923 until its closure in 2008. Proposed plans for development were halted after protests, and the space was reallocated for recreation. Large and flat it is the perfect location for the morning's activity. Runways are still in place, as is some of the infrastructure such as aerial navigation lighting and raised observation towers.



Figure 6.9: Panoramic view of the launch site, Tempelhofer Feld, Berlin. (Source: author.)





Figure 6.10: Tomás Saraceno prepares one of the sculptures for inflation. (Source: Aerocene launch group collective photo pool.)

A few people in the group are concerned that we are late, however this turns out not to be the case. From the other side of the park we see members of Saraceno's studio also arriving carrying equipment. As both groups meet and mingle a large bag of freshly cooked donuts appears and is passed around: the perfect remedy for the morning chill. A flask of coffee and cups emerges soon after. Such offerings supplement the sense of sociality and hospitality; any notion I have of the potential elitism that can pervade art events is alleviated. Throughout the morning other people not connected with the Campus show up to watch and to chat: friends of Studio Saraceno it seems.

Saraceno and his team unpack equipment from large duffel bags: large nylon membranes, ropes, small boxes of tools, tape, an electric fan, a car battery, and other paraphernalia.

Conversations focus on the weather. The morning conditions are perfect. Surprisingly, the cloud and rain of the last few days has cleared and the sky is cloudless. Just after sunrise the air is completely still – though this will change as the sun gradually warms the land creating a thermal differential.

Saraceno and his team begin the work of preparing the Aerosolar sculptures for flight. Two will be launched this morning. The sculptures are made from nylon fabric sewn together into large round-edged triangular bipyramid shapes with sides approximately three meters long. At one corner is an opening which can be sealed via a hook-and-loop strip. Preparing the membranes for launch requires them to first be inflated. Filling the large nylon membranes with air can be



Figure 6.11: A member of Saraceno's team tends to a sculpture as it is readied for launch. (Source: author.)

achieved quite simply by someone holding one of the open corners and running, forcing air in, and a group from Saraceno's team does just that. One person holds the membrane behind them and runs down the runway while others provide support. The opening catches air and quickly fills. Once inflated to a reasonable size the sculptures are positioned on the runway where they sit, waiting for the sun's heat to warm them. They look otherworldly in this urban landscape, like gigantic alien slugs (see Figure 6.12). And, as the surrounding air begins to warm, it gently stirs the creatures making them appear almost alive.

It will take another hour before the sculptures are ready to take flight. Those of us invited to the event continue conversations, but for those attending to the devices it seems there is still much work to be done. I watch with great interest at the continued attention required to nurture the sculptures to life. Saraceno and his crew are in constant attendance: the process is highly tactile. There is much touching, stroking, prodding, which provides feedback on qualities such as temperature and pressure. At one point I see the fan and car battery put into action, positioned at the corner opening to help circulate air inside. Such technology, with its relationship to elemental forces and sensitivity to conditions, calls for a disposition that is both empathetic and nurturing, and an ongoing attentiveness to changing states.

During the preparatory process I approach one of the sitting sculptures. Touching its surface I feel the nylon fabric. Comprised of a fine mesh weave the material has a soft but hard-wearing feel much like the surface of a nylon camping tent. I feel soft resistance as I press the fabric: there is very little internal pressure yet, as the air inside is slow to absorb the sun's warmth. The dark nylon fabric feels warm to the touch, although the temperature is difficult to estimate. The still morning air is now beginning to stir as the rising sun heats the surrounding landscape.

Such an attunement to elements and conditions is not completely new to me. It makes me consider similar attentiveness required when undertaking other activities reliant on environmental conditions. My own experiences are with landscape photography and surfing. Both require specific conditions to be met – at least the activities are made more favourable when they are. Surfing requires a close attention to weather: to local conditions, but also larger patterns that have local impacts. Interpreting the nuances of conditions is key to determining the best locations to find good waves on a particular day. All this occurs before actually getting in the water where, additionally, how to read other signs like tidal conditions, water currents and rips, the underwater landscape, and the kinds of waves being created by the combination of all of these, must be learned. Similar to this dawn launching, both surfing and photography are best undertaken during the early-morning liminal period when conditions are calmest.



Figure 6.12: One of the sculptures sitting on the tarmac, being warmed by the early-morning sunlight. (Source: author.)

The impact of such attentiveness has two particular outcomes. First, is an ongoing attunement to elemental conditions; an enhanced awareness of the environmental circumstances: weather in relation to season, also geography, and an understanding of how different elemental conditions impact the activity. Second, following attentiveness to environmental circumstances, comes the need for patience and timing. One must wait for the right conditions: there is no guarantee they will occur when you want them to, and no way to influence them. Being reliant on circumstances out of one's own control requires forbearance: an understanding that aspiration must yield to agencies beyond control.

Maybe it is because I have no expectation for this launch and because I consider myself a visitor that I find it easy to remain detached. I am able to disassociate from desiring a particular outcome and simply observe. I take mental notes of the things I notice: the light-shade warmth differential; the stillness of the early morning; a sense of connectedness through shared participation; the careful nurturing given to the aerosolar structures; the groupings and conversations; the activity of other people around us on their way to work, looking quizzically at these strange objects. As I watch quietly waiting for events to unfold there is a lot to be aware of.

At around the one-hour mark the sculptures show signs of launch-readiness. The structures are visibly buoyant with edges lifting sluggishly from the ground and descending just as slowly. They move as if in slow motion, without enough energy or momentum to fully raise. Cords tethering the sculpture, though taut, belie the lack of launch potential. It will be a while longer still before full launch capacity is reached.

However, as launch potential appears close, I notice additional movement on the runway. A park security guard has noticed the unusual activity. He drives his vehicle down the runway and parks in front of one of the sculptures. The timing is unfortunate. The guard exits his car and Saraceno, along with members of his team, head towards him to talk. A discussion ensues involving much pointing and gesticulation. I have the feeling that the guard is concerned with the unusual activity. Two additional security guards arrive and enter the conversation. The discussion continues for some 15 minutes. Saraceno and his crew persevere with their explanation and negotiating but expressions on the guards' faces remain stern. Eventually Saraceno returns to the sculptures and informs those of us gathered that the discussion did not go well and the guards have ordered the sculptures to be deflated and removed from the field. The problem, it appears, is the lack of a permit for the activity: although it is unclear how one could get a permit for the unique kind of activity we are undertaking. I am told that this is 'very German', and



Figure 6.13: Members of the launch group wait and talk beside one of the sculptures. (Source: author.)

just an excuse for the guards to shut down unanticipated activity. The irony is not lost on us: on a site used as an airfield for almost 100 years, the launching of aerial objects is regarded as irregular: more so, because kites, model aeroplanes, and drones are still flown here. Perhaps the size of the ‘balloons’ makes the guards uneasy. Our orders are to deflate and remove the devices from the field. Saraceno and his team are not happy but agree to comply.

Of course, the guards are not familiar with the operation of the ‘balloons’. Taking advantage of the ignorance Saraceno tells them that the deflation process will take some time, meaning the sculptures can be left to continue their launch preparation. As the guards look on from a distance, unsure of what is going on, the black sculpture that was threatening to rise finally leaves the ground (see Figure 6.14). It sluggishly ascends and is held in place by a tether just a few meters from the runway. The launch is a small one but a mini victory. We share furtive glances, quietly celebrating the poignant moment of aerosolar potential.

The sculpture hovers unsteadily in the air for a short while. Although it is still early morning there are now many more people in the park: running, walking dogs, some cycling to work. The sight of an unusual floating black object attracts a good deal of attention. The waiting guards, however, have keyed in to the ruse and issue another order for the sculptures to be deflated and removed. Relenting, Saraceno’s team begin the process that will let the life out of these now-buoyant objects. Opening the corner vent the warmed internal air finds an escape. The sculpture loses its lift and slumps to the ground, its shape slowly deforming as internal pressure is lost. A group of us surround the sculpture to witness its demise. I take the opportunity to put my head inside. The inside air is noticeably warmer than outside – feeling similar to that inside a car on a hot summer’s day. From within, the black nylon fabric appears translucent against the sky, and I can see the shadows of those surrounding the balloon (see Figure 6.15). Holding the membrane, people begin compressing and folding it expelling the warm air. Very soon the sculpture has been transformed back into a pile of loose fabric on the ground.

* * *

In some ways the launch disruption was disappointing. It did, however, usefully indicate the kind of unsettling politics that Saraceno’s work performs. As someone in the group aptly pointed out, while the atmospheric climate was favourable for a launch, the institutional climate was not. And, while the launch event was intended as a demonstration for the purposes of the Anthropocene Campus, the friction it generated with official ‘lines’, expressed through the guards’ unease, reflect attachments to a Situationist-style ‘moment’.



Figure 6.14: Tomas Saraceno holds the tether as one of the sculptures lifts off the ground. (Source: author.)

The launch event is different to other encounters I have considered in the thesis thus far. In other cases I have sought to examine sites already disruptively impacted. For this launch event the dynamic was inverted, with the artistic interventions performing an effective disruption to what could be considered stable ground – everyday urban life. For my own part, I was unaware of any distinctly unsettled feelings, only a slight sense of apprehensiveness when the security guards first appeared. I was more conscious of other affective qualities rendered by a sense of collective purpose and the unique and experimental quality of the event; an impression that leads me to contemplate the social and relational work performed. Such positive affective signals point to the potential that shared Situationist experiments may have as performative countermeasures to feelings of existential unrest. Before moving to reflect on such a possibility, I first undertake a critical analysis of the Aerocene project, contemplating implications of the more tangible and radical vectors rendered.

Beyond hot air

Saraceno's Aerocene project has the appearance of being manifestly utopian: self-organising and self-propelled floating cloud cities are a fantastically radical eco-friendly aspiration.

However, it would be unfair to take the Aerocene as wholly prescriptive. While projects have the appearance of being clear lines traced through optimistic trajectories, I take the work to be less about fixed plans and picturesque endings. More usefully, the Aerocene engages a politics of possibility in relation to the Anthropocene, with proposals best taken as invitations into a framework for social and political experimentation. In doing so Saraceno blurs the project's simple 'art' classification, embracing an interdisciplinary approach receptive to influences from diverse disciplinary knowledges, as well as being openly collaborative. Such a strategy allows additional projects to emerge and the wider Aerocene undertaking to grow – and not necessarily towards a clearly defined destination.

