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Introduction: Provisional Cities

This is a book of cautionary tales about provisional cities. It is an incomplete account of the ways our ideas about cities have come under pressure – and sometimes been transformed – in extraordinary times. The advent of the Anthropocene has made questions of planetary settlement more urgent. It has also exposed the thought that any possible answer to these questions is provisional. This is a book, therefore, about unsettlement.

The Anthropocene is a geological epoch of devastating human-induced changes to Earth systems – changes which, in geological terms, are manifesting as catastrophes on a par with volcanism, glacial cycles and asteroid strikes. This book is part of a bloom of simultaneous responses to the Anthropocene thesis. However, it is distinctive in its imaginative focus on cities and settlements, and in its specific mode of inquiry, that is, stories. It is about the capacity for stories about the Anthropocene unsettlement to transform and shape reality. Stories have agency: deployed effectively, 'stories undo stories.' Storytelling is, among other things, the high-stakes 'battle' between 'unjust narratives and just ones, disabling imaginaries and enabling ones.'[1]

The Anthropocene yokes together geological time with human history – and reveals the surprising mutability of both. It is therefore both geostory and cautionary tale. This book is not about cataloguing the various threats to human settlements and habitation, or proposing solutions to living more sustainably and securely in cities around the world – many good books of these types already exist. Instead it is something more tentative and more provisional: a study of how storying can help make sense of and assemble the realities we are dwelling in now. For ultimately, it is difficult to understand the story we are in. And yet the Anthropocene story offers the potent prospect of working with the unavoidable catastrophe rather than running for cover. Importantly for humanity, this cautionary tale offers the possibility of changing its own story.

This book starts from the assumption that the anthropogenic impacts on Earth systems are not simply the concern of science, scientific authority, or of experts. They circulate in our social and cultural life, as a tangled and complicated set of tales, scenarios, proxies, networks, equations, models and conversations, which together have contributed to narratives of the Anthropocene. This book is caught

somewhere between interpreting the past, surveying the here-and-now, and imagining the future. The Anthropocene is a planetary condition within which new 'settlements,' and new modes of settlement, will need to be negotiated. It is an event that can only be fully apprehended through consideration of the deep time of planetary processes. Terrestrial futures will bear scant evidence of contemporary human activity and its distinctive detritus. What we might consider our most lasting constructions of steel and stone will either be erased altogether or squeezed thin into layers of rock. Geological time frames may remind us that all human settlement is provisional, but global urban practices and contemporary geopolitics continue to show little recognition of the precarious interdependence of human and non-human worlds, their radical instability, their capacity to surprise. If the Anthropocene is showing us that everything – even our most enduring symbols of mastery and permanence, from the dome of the Capitol Building to the temples of Ankor Wat – is actually provisional, how can stories about settlement and unsettlement help us to meet and to cope with this new ontological and philosophical crisis? The Anthropocene – understood as a cautionary tale – may yet have the potential to help us embark on alternative trajectories.

This is not to denounce 'cities,' but to recognise that the history of cities – in all its incarnations: garden cities, ecocities, sustainable cities, resilient cities, smart cities and so on – as one grand narrative replacing the next, when ultimately they are all provisional. 'Provisional cities' is by no means a unifying term. The book addresses a wide array of sites, with divergent scales, times and scope: from past disaster zones to remote outposts in the present to future urban fossils. What links them is their precariousness, tentativeness, temporariness – their ephemeral stability with respect to Earth inhabitation. If unsettlements – from tent cities to megalopolises – are stories about a planetary humanity, can they also be stories about how we have created, and how we might survive, the Anthropocene? Stories have the capacity to construct systems for acknowledging radical transformation and coping with instability, forging dynamic narratives about humanity's provisional relation to its planetary home. For, 'provisionality is not something to be overcome, a structural vulnerability, but rather the underlying condition of the world.'[2] The Anthropocene story – or geostory – might allow for immersion in the world as it is, prone to rapid abrupt change, violent disruptions, sudden storms and perils. Perhaps it can help us cope with the idea that stability is transient and that we are always on unsure ground. The tricky thing is that humanity needs to learn to trust its own footing on this precarious ground – to inhabit the cautionary tales of its own making.

Holocene disruptions

This book is written during a time of disorientating and abrupt climate change, in what is increasingly being understood as the last years of a period of relative stability – the Holocene epoch. The unstable concept of the Anthropocene designates a move beyond the geologic conditions characteristic of the Holocene, and a shift into a novel epoch whose signature is irreversible human impact on earth and life processes.[3] The unusually settled climate of the Holocene, which began with the ending of the last glacial epoch, 11,700 years ago, has also accompanied the approximately 10,000-year-long history of agricultural civilizations and city-building. Present generations of rapidly urbanising humans are thus likely to be living through the next shift in Earth epochs. As Jeremy Davies explains,

> The Holocene matters because it is the only geological epoch so far in which there have been symphony orchestras and hypodermic needles, moon landings and gender equality laws, patisseries, microbreweries, and universal suffrage — or, to put it plainly, the agricultural civilizations that eventually made all of those things possible. With its demise, the civilized rights and pleasures previously confined to the Holocene will have to negotiate radically changed ecological conditions if they are to endure, let alone if they are to be extended more generously to more people. That is the political problem of the Anthropocene.[4]

The Anthropocene, therefore, Davies concludes 'asserts the pressing need to re-imagine human and nonhuman life outside the confines of the Holocene.'[5] The problem, however, is that no one knows how to live in anything but the Holocene. The Anthropocene has been proposed as a new epoch on the Geological Time Scale that recognises the shift in the functioning of the Earth system to a 'no analogue state.'[6] This temporal moment, understood in terms of Earth strata, coincides with the particular historical juncture that has seen predictions of human-induced climatic tipping points and extinction events expressed as a transgression of 'planetary boundaries'.[7] In addition to the build up of greenhouse gases, the new stratum could be defined by human landscape transformations exceeding natural sediment production (such as urbanisation and industrialised agriculture); by accumulated technofossils– plastics and concretes; by the acidification of oceans; by the relentless destruction of biota, and, above all, by radical instability.