Approaching Saraceno's work in this way helps me answer the key practical question I have for the Aerocene: does it provide a coherent and effective trajectory for navigating through unsettled conditions of the Anthropocene? The simple answer is no, I do not believe it does. But I do find Saraceno's work a usefully provocative response to Anthropocene challenges. Resultantly, I am less concerned with evaluating the practical value of the project's trajectory and, rather, find the conceptual reorienting work undertaken more significant. This is not to discount the importance of practical outcomes, but for the Aerocene these are perhaps better understood as serendipitous consequences of an experimental approach.



Figure 6.15: A shot from inside one of the sculptures as it is deflated and folded. (Source: author.)

Additionally, the Aerocene employs acts of suspension in multiple ways. Responding to the atmospheric conditions of the Anthropocene, quite literally, prompts conceptual suspension: opening up new lines of thinking and possibility. Here, Choy and Zee's (2015) focus on elemental and atmospheric suspension is highly relevant. In the first instance this is a concern with anthropogenic alteration to atmospheric load, but additionally draws on more intimate and affective attentiveness to dwelling, what Stewart (2011) refers to as atmospheric attunements. Suspension, in this way, becomes a method of noticing:

a form of attention that is also a mode of relation, a way of being suspended. This form of thought looks up and around, at plumes, clouds, and sky. It looks inward through the vital interiors that render bodies channels, containers, and filters for airs and the things they hold. More significant than the directionality of its gaze, however, is its manner of attunement to the potentials of substances to shift from states of settlement or condensation to ones of airborne agitation, to settle again in time, or to activate a reaction, somewhere else. (Choy and Zee 2015, 211)

Conceptually, suspension also becomes an opening for imaginative reconfiguration, helping to discharge:

assumptions and disbelief... that not only describes worlds but holds them in such a way as to allow them to settle into different arrangements, possibilities. (Choy and Zee 2015, 212)

The Aerocene is therefore a comprehensive performance of suspension, working with elemental and physical atmospheric properties, but as well those more intangible but significant affective qualities; and in ways that ultimately seek to rearrange and renarrate lines of world-making.

In this way, I read the end goal of floating sky cities as *aspirational* possibilities rather than *practical* end-points or solutions to Anthropocene living (I am certainly open to the possibility that they might be, but have concerns with their ultimate effectiveness). While the Aerocene manifesto has the appearance of a clear action plan defining specific goals, it is wholly untested. Floating cities sketch engaging endpoints on a provocative trajectory – but ones that may not be effectively realised or reached. The Aerocene, therefore, performs as a map for experimentation: an opening glimpse towards what Lefebvre (2003:16) called the 'virtual horizon' of as yet unknown liberatory possibilities (see also Gallan 2014). What is less important on such maps are known destination points: virtual horizons are imagined; the wayfaring vectors required to reach them are as yet unknown. In tracing new pathways, new lines are found leading to potentially more interesting destinations.

Saraceno's work is thus better understood as speculative rather than utopian. The provocative *effectiveness* of the Aerocene comes, I suggest, through the way in which the lines between

radical imagination – an amalgam of art and politics – and the practical are blurred. Such creative practice draws from political art traditions such as existentialism and Situationism, which have informed my own thinking within this thesis. Concerned with enacting provocative and unsettling moments, such traditions engage directly with spatial politics endeavouring to open up alternative maps of the world (Kanngieser 2013).

There are also similarities between the Aerocene project and the reorienting and rebuilding activity I considered in Christchurch: both are responses to challenges of dwelling on unstable ground; both offer new maps for future sites of dwelling. The Aerocene map, however, is designed to be dynamic in contrast to the prescriptive government map imposed upon Christchurch. Aerocene attachments to PAZ forms and spatial assemblage resonate with Candy's (2014) concern with self-organisation and emergence. Additionally, the Aerocene is a map for an Anthropocene world while the map of Christchurch was drawn for a world still thought of in Holocene terms, and with persisting modernist attachments.

The medium of air brings with it additional unique qualities: Aerocene atmospheric dwelling is free from the restrictive pre-existing lines and associations marking the ground as it was in Christchurch, as well as being unrestricted by terrestrial conventions of construction. The Aerocene attends to the fluidity and dynamics of the world as a three-dimensional lived space, analogous to the fluid ontologies of oceans. Admittedly, there are differences between air and atmospheric space, and water and oceans, but there are similarities in dimensionality, flows, currents, and embedded energies – properties to which aerosolar projects are attentive, tapping into their dynamic potentials: the propulsion and transport mechanisms are drawn from the energies and currents that permeate the very substance of the aerosphere. The Aerocene reminds us of more-than-terrestrial possibilities for habitation. And, where corals have discovered the benefits of clustering together, forming convivial shared living assemblages, ideas of collective aerosolar habitation structures propels such forms into a more ethereal dimension.

The Aerocene's practical attachments trouble its classification as an art project – which are often less concerned with pragmatic and real-world application. Saraceno's architectural affiliations clearly visible. His interest in social and spatial relationships and the dynamics of energy and power are salient real-world concerns. And, while the Aerocene avoids superficial concerns with representation and aesthetics, it also refrains from developing fixed and singular solutions. Given the project's concern with the future, I find it more pertinent to read it through a lens of speculative design by which the Aerocene can be understood as a venture of re-narrating future-world possibilities.

Speculative design focuses on the more tangible elements via which worlds are made. Bruce Sterling, science fiction writer and design commentator puts it simply: “Tell worlds rather than stories” (quoted in Bosch 2012, np). Saraceno’s aerosolar experiments – the sculptures, experiments, and devices – are the objects which perform (as well as collectively-generate) ideas of world-making. The ingenuity of speculative fabrication – in either speculative literature, cinema, or design – is that fictional worlds can be creatively inferred through the production of simple objects. Such devices prompt the viewer to imagine the kinds of worlds that these might exist within. In this way, the multiple Aerocene projects have a speculative capacity, prompting contemplation of the imagined world in which such fabulated devices – or variations of them – could exist.

The performative and imaginative capacity of speculative objects, however, relies heavily on the active participation of a willing viewer, without which the ‘story’ loses its potency. As in any theatrical performance the effective creation of imagined worlds comes through the effective suspension of disbelief. Such willingness becomes even more important when the story being told is in some way confrontational: where the audience is invited into a world different than that taken to be ‘normal’. In this way we might read the park security guard’s refusal to allow the launch of a pair of large, strange-looking ‘balloons’ to continue as proving too difficult to write into the procedural narrative in which they were operating. Re-writing worlds, however, is not a process without friction or confrontation, and we might best consider that objects written from within an Anthropocene world – real or imagined – will come with a fundamental unsettling potential. Conceptual unsettling, though, is the point, and the reason why speculative fiction has been employed as a provocative tool – even by scientists (see for example: Hanson 2009; Ward 2010; Zalasiewicz 2008) – for discussing pressing environmental themes and exploring radical response trajectories. Fiction’s ‘suspension of disbelief’ is perhaps the ultimate leap of faith (see Schaper 1978)

In an introductory discussion of the Aerocene project Saraceno discussed, somewhat provocatively, the idea of aerosolar flight as an alternative to modern jet-fuelled travel (Saraceno 2016). With the ability of aerosolar structures to lift a human payload having been proven (see Figure 6.8), the next stage is exploring point-to-point travel: ‘flying’ from one location to another. Beyond that Saraceno suggested the technology could be developed to serve as an alternative lighter-than-air transport mechanism: ‘Aerosolar Airlines’ – the airline for the Anthropocene. The suggestion was at least half-serious and, exploring the potential, Saraceno has developed a ‘flight planning’ tool in which point-to-point journeys can be

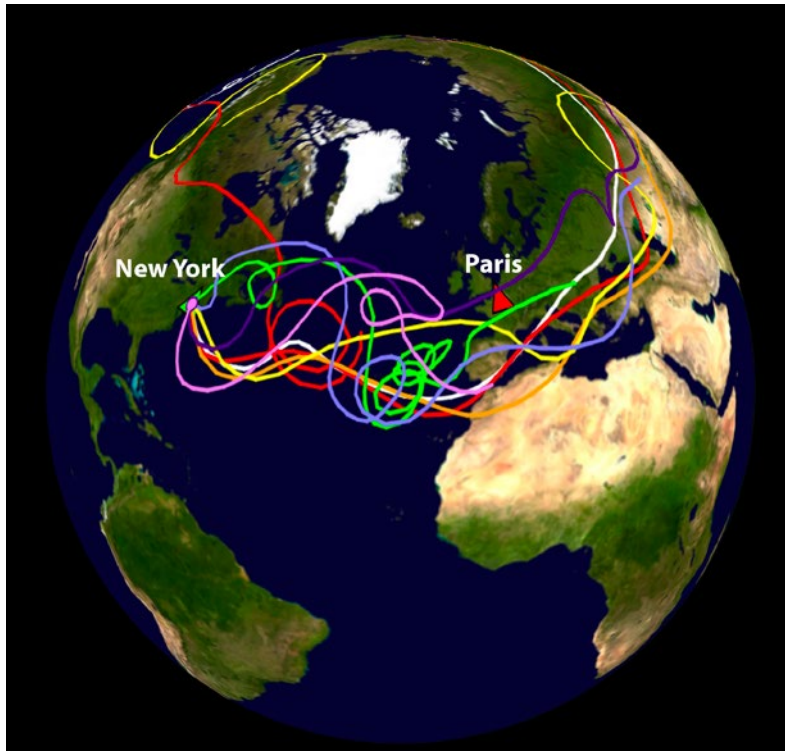


Figure 6.16: A map showing flight pathways from New York to Paris calculated by the Aerocene flight planner tool. The coloured lines indicate flight paths over a seven-day period based on projected weather patterns. In the flight projection, none of the trajectories manage to deliver the flight directly to the destination, with the closest landing being in the south of Spain. (Source: Studio Tomás Saraceno.)

mapped. The tool uses data of tropospheric jet stream currents to trace delivery vectors for aerosolar airships. Where one can ‘fly’ to, however, remains limited by the bounds of atmospheric currents and by seasonality – air currents change orientation and vary in intensity. A trip from New York to Paris is theoretically possible, although could take many days, and may not terminate exactly where intended (see Figure 6.16).

The uncertainty of factors, such as sun, weather, wind direction, and other elemental qualities, make the prospect of point-to-point flight highly uncertain and far less accurate than which we have become accustomed to. The very idea of travel – of planning a flight from a particular location at a given time, and expecting it to arrive punctually at another – is radically disrupted. Travel journeys would become almost impossible to accurately determine. ‘Destination’ might be better defined statistically, suggesting a range of probabilistic outcomes. What would be the effect on our current notion of travelling or going on holiday?