When understood in the context of deep Earth history, the scale of devastation observed indicates a transition to a new epoch in planetary time – comparable to the transition from the Pleistocene to the Holocene, which saw a 5℃ change in gl obal average temperature and a 120-meter change in sea levels. The reason we

understand the inception of the Anthropocene not just as change but as catastrophic change is that we are witnessing irreversible alterations unprecedented in the past 11,700 years. In other words, the particular moment we are now living can only be interpreted on the Geological Time Scale – any smaller scale of temporal reference cannot capture its uniqueness.

It could be argued that anthropogenic climatic disruptions will turn out to be just one more hazard for Earth's inhabitants in a sequence that stretches over milennia, from plague and pestilence to the prospect of nuclear annihilation. Can it really get worse then it has already been? For humans – urban or otherwise – and our companion species, the answer appears to be a resounding yes. What climate records show, in addition to the connection between CO_2 levels and global temperatures, is that the last glaciation was a time of frequent and traumatic climate swings, and of dwindling itinerant human populations that only just made it through. Humans only settled down when the climate did, building villages, towns and cities, and inventing all the basic technologies – agriculture, metallurgy, writing. Until the climate cooperated, the exceptional ingenuity claimed by the human species was not enough to help them embark on agriculture and city building.[8] In other words, the entire human history of urbanization might be seen as coinciding with 'a fluke in earth history.'[9] Moreover it is the construction and maintenance of cities (and the survival of their human inhabitants) that is now understood as responsible, directly or indirectly, for most of the Earth system changes associated with the Anthropocene: CO2 emissions, changed patterns of erosion and sedimentation, and bio-diversity loss. The provisional making of cities and settlements continues to be bound up in the notion of a threshold between the Holocene and the Anthropocene.

The Anthropocene thesis entails the idea that continuing to live in the Holocene is no longer an option. The Anthropocene thus unsettles any preconceptions we might have about modes of habitation and settlement on Earth. It suggests that we can no longer hope either to remain settled or to return to a settled state after only a brief interlude of crisis. Yet if we accept the idea of 'living in the Anthropocene' – even temporarily, or for this moment in time – in what sort of time and what sort of space do we find ourselves? A new epoch, by definition, is marked by a lasting geological signature. Only the most radical changes in the Earth's 4.6 billion year history have been inscribed in its geological strata thus far. The Anthropocene thesis suggests that future rocks will bear witness to geomorphic transformations of our time; the result of human activities now taking place at an unprecedented scope and planetary

scale. ‘The notion of the Anthropocene, then, vividly captures the folding of the human into the air, into the sea, the soil and DNA.’[10] As Oliver Morton notes:

> It may seem nonsense to think of the (probably sceptical) intelligence with which you interpret these words as something on a par with plate tectonics or photosynthesis. But dam by dam, mine by mine, farm by farm and city by city it is remaking the Earth before your eyes.[11]

Geophysical and ecological changes at the global scale, from climate change to biodiversity loss, alongside rapid urbanization and economic globalization, seem to indicate that humanity should prepare itself for sudden and unpredictable change. Projections show that the greatest risks will be borne by the most economically and geographically vulnerable communities. There is also a growing interest in planetary-scale responses, with private enterprise proposing a number of more-or-less fantastical, often highly intrusive, geoengineering fixes. Some commentators, such as Mark Lynas in The God Species, argue for taking renewed control of the planet through climate engineering and biotechnology, with a view to managing Earth’s systems in an artificial but Holocene-like state. Others argue for reigning in technological intervention and trying instead to restore balance – a kind of return to nature. The urgent need to reduce the vulnerabilities of large human populations in rapidly changing environments has, paradoxically, tended to obscure the philosophical and cultural shifts that are inevitably bound up with the more scientific-technical adjustments to ‘living in the Anthropocene.’ This book seeks to address this omission within the gap – the interval, or hiatus – we now appear to be inhabiting; the hinge between Holocene and Anthropocene. If the advent of the Anthropocene is being announced as a planetary emergency, it is also an opportunity for reflection.

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Planet of Cities in Planetary Crisis

The Anthropocene is a story unfolding on the planetary scale. It thus calls up the many different ways that the planetary has been refigured through the idea of the city. From Isaac Asimov’s sci-fi planet-city of Trantor and Constantin Doxiadis Ecumenopolis that covered the globe through to the experimental cities of planetary consciousness, such as Arcosanti and Auroville. The planet-city dyad is also expressed in the cosmopolitanism of Kant (via the Stoics) and the cosmopolitics of Stengers and Latour, who each combine cosmos with polis – the root of both politics and the city. The story of Earth is, increasingly, a story of cities: humanity inhabits an

urbanised and urbanising planet. The accelerated growth of settlements, cities, megacities is considered the most characteristic geophysical feature of the so-called Anthropocene-in-the-making. As the philosopher Michel Serres notes, 'When it is unevenly distributed, skyrocketing demographic growth becomes concentrated and stuck together in giant units, colossal banks of humanity, as powerful as oceans, deserts or icecaps, themselves stockpiles of ice, heat, dryness, or water.'[12] The Anthropocene is identified by the ecological disturbances and environmental destruction associated with the processes of urbanization, resulting from transport, sanitation and waste, manufacturing, energy production and consumption, engineered and agronomic systems. These go beyond mere surface inscriptions; they go deep in their disruption to earth systems processes. As the site of 'urban disturbances' – or urban–driven evolution, from the level of the urban ecosystem to the planetary scale – the Anthropocene is evidenced by modifications of habitat and new biotic interactions between plant and animal populations.[13] Whether drawing attention to an 'urban age,'[14] the 'age of humans,' or indeed the 'urbanthropocene,'[15] we are, in effect, describing a planet of cities in planetary crisis.

The majority of the world's population live in or rely on cities. Cities have become an increasingly dominant land-use and resource-use, with dependencies, relations and impacts that spread out from their hinterlands across the globe. The dominant patterns of this 'planetary urbanization' show no sign of slowing down.[16] These include energy intensive developments, suburban sprawl, disconnected infrastructures and speculator-led construction. And it is well understood that it is the wasteful ways that cities have expanded, the persistence of carbon-fuelled economic systems, and the exploitation of resources, that have led to the present crisis. Conversely, it is also clear that the impacts of escalating crises – financial, democratic, environmental – are concentrated in cities. Nevertheless, in 2012 the UN Habitat report stated that 'Cities can offer remedies to the worldwide crises – if only we put them in better positions to respond to the challenges of our age, optimizing resources and harnessing the potentialities of the future.'[17]

Up to a point. 'Our heavily urbanised planet,' Nigel Clark reminds us, 'is also a chronically turbulent one.'[18] There is every reason to feel uneasy about the future prospects of an urbanised planet, not least because of the growing awareness of the limits of human agency – that is, the capacity to act, or make a difference, in a warming and unstable world. With crisis inevitable, strategies of adaptation and mitigation are now a priority for cities, governments and markets. The task of urban

planners, architects and engineers has been to prepare cities, settlements and infrastructures for unpredictable conditions. Their focus has been on the capacity of settlements to adapt to climate change and of ways to 'design in' resilience. Recent proposals for future cities have therefore emphasised flexibility – amphibious constructions, hybrid ecologies, ecosystem engineering and smart technologies. They have also imagined security, in the form of physical barriers, strategies of managed retreat, and proposals for colonising subterranean spaces, the sea, or the sky.

But in spite of all these innovations that claim a degree of preparedness for living with uncertainty, the conventions of urban design and planning have, in practice, changed little. They remain rigid and reactionary. While tensions persist between the upheavals effected by top-down city planning and the incremental change of bottom-up approaches, democratic paths to decision-making in cities remain elusive. It seems unlikely that urban planning – at either the imaginative or administrative levels – will suddenly acquire the necessary agility, worldwide and simultaneously, to preempt the coming crisis. As Mike Davis observes, even if global agreement were possible, achieving worldwide adaptation to climate change along with poverty alleviation and the assisted migration of peoples 'would command a revolution of almost mythic magnitude.'[19] The task implies a more equitable redistribution of income and power unprecedented in human history. In his view, no person or organisation is capable of coping with the problems facing a rapidly urbanising planet:

> No-one. Not the UN, the World Bank, the G20: no-one has a clue how a planet of slums with growing food and energy crises will accommodate their biological survival, much less their aspirations to basic happiness and dignity.[20]

The Anthropocene describes the collision between the industrial civilization of cities and the Earth's geo and biospheres. The catastrophe of the Titanic in 1912– the crash of a mobile, state of the art, miniature techno-city with a 10,000 year old piece of Greenland ice– presents an allegorical forewarning of the Anthropocene. It seems an 'ideal Anthropocene tale', one that is 'compressed between technological optimism and natural catastrophism'.[21] But it also indicates that the human catastrophe cannot be avoided simply with better engineering, improved management and a bit more foresight. For it is also a tale about the social relationships inscribed in the ship, and in the shipwreck: there were not enough lifeboats, but there were some for first-class passengers. If the tendency of Anthropocene discourse is to underline that in terms of the planetary crisis 'we are all in the same boat', the narrative also reveals again and again that we are not all in

it in the same way.[22]

Anthropoceneries

> Corporate owned seed and genetically engineered fish, plastic-laden oceans and soil-burdened rivers, disappearing animal beings and evolving machine intelligence, rising seas and retreating ice fields, drought-stricken regions and inundated coastal zones, last gasps of going-extinct charismatic megafauna and rapid blooms of post-antibiotic microbial diseases, continental urban sprawls and miniscule remote wilderness, light-polluted night and exhaust polluted day.[23]

Entry into the Anthropocene comes with an array of warnings not to hope to keep things the way they are. We have already failed; and delusions to the contrary may lead us into further harm. Timothy W. Luke's catalogue of 'anthropoceneries' of the 'urbanthropocene' draws attention to the damage already done. The Anthropocene thesis is a thought experiment: as ontologically unsettling to established worldviews as it will be in the most practical sense to great tranches of the urbanised human population. The cautionary tale of the Anthropocene ushers in a series of unsettlements, temporal, spatial, political and conceptual. The Anthropocene - demands a stretching of the imagination backwards and forwards over timescales much vaster than we usually think in, and over incommensurable negotiations and arrangements of settlements. It forces us to inhabit not merely a lifetime or a generation, but 'deep time.' Disorienting as this is, it is also an invitation to extend our sense of responsibility; to redouble our efforts for social and environmental justice, not just for present day Earth inhabitants but for those who come after us – including generations of humans who will be living in a world we can't imagine, on terms with 'nature' that we can barely begin to comprehend. Valued ways of living will have to be renegotiated in the face of radically changed environmental conditions. Most of these changes have not been forced on us yet; but if we have the capacity to anticipate them, we also, arguably, have the obligation to brace ourselves for the coming confrontation.

The Anthropocene idea arrives in an era of ambivalence about humans' extraordinary capability to influence the planet we inhabit. But nature and the Earth are not simply benevolent entities at the mercy of a power-crazed humanity. If the Anthropocene is a cautionary tale – a warning against the hubris of exaggerating the reach of human agency – it also draws attention to a collective disavowal of the power wielded by the non-human and more-than-human – even what might be called cosmic agency. In the Anthropocene, we are increasingly being made aware

of the forces that threaten to wash, irradiate, or blow us into oblivion. This might be expected to alert us to a diminishing human agency and a decentring of the human. For in a worst-case scenario, regardless of what humans do next, it is possible that the Earth might undergo extreme volcanic events or be hit by an asteroid. Researchers in disaster studies tell us that when it comes to the next hurricane, earthquake or eruption, it is not a case of if, but when. As Georges Bataille reminds us, 'the ground we live on is little other than a field of multiple destructions.'[24] We dwell between catastrophes, between the perturbations of the atmosphere, hydrosphere, biosphere, heliosphere, cryosphere, lithosphere – air, water, life, sun, ice and rock. Volcanic eruptions, earthquakes, tsunamis, floods, hurricanes and typhoons are the norm rather than the exception. Moreover, it is now a familiar observation that there is no such thing as a 'natural disaster.' The degree of urbanization over the last 250 years is exceptional in the relatively short history of the human species – and with this astounding amount of city building has come the increased vulnerability of large numbers of urban populations to natural hazards.