The proposition that aerosolar flight could replace jet-fuelled travel invokes a sense of the uncanny. On the one hand aerosolar aviation appears practically feasible: the technology is real and has been proven. However, the inherent uncertainties and vagaries that come with the technology’s application make it seem absurdly impractical. Capitalism depends upon

absolute and abstract time-reckonings, and travelling precisely and efficiently – taking off and landing predictably at the right place, and on time (Cronon 1991). Aerosolar flight is both at the same time practical but impractical: it offers a clear line of hope through climate-changed futures while simultaneously disrupting the current certainties attached to planetary transportation. This, however, is the point of such a speculative provocation: it presents us with ideas that are *possible*, but at the same time highly challenging to imagine, or implement. And, such provocation prompts us to grapple with radical possibilities for ways in which human activities could be rewritten, and different kinds of worlds enacted.

The example of Aerosolar flight is therefore useful in foregrounding two things: returning an awareness of the relational dynamism of the world, and assumptions of re-narration. Aerosolar technology's sensitivity to atmospheric and energetic dynamics invite us into a more anthropocosmological performance. Looking beyond our own human agencies and those harnessed through 'forced' mechanics, the aerosolar draws on relational elemental agencies that surround us. Working with the relational weave of energetic connections and capacities effectively draws out those bundled potentials. And, because aerosolar devices are tools for humans to employ, they provide a technical conduit through which we are individually invited to not only perceive an elemental world-mesh, but prompted to expand our elemental and energetic relational sensitivities: an attunement to atmospheric conditions, fluid and fluctuating dynamics, as well as temporalities. Whereas other technologies of powered propulsion effectively dampen the fluctuating and chaotic properties of air, aerosolar encounters bring us back into such disturbing flows. We can read this as a response to Heidegger's 'distress of a lack of distress', with the aerosolar pulling us back into relationship with the 'raw' unsettled and unsettling forces and energies of the world-mesh, effectively 'un-homing' us from the technological shelters we have built around our modern forms of mobility.

Additionally, the instabilities rendered through imagining aerosolar flight are a reminder that efforts to re-narrate the world can easily overlook one significant feature – a feature that the Anthropocene reminds us urgently requires rescripting: the human. Aerosolar sensitivities also prompt us to rewrite lines of human connection and association in anthropocosmological and coexistential dimensions: acknowledging elemental and energetic more-than-human relationalities; bringing appreciation of fluidity, flux and impermanence, and relinquishing the desire to control (Instone 2015b). Such scripts embedded within dominant cultural narratives can be difficult to overwrite. Yet, the Aerocene manages to effectively rewrite such narratives through not just literary description or representation, but by performatively engaging and inviting others to become a part of such world-making, which is far more compelling.

Nevertheless, returning to consider the practicalities of the Aerocene, I want to focus on a number of key aspects where the project fails to address critical concerns of Anthropocene dwelling. I first want to focus on problems rendered by the Aerocene's enrolment of romantic lighter-than-air imaginaries before considering additional political, and then practical, physical-material concerns.

The prospect of human flight has longstanding spiritual and otherworldly attachments, even before powered flight became a reality. For many cultures the sky has historically been seen as a heavenly realm inhabited by gods and supernatural beings. The advent of powered or controlled flight in the early twentieth century was viewed by many as a 'miracle', around which large numbers in the West congregated, developing belief in a 'winged gospel' through which adherents were convinced conditions of life would be transformed (Corn 2002, xiv). The advent of an 'air age' would, it was argued, bring increased mobility leading to greater prosperity, cultural 'uplift', and eventually social harmony and peace. Sadly, matters have played out quite differently.

To be clear, the Aerocene is not framed as a strict techno-utopian plan; rather, it seeks to actively unsettle the techno-political status quo. However, entangled within the project's lighter-than-air renderings and experiments remain idealistic attachments to the possibilities of humans dwelling in a settled way within ethereal space overhead: a problematic implementation of stationary suspension. While aerosolar technology provides a sufficiently unconventional alternative propulsion mechanism, working with those energetic properties rendered by natural systems Aerocene visions also lean very heavily on optimistic readings of human nature and political organisation; relying on our shared ability to collectively self-organise and cooperate. While I would like to align with such reassuring ideas¹ I find it difficult to accept such upbeat techno-utopian attachments, and remain unconvinced that the spatio-political frictions we have on the ground will not simply follow us into, and be replicated in, the skies.

The open occupation of airspace would also appear to bring with it potential political and economic conflicts. With current heightened concerns of state border security and management, I imagine the Aerocene would be taken as a deeply disruptive, revolutionary assault on existing terrestrially drawn political state boundaries. Similarly, the potentials of aerosolar aviation as a transport mechanism would pose a threat to existing commercial aerospace activity and the significant investments made by those in aviation and air-travel industries. This is not to say that revolutionary organisation could not – or should not – take place; history is littered with revolutionary political events which are now invariably accepted as key

1 See for example Rushkoff's (2002, 21-32) basic principles of Technological Utopianism.

moments in the formation of the modern world, including the French and American Revolutions (see Fehér 1990, and Gould 2009 respectively). The Aerocene as ‘revolution’ would, consequentially, transcend geopolitical borders: it would be at once a global – and potentially globalising – uprising. But how effectively does the PAZ structure scale? Such a political model appears to be effective when employed at small scales – by a group defined and bounded by clearly delineated operating principles, such as a collective activity space or a communal living area – but is untested at larger global scales.

Considering a recent example of a socio-political ‘revolution’, the Occupy movement formed as a response to rising social and economic inequality and, similarly, employed forms of spatial occupation. The movement, however, is criticised for failing to result in any significant lasting socio-political change (Kreiss and Tufekci 2013), largely dissipating after only a few years². Occupy is argued to have failed to work effectively with other alternative social movements and, critically, that it was a movement without a lasting vision of an alternative future (White 2017). A direct comparison of the Aerocene with the Occupy movement is, admittedly, unfair: the Aerocene is not intended solely as a socio-political movement. However, it is worth considering that the socio-political potential embedded within Aerocene projects may not have the same sustaining energy as does aerosolar technology itself, given its vision of the future is by no means clear – or indeed practically attainable. Put another way, the Aerocene appears to more implicitly rely on the potential of its *technology* to open up and bring forth social and political change which, as we have considered, can be problematic³.

Finally, a more fundamental concern surfaces when assessing proposed Aerocene visions, and how these fail to address increasingly unsettled and turbulent planetary conditions forecast. Variations in upper-atmosphere water vapour and cloud coverage, as well as large-scale atmospheric circulation adjustments, are forecast to lead to increased air turbulence (Williams 2007) and result in more intense tropical cyclone activity (Trenberth et al 2007). However, renderings of future Aerocene dwelling (see Figure 6.17, for example) by default reinserts humans into amiable conditions: clear and calm blue skies dotted only lightly with cloud. Such depictions do not attend to the kinds of climatic and atmospheric Anthropocene turbulence expected. Saraceno’s architectural attachments here work against him. The style reminds me of optimistic architectural renderings of large-scale building projects showing ideal conditions but disregarding the problematic real-world frictions that are destined to emerge, such as weeds,

² Although remnant groups remain employing similar tactics, the aim of these is different to the initial Occupy impetus (see Cheng 2017).

³ For a detailed discussion of the issues with techno-utopianism and reliance on ‘techno-fixes’, see Huesemann and Huesemann 2011.



Figure 6.17: Rendering of Aerocene habitation. (Source: Studio Thomas Saraceno.)

graffiti, homeless people, and other messy complications. By this measure the Aerocene starts to look more like a lighter-than-air Holocene designed by property developers and award-winning architects, and smacking more of neo-colonialism than eco-social uprising.

Such imagery also acts to invitingly render the Anthropocene not so much as an unsettled and troubling future but rather as an attractive destination. And, while we will need to find ways of living in, living through, and enduring conditions of the Anthropocene, I'm reminded of Anna Tsing's astute warning that the era will be one that humans need to move through as quickly as possible (Tsing 2015, np): the resulting disruptive and challenging conditions will not be ones in which we will want to linger. The effortless and dreamy qualities emerging from Aerocene renderings fail to address both the chaotic turbulence that will increasingly inscribe the planet, as well the speed that we need to collectively move with in response.

Such critique does not discount the practical possibilities that can emerge from aerosolar experimentation. These may be more modest than the lofty aspirational trajectories of Aerocene cities, but reflect the project's broader potential. The development of a social network around the project has been one outcome. An Aerocene community has formed, both online and off, and acts as an emergent and self-organising 'bazaar', where diverse lines of interest meet, mingle, and allow new possibilities to develop. One practical outcome has been the development of an easy-to-transport, configurable aerosolar 'balloon', which emerged from collaborative work undertaken with the International Red Cross and Red Crescent humanitarian agency

(see Suarez 2015). The simplicity and cost-effectiveness of aerosolar technology provided an effective solution to developing a lighter-than-air mechanism that could be used to survey areas impacted by natural disaster. A simple aerosolar kit was collaboratively developed using open-source design – as well as employing other open-source technologies. The self-contained, portable kit is designed to be able to deploy a camera, or other environmental sensors, within an impact zone.

The Red Cross project suggested that a generic version of a self-contained aerosolar kit might be useful for more general application, and an ‘Aerocene Explorer’ kit was recently developed. Drawing on strategies from open-source communities, participants were invited to engage in Do-It-Together (DIT) techniques, and to share results through the Aerocene online platform, to: “change how people see the world in environmental, social, and political terms” (Saraceno 2017 np). Build instructions have been made available on the Aerocene website, which detail materials required and steps to construct a tethered-flight balloon (see Figure 6.18). The Aerocene Explorer kit:

enables anyone to personally launch their own Aerocene solar sculpture and start exploring the skies. A tactile and engaging way to experience the Aerocene, the Explorer allows participants to take aerial photographs and videos and to collect atmospheric data using non-intrusive, emissions-free scientific exploration tools that measure air quality, temperature, humidity, and pressure. (Saraceno 2017 np)

This emergent arm of the Aerocene project remains clearly in line with the associated politics and sociality. The kit provides a simple mechanism for people to directly engage with ideas but, importantly, allows them to directly engage and undertake their own experiments, which can be shared through the website, contributing to the wider project.

The collaborative and social qualities of the Aerocene project return me to reflect on the significance of the affective constitution of atmospheres. Another paradox of the Aerocene is that while it employs unsettling creative techniques, there is ancillary relational and social work performed which has quite different effects.