The megacities and the vast urban conglomerations of today might be posited as the inevitable end product of the Holocene. Yet urban restlessness resists categorisation. As AbdouMaliq Simone observes, cities are rather worlds of 'constant rehearsal and revision, improvisation and experimentation, planning and anticipation.'[25] The dramatic tehnological and social changes in metropolitan regions in the last century have been surprising even overwhelming, but as Edward Soja observes, 'It is almost surely too soon to conclude with any confidence that what happened to cities in the late twentieth century was the onset of a revolutionary change or just another minor twist on an old tale of urban life.'[26] Zygmunt Bauman warns of attempts to forecast what will become of cities: 'Whether cautious or reckless, radical or ambivalent, partisan or uncommittal, there was hardly a single prognosis that has not been dismissed by some other writers[...]'[27] When it comes to cities, therefore, we should continue to be cautious about predictions of the future. Cities are inherently unstable, unpredictable and averse to smooth functioning. And there are plenty of tales about troubled cities – failed projects, disappeared neighbourhoods, disfunctional politics, disjunctions and upheavals – that jostle with predictions of growth and development. Discordant stories about city-dwelling are in step with the general state of alarm about the sustainability of cities. Whether as an issue arising out of the inevitable ecological impacts of cities, or as recognition of the increasing stresses of urban population expansion without the requisite economic and infrastructural underpinnings on water, energy, transport services – there are

plenty of things that need sorting out in cities. Burgeoning cities around the world, we are repeatedly told, are poised on the brink of a planetary state of emergency, and yet make few concessions to the calamities that threaten to engulf them. This book about provisional cities touches on what it means to dwell within an unfolding disaster of human making, a world without stability – and yet continue to attempt the fiction of a settled life.

This book does not intend to veer between warnings of apocalypse and calls for adaptation – as if it were a straightforward matter to build better, smarter, stronger, catastrophe-proof cities. Recent years have provided access to difficult new knowledge about potentially abrupt climate change and cataclysmic earth processes that are likely to undermine all the best laid plans. Any projects to accommodate a rapidly urbanizing population must therefore take into account the certainty of intermittent catastrophe, but also, beyond this, the possibility that the relatively stable conditions – both political and physical – so relied on by contemporary humans and so conducive to their constructions, could disappear with very little warning. The Anthropocene and its anthropoceneries thus provokes thinking about what abrupt and irreversible climate change would mean for some of the more settled ideas about human settlement.

Fear and Trembling

> As cities collapse and grow desolate when there is an earthquake and man erects his house on volcanic land only in fear and trembling and only briefly, so life itself caves in and grows weak and fearful when the concept-quake caused by science robs man of the foundation of all his rest and security, his belief in the enduring and eternal.[28]

The trouble with science, according to Nietszche, was that it was fundamentally unsettling. His neologism ‘concept-quake’ – Begriffsbeben – plays on the enduring metaphor of an earthquake to express the radical sense of contingency provoked by the discoveries of nineteenth-century scientific empiricism. The coining of the ‘Anthropocene’ neologism marks an equally momentous epochal crisis. This epoch naming brings with it its own concept-quake whereby confidence in the stability and permanence of the world, its institutions and constructions, is shattering. At the same time, the advent of the Anthropocene signals a planetary crisis of agency. As Bruno Latour puts it, ‘How can we simultaneously be part of such a long history, have such an important influence, and yet be so late in realizing what has happened and so utterly impotent in our attempts to fix it?’[29]

Nietszche's metaphor is still apt for a world that recognises its existence as increasingly contingent and precarious. The Anthropocene arrives at a particular juncture when information from earth sciences research, philosophical enquiry on human and non-human relations, and a focus on ethico-political issues arising from ecological predicament coalesce – with the common theme of a volatile, unpredictable cosmos. Anthropogenic climate change and the concomitant disruption of earth processes is ontologically scary. It is both intensely local – as when a place we know intimately and depend upon (or else a place remote from us but that looms large in our fantasies, a kind of global 'unreal estate,'[30] like Venice, or New Orleans) is threatened – and massively distributed in time and space. It provokes a reflection on our place on Earth and in the cosmos: what is the human, what is society, what is Earth; what does it mean to exist at all?[31] The Anthropocene thesis provokes the question: What does all of this mean for the settled Holocene life we have taken for granted? There is much to unsettle us and keep us awake in the night.

In his reading of Soren Kierkegaard's Fear and Trembling, Jacques Derrida writes, 'We tremble in that strange repetition that ties an irrefutable past (a shock has been felt, a traumatism has already affected us) to a future that cannot be anticipated; anticipated but unpredictable;… apprehended precisely as unforeseeable, unpredictable; approached as unapproachable.'[32] Living within an unfolding disaster, in a Holocene world that is ending, provokes 'a deep shuddering of temporality.'[33] Timothy Morton's term hyperobjects denotes some of the characteristic entities of the Anthropocene. 'For it is gigantic nonhuman beings—radioactive materials, global warming, the very script of the layers in Earth's crust that opens the Anthropocene—who bring about the end of the world.'[34] These harbingers of the Anthropocene are met with opposition: 'The panic and denial and right-wing absurdity about global warming are understandable' writes Morton. 'Hyperobjects pose numerous threats to individualism, nationalism, anti-intellectualism, racism, speciesism, anthropocentrism, you name it. Possibly even capitalism itself.'[35] Morton observes that recognition of the crisis alerts us not only to our potential physical destruction (via storm, flood, fire, or drought) but points to the metaphysical evaporation of our 'world.' For Morton the contemporary condition is a 'fundamental shaking of being, a being-quake.'[36]

In The Natural Contract, Michel Serres describes our planetary condition as 'living in a permanent earthquake':

> For, as of today, the Earth is quaking anew: not because it shifts and moves in its restless, wise orbit, not because it is changing, from its deep plates to its envelope of air, but because it is being transformed by our doing…. We are disturbing the Earth and making it quake! Now it has a subject once again.[37]

Serres invites coming to terms with cosmic processes that have gone on from way before, and will continue long after, our species' constructions – and with utter indifference to them. Before cities could even be imagined, the planet went through periodic upheavals and constructions of its own. Any consideration of cities and settlements may therefore need to touch on those lithic architectures – the geophysical forms of earthly mobility and place-making, such as plate-tectonics, seismic upheavals and eruptions, that are beyond the scope of human involvement. To think of provisional cities, landscapes, infrastructures and settlements that are open to being reworked and reconfigured as a result of convulsive earth systems suggests, paradoxically, the reinstantiation of foundational 'ground' as an unstable present. We might also need to uncover stories about cities that allow for the imagination of worlds indifferent and incomprehensible to humans.