Being unsettled together

Recalling my experience of the sculpture launch, I am reminded of the kind of attention that aerosolar activity calls for. Beyond attentiveness to atmospheric and elemental conditions the project harnesses ancillary energies of relational and collective potential. Attendance at the launch focused my own sensitivity to requisite environmental conditions such weather and temperature, but beyond this Aerosolar attunement calls for wider elemental and material



Figure 6.18: Aerocene Explorer kit. (Source: Studio Thomas Saraceno.)

sensitivities: geographic factors and variables, additional atmospheric qualities, as well as the physical and material properties of aerosolar devices, including the type of plastic or nylon fabrics used, their weight, strength, and colour, and thermodynamic properties. Such projects therefore invite people into a more intimate anthropocosmological awareness, with aerosolar devices acting as elemental ‘bundles’: material-energetic assembled connecting points within the wider world-mesh.

Moreover, from witnessing the launching process I find it difficult to imagine the activity being undertaken alone: the preparation and management of the sculptures is more effectively a cooperative activity – a reflection of the Aerocene’s collaborative constitution. And, reflecting on the project’s cultural situatedness, the Aerocene’s performative character makes it a project that is only successful if other people are actively engaged and brought into the re-worlding performance: in many ways reflective of Satre’s turn to theatre as a format through which to present and explore ideas, or indeed Situationist moments.

The Aerocene therefore undertakes to be both unsettling and settling at the same time. Under the guise of art Saraceno’s work invites us into being unsettled: prompting contemplation of ways we might transcend familiar ground and reorientate ourselves to dwell differently. As a response to Anthropocene challenges the Aerocene explores an unconventional path, bringing together a technology solution which, unlike others, effectively uncouples human attachments

to modernity's fixed ground. Additionally, and importantly, Aerocene projects bring a transformative affective potential that humans are invited into, with the aim of bringing awareness to the reciprocal and co-constitutive make-up of the world (cf. Latour 2004, 205; Gibson-Graham 2009, 322).

What strikes me about Aerocene experiences in contrast to the other encounters I have explored is the *intentional* way in which they prompt coexistential awareness, rather than accidentally and haphazardly. Projects are conceptually engaging, as well as being charged with an affective conviviality which invites human others into wider experience and novel conversations about the world. Importantly, such conversations follow upbeat and diverging pathways rather than becoming grim prognostications.

At its most simple conviviality is the act of being friendly, which involves a fondness for festive activities and keeping good company. To have an attitude of conviviality is to be open and welcoming to others of all kinds. Conviviality emerges through a politics of the body and through identity politics: a posture of openness rather than one of opposition or resistance (Puar 2009). Being convivial suggests we take attributes of the subject, such as race, gender, and sexuality, as encounters rather than concrete features. An attitude of openness is accepting of the difference and unevenness of the world, and is an antidote to uncomfortable or unsettling conditions and encounters (see Smith-Prei and Stehle 2016). In this way, conviviality brings a receptivity to experiences of difference and alterity while at the same time allowing an experimental openness. As Saldanha writes, conviviality involves:

letting yourself be destabilised by the radical alterity of the other, in seeing his or her difference not as a threat but as a resource to question your own position in the world. (Saldanha 2007, 118)

Conviviality is, therefore, an attitude receptive to its own destabilisation and dissolution, bringing an awareness that openness to difference might mean being something other than that hoped for. Themes of conviviality and openness resonate at different scales through previous chapter encounters. Within the river-crossing incident, post-disaster Christchurch, and coral life on the Great Barrier Reef I have identified varying currents of emergent openness and adaptability that come from a shared solidarity under stressful conditions. Whether within a small distressed group, within a city population, or rendered at the species-level through genetic flexibility, convivial modes of co-being suggest useful in responding to the relentless turbulence of the world.

Consequently, conviviality is argued as a necessary condition in response to the ontological flattening of the Anthropocene, especially between humans and multi-species others (see

Haraway 2014, 2016; Hartigan 2014). And, while such arguments are useful in opening up the coexistentialism of inhabiting the world, foregrounding human entanglement *within* a worldly mesh rather than *above* it (Meyers 2013, 127), there are conceptual and psychological challenges attached. Saraceno's Aerocene does not wholly abandon significant human sensitivities, and therefore avoids becoming radically unsettling or alienating. Thus, beyond its imaginative and re-worlding potentials, I read the key contribution of Saraceno's work as bringing an intentional focus to intrinsic human qualities of sociality and inventiveness, and the affective settling that comes from being together during fraught and trying experiences.

Yet, the friction between human connectedness and settledness, and conditions of instability and flux remain a problem for Aerocene thinking: one that prevents me from subscribing completely to such buoyant trajectories. Although the Aerocene takes suspension as a elemental condition for dwelling within the Anthropocene, such renderings of invariable floating and hanging in this case is misguided. However, I am open to the possibility that Saraceno's depictions may be influenced by the desire to draw engaging pathways through future possibilities, and act merely as faint traces rather than clear targets. In this instance, ideas of suspension, while metaphorically apt, fail to evoke qualities of unsettledness, disturbance, and upheaval that seem necessary. The notion of dwelling in lofty, hanging aerospheric cities becomes, in my mind, increasingly troubled and unappealing if I begin to imagine escalating atmospheric conditions, including storm systems and hurricanes. Multiplied by unstable and escalating human factors I, for one, would rather have my feet planted firmly on the ground.

Such critique does not wholly reject such generative work. By drawing on art's radical and unsettling potentials, Aerosolar experiments and collective Aerocene projects provide useful insights into modes of navigating the unsettled 'ground' of the Anthropocene. Ultimately, the routes traced are neither clear-cut nor fixed, inviting further exploration, and also act as reminders that difficult journeys are best undertaken with others – 'strange strangers' both human and other-than-human. Our voyage into and through the Anthropocene is a collective journey and within this awareness lies expansive lines of potential.



Figure D: Human ice cube, 2017. Ice cube moulds in the shape of human figures; a reminder of human impact on climate. (Source: author.)

Chapter 7 | Unsettled reflections

This thesis has undertaken journeys into unsettledness. My investigation began with feelings of unease rendered through concern for ongoing anthropogenic planetary disruption. The Anthropocene gives a name to this planetary disturbance. I have argued that rather than rushing to transcend such disturbance we must pause and bring attention to the troubling, visceral dimensions of this intellectual concept, and learn to dwell with unease. In this final chapter I return to key themes emerging throughout the thesis, reflecting on insights potentially useful for navigating across an unfamiliar Anthropocene landscape, as well as the methodological trajectory.

The Anthropocene's conceptual provocation has profound implications for the way in which humans apprehend the world and understand their relationship with the non-human phenomena: challenging modernity's dominant rational logics (Morton 2010; Zylińska 2014), unseating ideas of human exceptionalism and blurring boundaries of the human/nature binary; prompting us to consider that we have never been human. A key challenge for the Anthropocene is how to respond to its ontological flattening (Castree 2014b) in ways that more justly reassemble the human/nature relationship; such as considering constitutions that are hybrid, 'multinatural' (Latour 2010, 2011), and 'relational' (Haraway 2008). While much work has focused on the ontological dimensions of the Anthropocene and the agency of the universal human, within this thesis I have sought to bring focus to the lived, ontic facets of experience. The 'double-whammy' of the Anthropocene is that it throws us into a profoundly unfamiliar world not just categorically or conceptually, but viscerally. This is a world that we all must inhabit, individually navigating our own particular lived pathways.

By focusing on experiences of trauma, disruption, loss, and unsettledness this research has sought to contribute to emerging Anthropocene scholarship that brings attention to the affective and felt dimensions of the Anthropocene condition (Head 2016; Ginn 2015; Scranton 2016;

see also Mickey 2016; Rose et al 2016), responding to calls for attentiveness across the full range of human faculties (Castree 2014a 444; Cook and Balayannis 2015; Braun 2016, 241).

A key question for the thesis has been what it means to dwell within unfamiliar and unsettled conditions of the Anthropocene. To explore this I have drawn on existential ideas which attend to subjective experience, bringing awareness to the margins and limits of human experience and existence, especially those which confront us with disorientation, confusion, dread, and loss of meaning (Crowell 2016). Existentialism is useful for contemplating conditions of individual and collective emergency: instances where certainty in one's life is removed; where one's familiar world is shattered (Mickey 2016, 33); and is also applicable through to planetary and species Anthropocene threats. Situations of disturbance, emergency, unsettlement, and unease have been key empirical sites for investigation: cases providing novel insight into modes of sense-making, reorientation, and dwelling on disrupted and unfamiliar ground. Returning to experience has also been a strategy to circumvent the impulse to rush into familiar methods of problem-solving: both the modernist propensity towards technological interventionism (Baskin 2015, 6), and my own pre-existing design-informed problem-solving disposition.

Against secure and grounded modernist logics, a concern with experimentation is a requisite for existential investigation, and also a means to reclaim subjective experience from the rationalist dialectics that weight the Anthropocene debate (see Grusin 2017, x). To be experimental calls for an openness to exploration and risk: a responsiveness to novel approaches; receptivity to a wide range of sensibilities; and an openness to the assembly of revised world-making narratives.

Sympathetic to existential and experimental concerns, my methodological approach has drawn from human geography, anthropology, and creative practice, and allowed me to collect data across a range of human registers: affective, reflexive, as well as attuned to the risk and generativity that come from experimenting. Dwelling emerged as a key existential theme, relevant not only to the individual human experience of feeling-at-home – or, conversely, feeling homeless – but to existential Anthropocene experience of dwelling on a planet rendered unfamiliar (Morton 2012, 14). I looked to work in anthropology which explores human dwelling, and brings an attentiveness to 'being in' place(s) and moving through a world-mesh comprised of historical/socio-political, practical, embodied and affective attachments (see Ingold 2007, 2011, 2015).

A multi-sited autoethnography was used within fieldwork, bringing a novel approach to the investigation of Anthropocene phenomena. An autoethnographic approach acts, to a large degree, as a self-narrative, placing the 'self' via the researcher's engagement within specific

social contexts (Reed-Danahay 1997). Autoethnography allowed me to bring my own personal experiences and reflections into the research, which was important for tracing ontic and affective themes. Investigation across multiple sites allows the researcher to follow people, connections, associations, and relationships across non-contiguous but thematically connected spaces (Falzon 2009, 2). And, following existential and experimental Anthropocene associations, I sought to trace multiple lines of investigation intentionally meandering, indirect and unpredictable.