The Anthropocene story offers insights into the work of researchers in the geophysical sciences, in their discoveries of a turbulent world. As philosopher Graham Harman observes, 'The history of the universe is packed with numerous fateful revolutions: the emergence of the heavier elements from hydrogen; the birth of solar systems; the breakup of Pangaea into multiple continents; the emergence of multicellular life,…'[38] Thinking about the Anthropocene invites consideration of both scientific accounts and philosophical deliberations about the ways in which the Earth is changing, and the ways humans and worlds they inhabit are changing, or failing to change, with it. It alerts us to 'living with earth and cosmic processes . . . in the context of a deep, elemental underpinning that is at once a source of profound insecurity.'[39] The Earth wobbles, leaving humanity unsteady and wavering. The Anthropocene story involves the being-quake, the concept-quake, as well as the just plain scary earthquake – how should humans act when they have so little stability on offer?

The Anthropocene and other tales

The shared vocabularies of loss, catastrophe, cataclysm, disaster and crisis, along with the compulsion to story across times and places, are two key features of Anthropocene unsettlement. In the face of events that are unpredictable, and incommensurable with our day-to-day lives, we fashion tales of the destruction

and/or the improbable endurance of cities and city dwellers. Cities in trouble are a ceaseless spur to storytelling. Stories have accompanied cities through frequent disasters, for example, in the chain of dire warnings that is Mike Davis's Dead Cities and other Tales. In a book ostensibly about West Coast US urbanism, Davis weaves together tales of asteroid impacts, mass extinctions, Victorian disaster fiction, planetary gravitational imbalances and anthropogenic climate change. Scary stories about cities and their uncertain futures in what is being termed the Anthropocene might perhaps offer at once a more provocative and more attentive engagement with present conditions. They may be what allows us finally to face up to, and grapple with, the prospect of irreversible changes in the Earth system. Cautionary tales have steered us through the fears and paranoias of the last century of anthropogenic calamity, confronting the unknowable and thinking the unthinkable. We have turned to stories to work through the consequences of pollution and toxicity, confront nuclear threats and the Cold War, deal with environmental distresses and inbalances, and imagine life in the aftermath of devastation. Cautionary tales allow us to rehearse, if not avoid, a distorted future world of our own making: a world in which there may or may not be room for our own species.

In the early twenty-first century, we are steeped in stories of the destruction of habitats, cities and infrastructures, either because of humans, and in spite of humans. These are all cautionary tales for the Anthropocene. In 1886, the same year that the Holocene was officially approved as the 'wholly recent' geological epoch, Richard Jefferies published After London, where he imagined the collapse of civilisation, with London engulfed in a poisonous miasma after some mysterious cataclysmic event. In J.G. Ballard's novel The Drowned World (1962), flora and fauna reached colossal sizes after the world warms dramatically, a previously temperate London now so hot as to be uninhabitable as the earth regresses to earlier climatic conditions. A Fable for Tomorrow, the innocently titled prologue In Rachel Carson's Silent Spring (1962), warns about contamination by pesticides and nuclear fallout by weaving a poetic narrative about seasonal disfunction and desolation in an everyday US town. Environmental apocalypse was imagined in the New York of Harry Harrison's novel Make Room, Make Room! (1966) and also in the film it inspired, Soylent Green (1973), which reveals the macabre solution to a resource-stricken city where most human beings are considered 'surplus'. The annihilation of the world's cities in the worst-case scenarios of nuclear war, developed by Herman Kahn with the Rand Corporation, set the scene for Stanley Kubrick's apocalypse satire Dr Strangelove (1964). Cormac McCarthy's The Road

(2006), adapted into an eponymous film (2009), is a vision of utter ecological devastation that reduces the few survivors to scavenging or cannibalism. Jeff Nichols' film Take Shelter (2011) set in small-town Ohio, explores a construction worker's premonitions of an apocalyptic storm that results in compulsive yet seemingly pointless shelter building. The prophetic visions of this 'modern day Noah' are dismissed by his family and friends as the product of inherited mental illness – they thus 'safely annex the apocryphal storm as a symptom of his psychological turmoil.'[40] There is no re-assurance of safety from the storm in the film- instead it augurs the kind of unsettlement and uncertainty we may need to get used to. Such cautionary tales negotiate the discord between the actual and the (im)possible, and test the pragmatic, moral, physical and psychological consequences of certain courses of action. They compel us to imagine how things could be – disastrously – otherwise than the more or less stable state we have always known. Cautionary tales can be a strategy for dealing with a contingent, turbulent, uncertain future of humanity's own making.