For the purposes of the thesis, such divergent exploratory lines have been wrangled into a more methodical linear flow, belying their inherent messiness. Throughout the thesis text I have displayed supplemental investigations which – for different reasons – proved less fruitful as case-studies but were integral to the project's development because of ideas explored and lessons learned. Being experimental in this way is decidedly challenging given the expanded uncertainties brought to the research process, and also a reminder of the provocative challenge found in purposefully steering a course while remaining open to uncertain planetary flows.

While there are clear connecting themes within the sites explored, there are also differences. Emergency and disruption is a key theme: whether it is felt personally, such as with my river-crossing encounter in Chapter 3, rendered structurally and collectively in post-quake Christchurch discussed in Chapter 4, through the unsettling ecological emergency of the Great Barrier Reef in Chapter 5, or creative work seeking to generate aesthetic and conceptual disruption in response to an Anthropocene-as-emergency in Chapter 6. Within each case, however, differing qualities are evident. The river incident and Christchurch cases centre around sudden moments of destabilisation, whereas the Reef and Aerocene cases draw out longer-term significant temporal attachments to emergence and emergency – crucial geological-historical lines as well as those with imaginary, future world-making potential.

As a way of disentangling the array of emergent concepts and bringing clarity to concluding reflections in this final chapter, I employ thematic 'clustering' (as applied in the introductory literature review), discussing significant conceptual patterns and associations that attend to the structural and visceral dimensions of Anthropocene conditions and experience.

(Co)existential emergency

Existential themes have been a key concern for this thesis, and I have found that ideas emanating from seminal existential interrogation remain highly relevant to disturbing conditions of ecological emergency rendered through the Anthropocene. The Anthropocene concept

expands 'human' sensibility through to a planetary anthropos, posing questions of what it is to be and how to live authentically as planetary beings (Schmidt et al 2016; Zylinska 2014). But beyond philosophical considerations of the universal human, we each individually grapple with our own complicity in planetary disruption and, in very grounded terms, deal with the unsettling resonances within quotidian, everyday experience.

The encounters explored in field chapters each tease out different facets of existential emergency, provoking contemplation across disturbing, unsettling, paradoxical, and uncanny dimensions. Where our sense of planetary 'home' is threatened existential ideas of dwelling and homeless have served as useful conceptual frames for contemplating what it means to feel 'ill-at-ease' in the world. A sense of uncanniness emerges when one loses one's way and becomes disoriented (Freud 1919) – especially when once-familiar conditions change. However, the security that comes from the familiarity of home can make us forget the ineradicable unsettledness that remains outside. Stepping outside the safety of one's dwelling – one's home – therefore functions as a vital transcendental exposure to the world.

Throughout this thesis I sought to unsettle my own sense of home. Notably, in Chapters 3 and 4, I drew on personal place attachments, visiting once-familiar sites to contemplate emergency conditions. Both my return visit to the location of a traumatic river-crossing incident and to post-quake Christchurch led me to consider unsettling disruptions to familiar maps. While such investigation allowed me engage with personal sense-making and reorientation it also revealed a more complex associative mesh of relations and effects: a reminder that 'home' or familiar maps are sites shared with others – both human and other.

Contemporary existential concerns, therefore, extend beyond just those of individual sense-making. A focus on the self and one's being are not enough as we are compelled to recognise the inherent interconnectedness of being. Awareness of the *coexistential* dimensions of being leads us to contemplate how we are intimately immersed with a worldly mesh rather than separate from or above it (Morton 2010; Rose 2011; Instone and Taylor 2015; Mickey 2016). Ideas of coexistentialism reverberate through critical conceptions of the Anthropocene: where humans are not so much planetary 'masters' but simply just another agency entangled within a complex worldly mesh. Against bounded modernist thinking, inter-being 'un-homes' us, exposing us to a world of strange others. Existentialism's summons to live dangerously and remain exposed provokes awareness that our own existent vulnerabilities are in fact shared with others. Critically, exposure to strange others, and to our own fleshy vulnerabilities becomes a compelled condition for the Anthropocene: a state we are forced into, and to grapple with.

Within the sites explored I noted two significantly different affective responses to the unsettledness and vulnerability generated by emergency and disorientation. The first stems from the initial challenge that comes from being unexpectedly ‘un-homed’ or ‘thrown’ by suddenly precarious ground. This was the moment of my misstep in the river, throwing me into turbulence and visceral panic; it was also the moment the first earthquake struck Christchurch in the early morning of 2010, shaking people awake to a fundamentally different city. Both shocks are sudden and discrete, but it is also through lingering and uncanny emergency that we are affected. The sense of loss and grief provoked by conditions of the Great Barrier Reef are similar resonances of an emergency trauma – although one that stretches beyond clear and comprehensible boundaries given ecological, temporal, and planetary attachments. The experience of liminality and phase-change is deeply unsettling, especially if we are not prepared for it. If we have only resided in one house we only know that one home; and if we have not ventured and explored outside we can be ill-equipped to cope with unfamiliar, ‘uncivilised’, ‘inhospitable’, ‘abnormal’ conditions.

Existentialism exhorts us to embrace such disturbance. A prompt which is reiterated within the ideas of environmental humanities (Haraway 2014, 2016; Tsing 2015; Rose et al 2012), extinction studies (van Dooren et al 2016, van Dooren 2014; Rose et al 2017), dark ecology (Morton 2010, 2011, 2013), and geo-philosophy (Clark 2013, 2014, 2015; Yusoff 2013, 2015) informing this thesis. The point of bearing witness and ‘staying with trouble’ is not to acclimatise to it – to simply accept ongoing unsettledness – but to allow oneself to be affected and changed by the experience. There is practical and therapeutic value in facing deeply troubling and unsettling phenomena. For Nietzsche, “...if you gaze long into an abyss, the abyss also gazes into you” (1886, Aphorism 146). It is within such depths that Jung locates the shadow: the repressed and unknown dark aspect of the human self (Stevens 1991); and it is in the darkest places that we can find significant insights to better reorient ourselves in the world, directing movement along new trajectories to alternative destinations.

Conversely, the *communitas* emerging from disrupted states (Jencson 2001) comes from a sense of shared disorientation and exposure. This was clearly evident in Christchurch, where community groups formed out of shared need, and also shared concern for others. Thus, a sense of coexistential vulnerability can animate us to respond compassionately and selflessly. I noticed *communitas* formations coalescing around Saraceno’s Aerocene projects; and also to some degree within the shared river-crossing trauma as we collectively strove to navigate out of the ‘wilderness’. Such associative formations extend beyond human connection and through

anthropocosmological dimensions, where a sense of interconnectedness links us to elemental, material, and planetary agencies. Where aerosolar assemblages perform this effectively with solar and atmospheric potentials, I am also reminded of the vulnerable empathies formed by my observation of the imperilled ‘fleshy’ marine life on the Great Barrier Reef.

In very different ways each encounter within this thesis exposed me to different qualities and dimensions of an expanded world-ontology. By applying tenets of existentialism, and subsequent coexistentialism, I invited uncanny and unsettled experiences in being ill-at-ease and homeless. Exploring sites of emergency and phase-change allowed me to become disoriented and investigate varied modes of reorientation, emergence, and reassociation with reformed ontological ground: ground fundamentally transformed from being a solid and stable surface, to becoming a deeply interwoven fluid and dynamic mesh. The route has been both fascinating and immensely challenging, indicative not only of the trial of undertaking doctoral research but of the deep challenges existential ideas and methods provoke.

Existentialism, therefore, is not something to take lightly; it is not an outlook to be dabbled with. As journalist Hunter S Thompson recommended to a friend who wanted advice during a period of personal crisis: if you are satisfied with the current conditions of life, steer well clear of existentialism – it is not a path to quick or easy answers (Thompson 1958). Such advice may be appropriate for an individual, but for the planetary human whose house is in disarray such there is no such luxury of choice.

While existentialism has formed in response to punctuated historical moments and could be considered outdated or unfashionable, its legacies remain, reminding us of the challenges of living and dying together, and of sharing the struggle to be (Mickey 2016, 27). It may be best to think of existentialism as cyclical, like the weather, where settled conditions are followed by turbulent storms. Within the brewing storm of the Anthropocene existential ideas emerge as highly relevant in attending to current conditions of ecological and planetary emergency.

An existential and coexistential approach to dwelling on and within the emergent turbulence that will affect all life, is not just a provocation to find oneself in the storm but also a reminder of our shared vulnerability. But, at the same time, we should remember that without emergency nothing different can emerge; surprise is a necessary condition of life, provoking change and movement.

Reorienting, remapping, renarrating

Anthropocene ideas unsettle prevailing modern narratives of ‘progress’ and the grand teleological story of human improvement used to understand the world (Head 2016, 46; Ginn 2015, 357; see also Bonneuil and Fressoz 2016). New narratives are needed: accounts which more appropriately express relationships and pathways through the present and into the future (Bonneuil 2015; Davidson 2015; Scranton 2016). Within this thesis I have explored consequences of Anthropocene reorientation at different scales. The work of renarrating the world is one that we need to engage at all levels: within political and governance structures, social institutions, as well as personally.

I explored disorientation resulting from emergency conditions, finding it revealing how familiar attachments to place and home are fractured, and the transformative potential this precipitates. Such disorientation is clear in Chapter 4, where the familiar maps of Christchurch were severely disrupted by a series of earthquakes. Not only was the city’s spatial map thrown into disarray, disturbances reverberated through social, cultural, and political structures. And, at a smaller scale, events in Chapter 3 followed my own disorienting experience at an individual level where personal maps of meaning were re-written by a small misstep.

The reorienting work that follows disaster events can tell us something about the kind of remapping and renarrating that is required in responding to Anthropocene conditions. First, is the need to be attentive to the aforementioned emergent qualities found within emergency and phase-change states. Resultant unsettled feelings are revealing signals to be explored rather than discounted as anomalous, or alleviated. We are better to follow existentialism’s exhortation to remain attentive to those experiences which profoundly unsettle our sense of being; a strategy which, under the shadow of the Anthropocene, Haraway (2016) reiterates by urging us to ‘stay with the trouble’. Existentialism’s self-reflexivity brings an openness to experience that, somewhat paradoxically, transcends the boundaries of the self. Attending to bodily awareness (Merleau-Ponty 1998) can expand the ‘fleshy’ and relational constituents of experience towards that of a co-existence, better appreciative of human entanglement in a wider, stranger world-mesh – an ‘anthropocosmology’ (Bachelard 1964) composed of associated and assembled elemental and fleshy materials. Resulting lines of relationship and agency are far from fixed or linear, but rather fluid, emergent, and unstable. Humans are not the key protagonist: ‘stories’ are written not just by a single author but woven by many.