The United Nations' Intergovernmental Panel on Climate Change (IPCC) reports have consistently warned of possible devastating impacts of anthropogenic climate change. And with each report, real events are catching up with the worst-case scenarios. In 2007, The Independent offered five different scenarios for the world in the year 2100, warming in one degree increments between 2.4° and 6.4°. It didn't look good:

> +6.4°: Most of life is exterminated
>
> Warming seas lead to the possible release of methane hydrates trapped in sub-oceanic sediments: methane fireballs tear across the sky, causing further warming. The oceans lose their oxygen and turn stagnant, releasing poisonous hydrogen sulphide gas and destroying the ozone layer. Deserts extend almost to the Arctic. "Hypercanes" (hurricanes of unimaginable ferocity) circumnavigate the globe, causing flash floods which strip the land of soil. Humanity reduced to a few survivors eking out a living in polar refuges. Most of life on Earth has been snuffed out, as temperatures rise higher than for hundreds of millions of years.[41]

From the data-driven scenarios and decadal timescales of IPCC reports through to examples in mainstream media (The Day After Tomorrow, 2004; The Age of Stupid, 2009), the contemporary imagining of possible futures has been dominated by doom and gloom, a realized eschatology of global environmental change – now culminating in the Anthropocene. Recent utopian designs for urban futures are likewise influenced by a pessimistic futurology, inherited from the 1970's worst-case

scenarios of Limits to Growth and A Blueprint for Survival. In the early twenty-first century, back-to-basics survival manuals proliferate alongside exuberant technofantasies of massive-scale geoengineering. Indeed, these are two sides of the same ecotopian/eschatological coin. We live in an uncertain world fraught with potential danger and imminent collapse. Each year of the present century has brought more examples of extreme weather, epic floods, seismic unrest, typhoons, pestilence, and war. Fear and foreboding are appropriate responses. We have cautionary tales of grim futures in abundance.

Various titles on the bookshelves add to the increasing array of future disaster tales warning of climate change: of a world that is 'post-apocalyptic', 'post-human' or 'without us,' along with user manuals for coping with 'the end of the world as we know it.' Long-form investigative journalism has likewise been a source of dire warnings, as in Elizabeth Kolbert's Field Notes from A Catastrophe and her more recent book The Sixth Extinction. James Lovelock's Revenge of Gaia (2006) describes bleak scenes of dwindling human populations struggling to reach a suitable habitat in the Arctic circle. Alan Weisman's The World Without Us (2007) predicts the gradual deterioration and destruction of human artefacts, and nature's eventual reclamation of urban environments, after an unnamed cataclysm (many scenarios are possible) that wipes out our species. He lingers aesthetically on the absurd spectacle of our artifacts of convenience – the stainless steel saucepans with their plastic handles, the cars, the bridges – surviving the creatures who made them. Bill McKibben's Eaarth (2010) offers a vision of total ecological devastation, arguing that we are already two decades too late to avoid a cruelly inhospitable future.

Many narratives about anthropogenic climate change have been framed in apocalyptic terms. If they offer any consolation, it is in the form of a call to arms, explicit or implied: we must try to stop this inhospitable future from happening. If recent decades have taught us anything, however, it is that humans do not seem built to pivot easily toward coordinated action – and certainly not at the expense of short-term profit and convenience – to avert disaster. Or at least, we do not seem inclined to be frightened into it. Tales of unmitigated doom and gloom may therefore have been of little effectiveness; or even have further embedded inaction. As Frederick Buell warns, we need to be wary of the 'domestication within crisis' and instead find ways of 'dwelling actively within … crisis.'[42] For cautionary tales to be effective, then, it seems they cannot merely spell out imminent disaster. They must offer the possibility of inhabiting the prevailing doom and gloom more purposefully; of

doing something with it. Even if it is the story to end all stories, the Anthropocene offers the prospect of working with and within the story as it unfolds.

A Thousand and One Cautionary Tales

> They still hung suspended between catastrophe and paradise, spinning bluely in space like some terrible telenovela. Scheherazade was Earth's muse, it seemed; it was just one damn thing after another, always one more cliffhanger, clinging to life and sanity by the skin of one's teeth[…][43]

2312, Kim Stanley Robinson's tale of cosmic inhabitation, posits the troubled planet as a planet-sized cautionary tale – 'some terrible telenovela' – which, since it is in the reader's future, might still suggest the possibility of evasive action. Of course, our oldest stories indicate that humanity has always been susceptible to catastrophe – especially wherever we concentrate and settle. Biblical, mythical, and historical accounts (confirmed by recent scientific findings) indicate ancient cities' extreme vulnerability to flood, drought, and plague, as well as to an intermittently shaking ground. The masonry quilt of Jerusalem's old walls shows repeated damage and repair; it tells a story of destructions wrought not only by humans but by earthly tremors. The collapse of ancient urban civilisations is regularly attributed to climatic and geophysical disruptions.[44] But the current situation is different: the shifts in earth systems we are experiencing now are rare enough in the Earth's 4.6 billion-year history; in the span of human history, they are without precedent. The potential for the sudden and catastrophic dislodgement of our settlements has never been greater; and yet we remain remarkably stubborn in how we build and how we live, ranging busily over our planetary-scaled construction site as if nothing had ever changed and never will. Why are severe warnings being ignored?

Stories about cities are often stories about devastation – cyclones, earthquakes, floods, plagues, tyranny, class warfare – but they are also, usually, stories of endurance. Cities have the capacity to bounce back and cling on. Alongside narratives of folly and avoidable calamity there are tales of improbable survival. Making it through to the next retelling is something cities do well. Telling stories to survive, just as Scheherazade does in Tales of the 1001 Nights, is a constant theme for cities and city dwellers. Like the stories she tells, forestalling the cataclysm each night with an embroidery of complications, stories told about cities undergo myriad retellings generating further stories, alarming and compelling in equal measure. 1001 Nights was also a favourite book of Cold War strategist and futurist Herman Kahn and discernible in the scenarios of his experimental epic narrative On

Thermonuclear War, published in 1960. Kahn's storytelling impulse ranges from quirky asides through details of the 'unthinkable,' such as lists of casualties of hypothetical nuclear war, to detailed analyses of the pageantry of World Wars I through VIII. The book's structure of nested stories promised to continue – no matter what – with no end to the scenarios. A journalist remarked at the time, 'Herman Kahn may feel that, by inventing one Scenario after another, he is holding back the changes that would seal our doom.'[45] Scheherazade is still Earth's muse. Cities, like stories, are provisional and open to constant revision and reinvention. Cities are unfinished stories. They prompt the question: 'What next?'