Disruptive states may not only help to reveal concealed formations, but provide fertile conditions for novel arrangements to develop. Reorientation, remapping, and renarration become

creative responses to emergency chaos and disorder. Christchurch's post-quake rebuild evidenced many actors and projects working to imaginatively remap the city, from the Government's domineering masterplanning, to Gap Filler's collective egalitarian place-making.

Chapter 6 examined creative work responding directly to Anthropocene emergency. Tomás Saraceno's Aerocene project seeks to explore alternative socio-political lines through Anthropocene dwelling, in effect remapping trajectories through future possible worlds. Beyond art's disruptive reflective potential, aesthetic practices can be employed to represent Anthropocene phenomena, helping make ambiguous phenomena tangible. Art practices open up polyarchic sites for experimentation for "living in a damaged world" (Tsing 2014, np), which are not confined by regimes of scientific objectivity, political moralism, or psychological depression, and respond to the subsequent 'crisis of thinking' (Morton 2010).

Saraceno's work followed emerging blurred transdisciplinary lines of Anthropocene response which cut across science, politics, literature, and art attempting to grapple with planetary emergency (see Palsson et al 2013). Lines of thought become entangled trajectories, having not just material agency but temporal repercussions. The Anthropocene renarrates the human story from the past and into geological and planetary futures. Given present circumstances it is possible to make informed predictions about the future, but these remain inherently uncertain. Subsequent engagement with speculative fiction seeks not just to make visible possible scenarios but ultimately sketch out alternative pathways to consider.

Saraceno's Aerocene brings a performative potential to speculative Anthropocene response; one which draws on art's radical disruptive and re-worlding possibilities. Post-war existential thinkers sought to explore the performative potencies of experiential contradiction and confrontation through collective imaginative action (Goldthorpe 1992). Situationist artists embraced such ideas, constructing moments of reawakening: experiments intended to re-orientate collective experience of the world, thereby re-making and re-mapping space (see Plant 1992). Saraceno's work develops highly empathetic antidotes to Anthropocene dwelling, looking to social, political, and energetic forms attentive to anthropocosmological and coexistential relationships. Aerosolar sensitivities prompt us to rewrite lines of human connection and association, acknowledging elemental and energetic more-than-human relationalities; bringing appreciation of fluidity, flux and impermanence, and rescinding controlling impulses. Additionally, the Aerocene narrative avoids being singular or prescriptive and, similar to Christchurch's Gap Filler project, is shaped through collaborative and emergent processes. Such representations of the future are not fixed but rather render

aspirational possibilities within an intentionally faint map, encouraging further experimentation; and providing only glimpses of a ‘virtual horizon’ of as yet-unknown liberatory potentials (Lefebvre 2003:16). And, even though, as discussed, there may be certain practical failings within Saraceno’s work through stable-state attachments it nevertheless provides openings for contemplation.

Requisite reorientation, remapping, and renarration must be sympathetic with the diverging constitutive qualities of an Anthropocene world-mesh, across expanded dimensionality, interconnectedness, unevenness, and irregularity. As Donna Haraway puts it:

...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. (Haraway 2016, 160)

Yet, Saraceno’s work goes beyond just telling us different stories, or showing us alternative maps: its performative character brings a corporeal and embodied dimensionality to ideas, propelling them into contact with the world and with others. Performance not only makes ideas more tangible – and therefore realisable – but allows others to engage with them, ultimately encouraging a collective means of world-making.

Fluidity, phase-change, suspension

Fluidity and dynamics of state-change emerged as a significant theme for thinking about Anthropocene dwelling. Rendered most visible in Chapter 5, which focused on oceans and the site of the Great Barrier Reef, fluid and liquid conceptions of space and matter move beyond a concern with surface and penetrate through the depth, volume, and inherent unevenness that constitutes the material world and essential planetary dynamics (see Anderson and Peters 2014; Schmitt 2014; Steinberg and Peters 2015). Heraclitus’ percipient meditations tells us that recognition of the material world’s inherently dynamic qualities is not novel, but one worth returning to following Anthropocene disruption to the stable conceptual ground that Cartesian thinking has endeavoured to construct.

Flow and fluidity are not only relevant to water but for considering all states of matter – as well as non-material forms. My encounter with the Waitawheta River led me to contemplate the dynamic planetary geological flows attached to rivers. Operating at different scales both temporally and physically such geologic planetary dynamism was significant within the disturbances of Christchurch and the Great Barrier Reef. Earthquakes are a forceful reminder of the ongoing crustal ‘flow’ of tectonic plates, which for the planet are merely brief punctuated moments in its

lifetime. But, such events can bring significant state changes. Energetic earth movements can liquify soil, rendering once stable ground insecure and troubling human dwelling. Most visibly for Christchurch this resulted in significant damage to the city's built environment as well as that to wider urban dwelling. Less visible were impacts felt individually and collectively. Psychological and cultural disruption from the quakes mark a phase-change of experience, where life – consisting of familiar lines of dwelling, attachment, and relationships – is significantly ruptured. One's experience of the world can be 'turned upside-down' as one is thrust onto unstable and unfamiliar ground.

Fluid or liquid ontologies bring conceptual insight to the Anthropocene's planetary material depth, complexity, and flux, where irregular and uneven associative lines run through different layers – whether stratigraphic, oceanic, atmospheric, biological, or temporal. Within this thesis I have sought to trace ancillary 'felt' lines through sites of material-elemental emergency. The inherent affective unsettling that comes from dwelling within unfamiliar, unstable, and uncomfortable conditions not only make us feel uneasy, but provoke us to reorientate and remap our earthly understandings. While the Anthropocene may be conceived of as a 'long' or 'slow' disaster (Rickards and Kearnes 2016), its effects are likely to materialise in highly uneven and unpredictable ways (Tsing 2015; Dominey-Howes 2018) – both slow and fast. Perturbations to planetary systems will play out over geological timescales resulting in uncanny conditions that, difficult to discern in the short term, deviate in eerie ways. At the same we should expect punctuated moments: extreme, short-lived events that strike with unpredictable intensity. Much like the creep of warming climate that, over decades, remains imperceptible to us, occasional eruptions of extreme conditions – such as storms or heatwaves – calls attention to a chronic malaise, reminding us the thresholds of human agency and 'control'.

A quality of fluids is a volumetric ability to contain or hold other materials. Within a liquid or gas, suspension is a state of hanging or floating within the medium; it can be an in-between condition stirred up by turbulent energies. To suspend can also mean to halt something from being active, either permanently or temporarily. Suspended qualities were evident throughout my encounters. Starting with my river crossing incident, being swept away by the water I become part of the river's sedimentary load, suspended from my accustomed human bodily agencies I was rendered as a floating piece of matter, like a tree branch or log. But the event worked in other ways to suspend my ontological outlook when returning to the city, and to the safety and comforts of 'civilised' dwelling.

In cultural terms suspension has similarities to Turner's (1969) ideas of liminal antistructural states, periods 'betwixt and between' normal social conditions. Post-disaster Christchurch, provided an expanded example of suspended dwelling: an example of life paused or hanging within a disruptive or turbulent state, and allowing new associations and relationships to emerge. Thus, suspension also has conceptual and imaginative dimensions which helps to discharge assumptions and beliefs tied to accepting renderings of the world, effectively stimulating these to rearrange into different arrangements and possibilities (Choy and Zee 2015, 212). Such deployment was found in Saraceno's aerosolar experiments which sought to not only explore the physical and socio-political dimensions of suspending dwelling, but became creative vectors ultimately seeking to rearrange and renarrate lines and possibilities of world-making.

Yet, while suspension is a compelling idea with which to think about the phase-change potentials of moving from Holocene to Anthropocene dwelling, it comes with significant friction. Suspended states characteristically will seek to return to equilibrium, both physically and within conditions of social and cultural disturbance. Yet, the Anthropocene suggests a significant ongoing phase-change state: one which poses countless challenges in adjusting to its divergent conditions. The increased psychological stress in post-quake Christchurch is an indicator of the harms that ongoing exposure to remaining homeless and unsettled can bring about. And, while adapting to long-term stresses is possible – something which corals have managed to do over millions of years of climatic flux in order to survive – the changes written within their very DNA is the result of extreme fluctuations and species die of which make today's corals ragged survivors of a precarious existence.

Yet, suspension, liminality, and phase change also come with emergent opportunities, opening up and inviting transformative possibilities. The challenge of the Anthropocene, like any emergency condition, will be with devising support strategies receptive to disruption, and to remain open to surprising potentials. And, despite corals' inherently unstable constitution, there can be no denying their ability to endure through highly adverse conditions. More prosaically, we can remain attentive and open to qualities emerging within disrupted states. This can be the generative unsettling mobilised through creative practices, such as those generated by Gap Filler in Christchurch, seeking to remedy spatial and social vacancies by bridging ruptured lines with novel moments and performances – vis-à-vis situations. Similarly, Saraceno's wider Aerocene project performs creative unsettling and imaginative suspension; and employs a collaborative and networked conceptual process, which invites

experimentation and the emergence of novel ideas and trajectories. By emulating disruptive and unsettled conditions we can invite the kinds of haphazard jostling and disarrangement found in suspended fluidity and fluctuation, and invite possibilities of reconfigured and reassembled relationships and designs. A key task for Anthropocene living beyond revising commitments to modernity's singular and fixed logics will be with developing responses sympathetic to fluid and emergent structural qualities and which, rather than proffering clear solutions or end points, render responsive vectors for manoeuvring within novel and uncertain conditions.

Political reverberations

While politics was not a key concern at the outset of this thesis, interest with the Anthropocene comes with requisite political embroilment. Initial Anthropocene ideas have been shaped by geo-physical thinking and dominant techno-scientific ideology (see Finney and Edwards 2016). Subsequent critical political-economic readings call attention to historically situated forms of social power responsible for Earth system disruptions (Rowan 2015; see also Löwbrand et al 2015; Malm and Hornborg 2014). Further critical, feminist-influenced work highlights ideological attachments to gendered and masculinist logics (Raworth 2014; Grusin 2016), as well as post-colonial and neocolonial impulses (de la Cadena 2015; Lewis and Maslin 2015; Haraway et al 2015; Bonneuil and Fressoz 2016).

Anthropocene politics can be read as an ideological contest over how the world is storied: through the unravelling of dominant modern narratives and subsequent tussle with new storylines rendering appropriate relationships and pathways through the past, the present, and the future (see Bonneuil 2015; Davidson 2015; Rickards 2015; Scranton 2016). As Haraway (2016) reminds us: it matters who stories stories.

Within this thesis, emergency moments of liminal antistructure provided examples of both physical and conceptual 'flattened' ground where contests of remapping and renarrating occur. This was most evident within Christchurch's post-quake rebuild activity, where competing agencies sought to rewrite the city through a very different politics of inclusivity and place-making. Although unattached specifically to Anthropocene politics, pertinent themes emerged. Deep geological attachments were reminiscent of Anthropocene geopolitical planetary associations that direct attention beyond surface concerns and contests, and through vertical and volumetric dimensions (Dalby 2013; Clark 2014). Subterranean concerns were evident in Christchurch where geo-technical classification was used to remap the city, and residents were

forced to become familiar with their own geo-structural positioning. The wider political implications of post-quake rebuilding highlighted friction between linear and emergent response models. Cathedral-like masterplanning undertaken by Government agencies reinscribed normative modernist lines, and where emergent and 'organic' responses followed the patterning of Candy's (2014) proposed 'bazaar' formation. Post-quake Christchurch is therefore a tussle of reorienting and remapping, where multiple actors seek to reinscribe or redirect physical and political pathways. Ground becomes a palimpsest; not completely erased, but showing lingering marks – some human inscribed, but others more deeply cut by geologic agency.

Emergent Christchurch responses evidenced additional qualities of experimentalism which are opened up through disturbed conditions and states of emergency. Experimentation is a key concern within the Anthropocene-emergency, where arguments for an 'experimental society' (Callon et al 2009) are expanded to a 'collective' planetary-scale experiment (Yusoff and Gabrys 2011). Experimentation comes with bundled political attachments (Nelson and Lehman 2014), and is not in itself a panacea for Anthropocene conditions. Problematically, the postpolitical 'state of exception' which can follow emergencies may be filled in by ideologically attached experiments. Techno-managerial solutions problematically amplify human interference within planetary systems, such as through geoengineering responses to combat climate change (see: Gabrys and Yusoff 2012; Yusoff 2013; Hume 2014). Such technical interventionism was evident within work responding to an endangered Great Barrier Reef, experimenting with coral hybridisation and reef seeding. The problem with experimentation and increased human intervention at large and planetary scales is the intrinsic uncertainty of outcome: experiments, by design are unpredictable (Clark 2014). And, as Bruno Latour (2003) reminds us, while we know how to conduct experiments within the controlled settings of a laboratory, when applied to messy, real-world situations with planetary scale and complexity, such as global climate change, we are way out of our depth. And, there are serious consequences for failed experiments at such scales. We are perhaps therefore best to devise experiments that are localised and bounded: alternative socio-political responses which can be amplified (Gibson-Graham 2009), or emergent socio-ecological 'wild experiments' (Lorimer and Driessen 2013); open-ended and uncertain political negotiations between people, wildlife and landscapes.

Tomás Saraceno's creative-experimental work provided a novel site for investigating alternative socio-political Anthropocene world-making. The unsettling and re-storying performances engaged within Aerocene projects invite us into unfamiliar and unconventional social and political relationships. Aerosolar sensitivities prompt a rewriting of relational lines through

anthropocosmological and coexistential dimensions, foregrounding elemental and energetic more-than-human bonds, and associative qualities of fluidity, flux and impermanence. The Aerocene seeks to perform a nuanced socio-spatial politics of world-making at multiple scales; one where individual human experience and sensibility is expanded through multiple attachments to ‘strange strangers’, with who we are invited to commune and explore alternative modes of dwelling. Freeing up space dimensionally, and providing a mechanism to traverse it, opens up possibilities for communal forms of habitation structures to be assembled. Much like coral polyps employing ocean currents to find reef assemblages to which attach, Aerocene forms employ atmospheric potentials – although dwelling structures continue to remain dynamic and mobile bringing additional flexibility and possibility. Such unbounded potential brings a radical challenge to existing political governance structures.

However, the key failing of the Aerocene may stem from the project’s particular reliance on technological mechanics as a vital impelling agency – energetic as well as socio-political – which tether Aerosolar projects to the problems of technological utopianism and overly optimistic readings of human social nature. Simply, humans do not endure unstable conditions well. While moments of crisis and liminality allow novel responses to emerge, such situations are only temporary, and emergent forms may not endure the transition back to a stable state. A critical question for projects seeking socio-political change is how to generate impacts that endure amidst perennial turbulence. Contemplating the failings of current social movements to produce any lasting change, Naomi Klein reflects:

It is a fact of the information age that too many movements spring up like beautiful flowers but quickly die off... It’s because they don’t have roots. And they don’t have long-term plans for how they are going to sustain themselves. So when storms come, they get washed away. (Klein 2011, np)

Such imagery, ironically, reminds me of my visit to Christchurch. How to go about dwelling on unsettled ground was a significant post-quake issue. However, amidst the decimated central city landscape the only large features that remained standing, and visible reminders of the destroyed city map, were trees. Withstanding forces devastating to steel and concrete, the firmly rooted pliable forms of the city’s trees remained resilient. It is a reminder to remain attentive to those forms around us that may already possess effective structural resilience (see Gibson-Graham 2009; Gibson et al 2015). Against creative and inventive outputs, the other novel approach that stands out during my investigation is the renarration and ontological ‘stretching’ undertaken in the Te Awa Tepu settlement policy in New Zealand. The legal fiction of assigning ‘natural personhood’ to non-human assemblages effectively rewrites lines of a governance world-mesh, bringing an embodied agency and ‘life’ to significant environmental features.

Drawing on indigenous, non-modern forms of conceptualising the world opens up alternative political formations; forms whose deep cultural lines may provide useful insights for more resilient Anthropocene dwelling (see Inoue and Moreira 2016; Whyte 2016). While such ideas were only a peripheral concern for this thesis they are a reminder to remain open to insights outside the conceptual, cultural, or other spaces with which we are familiar.

Unsettled times

Coming to concluding reflections, I return to the sense of unease with which the thesis began. Uneasy feelings remain, but I am more comfortable with them. And, I am better able to make sense of affective resonances triggered by the expanding array of unsettling global phenomena that has continued to emerge while working on this project over the last five years. The global political climate continues to be turbulent. Concerns with boundaries and borders, and the demarcation of ideology, truth, and difference have become increasingly significant themes. 'Border anxiety' has emerged within Western countries concerned with threats posed by 'soft' immigration stances (Taub and Fisher 2018). Within the UK, immigration emerged as a key issue influencing the vote to leave the European Union (Becker and Fetzer 2016). The 'unimaginable' outcome of the 'Brexit' referendum in mid-2016 was followed by another 'shocking' (for many: see, Healy and Peters 2016) political event: Donald Trump's unexpected victory in the 2016 US presidential election. Shock has turned into on-going disturbance and unease as the President's personal egomaniacal and mercurial qualities (Mangan 2017) permeate wider American politics, and through to the global stage (BBC 2017).

However, such an unsettled political climate became overshadowed by global events during 2018's northern hemisphere summer as I finalised this thesis. Unprecedented weather conditions resulted in severe heatwaves across many northern-hemisphere countries, including the UK, Europe, the US, Canada, and Japan. Temperature records were broken in many places, and thousands of heat-related deaths were reported (Watts 2018). Extreme conditions resulted in wildfires across Europe, in the UK, Norway, Finland, Latvia, with severe fires in Greece, Sweden, and Portugal (Etehad 2018). In California, where drought and wildfires have become the norm, 2018 has seen the largest wildfire on record. As of mid-August, a total of 5,168 fires had burned an area of 824,268 acres (3,336 km²) prompting the state to declare a national disaster in Northern California (Bacon 2018). Beyond the alarming statistics, news sites reported on 'weird' and 'uncanny' side effects of conditions: Sweden's Kebnekaise mountain is no longer the country's highest point because of some 14 meters of glacial melt; in Switzerland

fish had to be rescued from suffocation in abnormally warm lakes; in Poland, Lithuania and Sweden people were advised not to swim in the Baltic due to a major toxic algae bloom; in the UK, abnormal dry conditions revealed surface patterns indicating previously unknown archaeological sites (BBC 2018; Williams 2018). Meanwhile in Australia, at the same time, severe drought and fire took hold in the normally moderate winter season, continued evidence that recent historical droughts (over the last century) are unprecedented (Freund et al 2017), portending increasing climatic stress.

Making conclusive links between such heatwave events and climate change is difficult. The abnormal northern hemisphere conditions appear to be the result of jet stream anomalies possibly caused by polar amplification – itself a side-effect of global warming (Coghlan 2018). And, while the unprecedented heatwave provided fuel for debate, and poignant evidence for the need to focus attention on political response to climate change (Lewis 2018), it also provoked dismissive and deflective responses from climate-denial ideologues – notably President Trump who, responding in customary off-handed and ambiguous fashion via Twitter, blamed the fires on ‘bad environmental laws’ (Sutter 2018). Since taking office in January 2017, Trump has focused on rolling back every Obama-era environmental regulation, from the Paris climate agreement to emissions standards for cars (Johnson 2017).

Such a brief snapshot returns me to the key existential theme that has permeated this thesis: learning to live with uncertainty and unsettling paradox. We live in turbulent times. But we are exposed not just to fragmenting meta-narratives about the world, but discrete uncanny moments that disturb our own individual ideas and trajectories. As Timothy Morton candidly puts it, “everything is interconnected, and it sucks” (Morton 2010, 33). That things ‘suck’ is, of course, a relative judgement. And, as I have explored, the utility of engaging existential ideas is not with learning to acclimatise to or become immune to unsettled conditions, but rather in remaining attentive to and mindful of the ‘suck’; and to the potential that can manifest from such unsettling affective registers.

The emergency of the Anthropocene implies that humanity has “come up against a greater force, the Earth itself” (Hamilton 2010, 30), and that humans must now “view themselves as members of a forced commune that no longer permits any escape” (Elden 2012, 171). This suggests the need for a planetary ethics of responsibility (see Dalby 2014; Miles and Craddock 2018). And, while such ethics may usefully inform political and governance responses, my concern has remained with smaller-scale attachments, where individual ethics and responsibility are inseparable (Zylinska 2014; Schmidt et al 2016, 196). An awareness of our own personal ethical responsibilities poses questions of sense-making and agency. Within this thesis I

have drawn on my own emergent sense of unease, confronting questions of how to formulate practical responses. It is a condition that we are all faced to confront.