The Anthropocene is the story of the human species' changing attachment to Earth. It veers between precarious inhabitation and ruthless opportunism on a stranger-than-fiction planet. With our accidental and unsettling advance into the Anthropocene, fearsome stories with the planetary at stake – the earth-shattering, sky-falling and world-ending variety – have renewed poignancy. Catastrophic events bring incommensurable times and scales into collision: geological time folding into the gestures and routines of everyday social life, the global invading the local, planetary energy bearing down on a city. Cautionary tales that evoke the cosmic dimensions of planetary inhabitation are ripe for retelling. They draw attention to the transformative power of stories – where things might change, or remain the same… or else… What stories can be told about an Anthropocene epoch in the making? How can they help with inhabiting the Anthropocene in more just, considerate and purposeful ways?

Anthropocene unsettlements

This book set out to comprehend the Anthropocene through the narratives that were the making of it. It presents a series of essays about Anthropocene unsettlements. It has charted an environmental history full of curfews, admonitions and alarms about dwelling on Earth – the multiple warnings that announced that widespread environmental disarray was linked with human activity. These were accounts steered by frequent surprises and disasters; that revealed the restless and turbulent condition of the Earth. This story of getting to the Anthropocene is not simply a rebuke to humans about not heeding warnings. It is much more complex and messy. It is a story of trial and error, and more error. It concerns geopolitical struggles, alternative paths that might have been taken, and others that were considered and abandoned. The book recognizes the futility of attempts to frame the Anthropocene in terms of a unifying planetary history.[46] Instead it posits 'provisional cities' as

exemplary sites for the Anthropocene. Each chapter focuses on cities, settlements and urbanisation in different states of crisis and disruption, real or hypothetical. The writing touches on these sites' inevitable entanglements with history, geology, and different (often incommensurable) ways of thinking what it is to be human; what it is to inhabit this fragile-resilient Earth.

Chapter 1, Fossil Traces, reviews the stratigraphic case for the Anthropocene, and considers the implications for humanity's planetary future. The present day is still oficially within the Holocene epoch. This chapter projects imaginatively millions of years into the future to uncover and contemplate the fossil traces that may remain as evidence of human societies' disfigurement of the planet they have always depended upon. It reflects on the Anthropocene as a site of unparalleled human-induced 'unconformity' in Earth's systems, and also of human impasse. It explores how the most significant yet provisional human artefacts – cities – might be inscribed in the archive of deep time.

Chapter 2, Disaster Zone, traces the existential and ontological threads of current thinking about catastrophic upheavals back to the Lisbon Earthquake of 1755. The eighteenth century also saw the beginning of modern period and is considered by some to be the start of humanity's fossil-fuelled trajectory towards its final geological inscription. Recent narratives of the Anthropocene as 'a disaster read in the rocks' can be compared with the philosophical impact of the Lisbon earthquake on European society, in terms of the scale of cultural shift required to respond to increasingly volatile urban conditions.

Chapter 3, Proving Ground, looks at the history of test sites for warfare and civil defense in the nuclear age, and the roles of military-scientific strategies and technological infrastructures in rehearsing the mass destruction of cities. The Cold War introduced the possibility of an age that could destroy itself, feeding an apocalyptic imaginary that has informed thinking about the Anthropocene. The development of emergency scenarios, proving grounds and test cities was part of an elaborate system of preparedness that was not just technological but narratological. The construction of bomb sites and testing of bombs necessitated the construction of nuclear fictions. These rehearsals for the end of the world, fueled by horror at its very possibility, served, ironically, to bring that scenario closer.

Chapter 4, Proxy World, travels to the ends of the Earth in pursuit of an experimental, inhospitable, off-limits site: a place that is beyond the pale of most human practices of inhabitation, and yet one of the most intensely monitored on Earth. Antarctica accommodates research laboratories that are world observatories, fragile spaceship-like bubbles of habitability that appear as clumsy scars on the landscape they are there to document. It has been the key warning site for the Anthropocene: ozone holes; glacial melt; ice-shelf collapse. Antarctica stands in for all the places we can't reach or don't understand – it is the most extraterritorial and extraterrestrial place on Earth.

Chapter 5, Bounded Planet, explores the ways in which planet Earth has been conceived of as a spaceship, conveying our species through the cosmos and providing a 'life support' system subject to strict boundaries and limits – including, perhaps, a limited carrying capacity. The notion of Spaceship Earth helped to establish the idea that humanity's home planet was a temporary and fragile biospheric environment that would need our careful attention to maintain. This idea was important to the popular environmentalist movements of the 1960s and 70s and has inspired contemporary thinking on 'planetary boundaries' – an accessory concept to the Anthropocene. 'Spaceship Earth' also inspired ideas for space colonies –closed, Earth-like environments, which would allow humanity – or a select minority – to escape this planet and its troubles altogether.

Chapter 6, Monster Earth, addresses geoengineering: the range of ambitious and often disturbing schemes currently under consideration for global-scale, technology-driven interventions into Earth's complex systems. Mostly speculative, but increasingly within our technological grasp, geoengineering is a process of intentional Earth-alteration that reifies the entire planet as an object of experimentation and control. It is presented as the technological fix that can save humanity from the environmental crisis that our species engineered in the first place. It also puts us at risk by sustaining a dream of human mastery of the environment in the face of increasing evidence that Earth has the capacity to humble humanity at a stroke, even to our destruction.

Chapter 7, Temporary Home discusses the precarious contemporary condition of human unsettlement. Tent cities across the world are strained to bursting as we attempt to contain large-scale geopolitical upheavals which, increasingly, show signs of having ecological origins. Citizens are stranded in the wreckage of cities

devastated by flooding, earthquakes and drought, unable to rebuild, unable to move on. In the context of a climate that humans are actively changing, catastrophic environmental change and unsettlement may well become more familiar in the future, as the so-called Anthropocene epoch unfolds. It suggests inhabiting this crisis – the transition or interval between the Holocene and the Anthropocene – with a renewed sense of responsibility and hospitality, an attentiveness to the limits of human agency, and a spirit of cooperation without which it will be difficult to endure.

Cautionary tales for the time-being

One of the most intriguing things about the Anthropocene warning is that it is provisional. As a proposed geological term naming a stratum of the Earth, it may not meet the stringent requirements of stratigraphers. Even if it is formally adopted, 'Anthropocene' always already has the potential to be superceded by the next geological epoch-naming. As a story called 'the Anthropocene,' it is a container for divergent narratives of a radically uncertain future; for we have no real idea of what is going to happen next or how we should respond. In other words, this moment of paradoxical hubris – of proposing to name a geological boundary event for anthropos, that may only be legible in the world after humans – may well be short lived.