Anthropocene dwelling may best be approached through a therapeutic framework, such as Head's (2016) invocation of grieving. Themes of loss, change, and difference are appropriate at both a cultural and personal level. However, we must remain aware of the deeply profound challenges posed when, both collectively and individually, we are forced to confront the abysmal depths of being. To change course along the pathway of one's life can be difficult; the accumulated momentum from remaining on the same trajectory can require significant effort to redirect. In therapeutic terms, there may be resistance with accepting change to one's situation; resistance that may be amplified when circumstances are unexpectedly thrust upon us (Colman 2008). This is the visceral 'shock' of the Anthropocene (Bonneuil and Fressoz 2016). But, as I have explored, states of emergency can provoke sudden change: abruptly transforming and suspending established material and structural conditions which we are ultimately forced to respond to. And, while such change may not be pleasant in the conventional sense, transformation can be surprising in unexpectedly beneficial ways.

The Anthropocene-as-emergency is, therefore, a compelling framework to contemplate existentially through experience. An 'atmosphere' of emergency can open us up to novel conditions and ideas both about the world and ourselves. A key challenge, however, is with remaining open to change and difference given the stresses. Thus, in practical terms how might useful attitudes and aptitudes be developed? Within trauma therapy, mindfulness and acceptance are overlapping qualities argued to be critical in confronting personal upheaval (Thompson et al 2011, 222). Informed by Buddhist meditation practice, mindfulness emphasises a non-judgmental, accepting attitude toward present experience (Bishop et al 2004) and is believed to facilitate acceptance. Practicing acceptance leads to one being more fully present within one's experience of the world (Hayes et al 1999). Existential and coexistential practices share similar mindful concerns, although allow for more vivacious confrontation with experiences of difference. There will be some who are more willing to face the Anthropocene's radical call head-on: perhaps explorers, innovators, or artists who thrive in novel and uncertain conditions. For them the task will be to remain mindfully adventurous, and to create inviting pathways into the unfamiliar landscape that act as guides for others more apprehensive.

Contemplating pedagogical responses to such challenges for the 21st Century, historian Yuval Noah Harari (2018) argues for education strategies which downplay technical skills and

emphasise adaptive competencies which enable people to deal with change and better cope with unfamiliar conditions. The '4Cs' framework, for example, focuses on creativity, critical thinking, collaboration, and communication, identified as key future skills (NEA 2016). Such an approach is a potentially useful starting point in enabling and equipping young people for uncertain futures, though does not address the full scope of concerns this thesis has explored, such as ecological and coexistential awareness, existential themes, and non-modern modes of thinking.

To significantly alter the trajectories of global human systems and institutions, let alone some seven-billion individuals, is a monumental challenge. And, while I have strong sympathies for the potentials of 'generative' and 'convivial' responses, I also have trouble imagining such ideas scaled up to global proportions. If I try to imagine a future world in which humans have resolved their relationship with the planet (both with themselves and non-human others) I can only visualise such a state many thousands of years into a distant future – not in decades or even hundreds of years. The Anthropocene era will, undoubtedly, be as Tsing (2016) describes, patchy and uneven. While some will embrace the generative potentials from ensuing unsettledness, we must also expect strong resistance. Profoundly difficult and challenging aspects of Anthropocene dwelling lead me to consider that Misanthropocenic currents, coloured by denialism, intolerance, and cynicism will be necessary constituents of future trajectories – themes to which we must also remain attentive.

Thus, while I have argued in this thesis for paying attention to affective Anthropocene registers, both generative and troubling, I end by emphasising the difference between themes rendered by Anthropocene experience and attitudes we bring to it. We must remain sensitive to the potentials found in human affective experience; but we must approach the Anthropocene with clear, unidealistic examination that avoids being overtly optimistic or fatalistic. The Anthropocene is uncharted territory for humans and the planet, and navigating pathways through its unsettled dimensions demands attentiveness to the full range of human faculties.

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Appendix I: List of activities

2013

- June *NCCARF Climate Adaptation Conference*, Hilton Hotel, Sydney (attendee)
- August *Designing 'with' Forum*, Social Design Sydney (attendee)
- Impatience Symposium*, UTS, Sydney (attendee)
- Art and Architecture in Post-Disaster Japan Conference*, University of Wollongong (attendee)
- November *Sydney Sustainability Jam*, Redfern, Sydney (participant)
- December *Thinking through the environment: Unsettling the humanities*, School of Humanities and Languages, UNSW, Sydney

2014

- January *Climate Change in Four Dimensions*, UC San Diego MOOC (Online)
- Turn Down the Heat*, The World Bank MOOC (Online)
- Feb *Encountering the Anthropocene: The Role of Environmental Humanities and Social Sciences*, University of Sydney, Sydney (attendee)
- March *Service Design Jam Sydney*, Fishburners, Sydney (participant)
- June *Institute of Australian Geographers/New Zealand Geographical Society Conference 2014*, Melbourne (presenter)
- July *Unnatural Futures Conference*, Hobart (presenter)
- August *RGS/IBG International Conference 2014*, London (presenter)
- xskool: a socio-ecological design workshop*, Grinda, Sweden. (participant)
- Future Perfect Festival*, Grinda, Sweden. (participant)
- Interview: Dougald Hine (futures)
- 3D Print Show 2014*, London (attendee)
- September Visiting research fellow, department of design, Goldsmiths University of London, London
- Futures in Question Conference*, Goldsmiths University of London, London (attendee)
- Interview: Anab Jain, Superflux (speculative design)
- Interview: Tobias Revell (speculative design)
- October *Millennium People in Space*, Nesta, London (participant)
- An experimental workshop exploring the future of open access space through new Cubesat technology for disaster resilience and personal use.
- The Anthropocene Project Launch*, HKW, Berlin (attendee, public programme)
- Extinction Marathon*, Serpentine Gallery, London (attendee, public programme)

November Fieldwork, Christchurch, NZ

December Fieldwork, Kaimai-Mamaku Forest Park, NZ

2015

June *Blue Carbon Forum*, ANCORS, Wollongong (participant)

Interview: Dr Helen McGregor (oceans)

Interview: Dr Travis Potts (oceans)

July Interview: Dr Quentin Hanich (oceans)

Interview: Prof Richard Kenchington (oceans)

August Interview: Prof Tim Stevens (oceans)

RGS/IBG International Conference 2015, Exeter (presenter)

Dismaland Amusement Park, Weston-super Mare

2016

April *Anthropocene Campus II – The Technosphere*, HKW, Berlin (participant)

August Fieldwork, Great Barrier Reef, Cairns

Cultural responses to the Anthropocene Symposium, Anthropocene Transition Project, UTS, Sydney (invited discussant)

Appendix II: Everyday Anthropocene blog

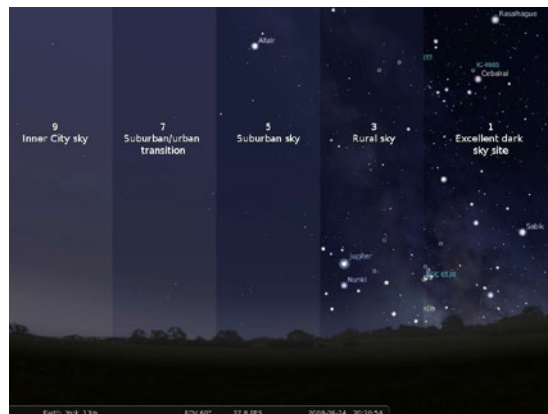
For the final year of the project I collected found images revealing uncanny slippages between familiar everyday experience and ideas of an affectively unsettling Anthropocene. Images were scrapbooked through an online blog platform under the title 'Everyday Anthropocene'.



Radioactive Waste Birthday Cake (via laughingsquid)



Shark Tea Bags That Slowly Release Bloody Red Tea: <https://youtu.be/8jM7mHIFnUE>



Perhaps borderline Anthropogenic? Light pollution impairs our ability to orientate ourselves in relation to the cosmic. Bortle scale chart: <https://www.jmu.edu/planetarium/light-pollution.shtml>



Crabs with beach trash homes – series by photographer Shawn Miller:
<http://okinawanaturephotography.com/>



Cute Cthulhu transcends the divide between cosmic horror and the everyday.



Your everyday road warning sign can act as a reminder of the planet's inherent dynamic and unstable nature. We need reminding that rocks are not static – they move...!?



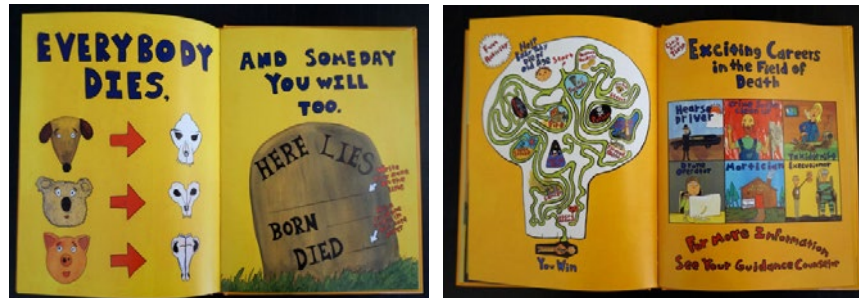
“Radioactive Boars in Fukushima Thwart Residents’ Plans to Return Home“ via NYTimes



There's something about the jarring cuteness of Jason Freeny's sculptures that make me think about contemporary memento mori.



Disaster Lego is a thing... Of course it is! Photo via Heikki Mattila/Flickr



I like the existential accessibility of this book 'Everybody Dies' by Ken Tanaka.



Memento mori (“remember that you have to die”) is a Latin expression, originating from a practice common in Ancient Rome; as a general came back victorious from a battle, and during his parade (“Triumph”) received compliments and honors from the crowd of citizens, he ran the risk of falling victim to haughtiness and delusions of grandeur; to avoid it, a slave stationed behind him would say “Respite post te. Hominem te memento” (“Look after you [to the time after your death] and remember you’re [only] a man.”). It was then reused during the medieval period, it is also related to the ars moriendi (“The Art of Dying”) and related literature. Memento mori has been an important part of ascetic disciplines as a means of perfecting the character by cultivating detachment and other virtues, and by turning the attention towards the immortality of the soul and the afterlife. (https://en.wikipedia.org/wiki/Memento_mori)



Pet rocks: everyday geologic?



Popsicles made from polluted river water. Project from National Taiwan University of Arts students.



classic détournement: Installation by <http://www.robynwoolston.com/>



Rock candy: candy... that looks like rocks



MTN App: like a pet rock for the smartphone generation

<https://itunes.apple.com/au/app/mtn/id891528055?mt=8>



Polar Ice: Ice cube moulds by Japanese designer Atsuhiko Hayashi .