While the Anthropocene thesis has been a success insofar as it it has provoked widespread debate, in the longer term it just might not catch on, or there might be some better ideas on the horizon. It remains to be seen whether it will be accepted as an official geological term or consigned to the same heap as other words that have attempted to describe the planetary force of humans – for example, 'noosphere', 'anthropozoic' and 'anthrocene.'[47] It is as yet a nascent concept. It is also one that has its own end in sight: a term with obsolescence built in. And one with such wide-ranging implications, for human life and for the planet we call home. It is also remarkably accommodating of interdisciplinary analysis. This scientific proto-concept has strayed into areas beyond geology and stratigraphy, prompting innovations of social, cultural, political and philosophical thought about dynamic Earth processes and the humans who are vulnerable to them. As one review of the new epoch-naming puts it, '[T]he Anthropocene appears as a rough place-holder for an undefined and arguably unprecedented historical condition underpinned by environmental uncertainties, which demand critical re-assessments of how material engagements take form, hold fast, and/or break apart in space and through time.'[48]

Regardless of the eventual decision (to be delivered by one particular discipline - Geology), the deliberations of an Anthropocene epoch offer an opportunity to revise our terms. This geological boundary-crossing creates the space to hesitate, to pay attention, and to rethink human-planetary engagement, for the time being.

The Anthropocene warning nevertheless comes with its own pitfalls and faultlines. It troubles the identification and articulation of a world whose social, political and physical parameters are changing faster than our capacity to process change. It evokes the sense of present precariousness, even impasse. Yet the Anthropocene is as much a provocation as it is a lament. It suggests an experimental and transformative approach to Earth pasts, presents and futures that simultaneously demands the exercise of caution. As a cautionary tale in and of itself, it administers 'a massive jolt to the imagination'[49] that prompts the need to think again and act differently. The Anthropocene may well be the brief moment in time where it is still possible to talk as if what we do now might matter and could make a difference to the future. It may be the last time we are able to talk about the future at all. For, in the grandest of narratives, we may have already and unwittingly written ourselves out of the story. Telling stories that matter, even if they are scary ones, is therefore the theme of this book.

Like all discussions of the Anthropocene, this book offers only a provisional investigation. It is an invitation to unexpected futures and changing stories. It asks that we try to imagine how we might yet get to grips with the Holocene-Anthropocene interim for our cities in the making. Stories about Anthropocene unsettlements reveal a complicated history of humans as inventive, negligent, recalcitrant, misguided, and imperilled. Paradoxically, stories about the Anthropocene can open up less anthropocentric ways of understanding materiality, making visible the eternal but often ignored proximity of the geological, and non-human, and human life. As Doreen Massey reflects, 'bearing in mind the movement of the rocks, both space and landscape could be imagined as provisionally intertwined simultaneities of ongoing, unfinished, stories.'[50] Anthropocene tales are not merely human. They are imagined through intimacy with incalculable temporalities, frighteningly dynamic entities and ecological precariousness. This book asks what narratives are needed in this provisional time of human settlement – tentatively termed the Anthropocene – to equip humanity to thrive, or at least survive, in a future that is uncertain. Isabelle Stengers' In Catastrophic Times reflects on tangled histories of scientific projects gone awry: 'What is proper to every event is that it brings the future that will inherit

from it into communication with a past narrated differently.'[51] Tuning into the catastrophic world we are living in now through the idea of the Anthropocene suggests that it is no longer possible to expect to maintain the status quo, nor is it any longer viable to treat the world simply as a resource for human use. The Anthropocene is an uncanny tale that sets both its tellers and its listeners adrift – unsettled, yet somehow still 'at home.' For the time being, this book argues, we still need cautionary tales.

[1] Victor E. Taylor and Richard Kearney, 'A Conversation with Richard Kearney', Journal for Cultural and Religious Theory, vol. 6 no. 2 (Spring 2005), pp. 17–26, p. 21
[2] Renata Tyszczuk 'On constructing for the unforeseen' in Robert Butler, Eleanor Margolies, Joe Smith and Renata Tyszczuk (eds.) Culture and Climate Change: Recordings (Cambridge: Shed, 2011); pp. 23–27.
[3] Jan Zalasiewicz, Mark Williams, A. Smith, T. L. Barry, A. L. Coe, P. R. Bown, P. Brenchley, et al. 'Are We Now Living in the Anthropocene?' GSA Today 18, no. 2 (2008): 4–8.
[4] Jeremy Davies, The Birth of the Anthropocene (Oakland CA: University of California Press, 2016); p. 5.
[5] Jeremy Davies, The Birth of the Anthropocene (Oakland CA: University of California Press, 2016); p.209.
[6] Paul J. Crutzen and Will Steffen, 'How Long Have we Been in the Anthropocene Era? An Editorial Comment' Climatic Change 61: 251–257 (2003): 253.
[7] Johan Rockström et al., 'A Safe Operating Space for Humanity,' Nature 461 (September 2009): 472–75.
[8] Elizabeth Kolbert, Field Notes from a Catastrophe: A Frontline Report on Climate Change, (London: Bloomsbury, 2007); p.187.
[9] Evan Eisenberg, The Ecology of Eden: Humans, Nature and Human Nature (London: Picador, 1998); p.433; cf. Nigel Clark, 'Turbulent Prospects: Sustaining Urbanism on a Dynamic Planet' in Malcolm Miles and Tim Hall (eds.) Urban Futures: Critical Commentaries on Shaping the City (London and New York: Routledge, 2003); pp. 182– 193; p.190.
[10] Ben Dibley, 'The shape of things to come': Seven theses on the Anthropocene and attachment' Ecological Humanities, Issue 52, May 2012; http://www.australianhumanitiesreview.org/archive/Issue-May-2012/dibley.html
[11] Oliver Morton, 'The Anthropocene: A man made world; Science is recognizing humans as a geological force to be reckoned with', The Economist, May 26 2011.
[12] Michel Serres,The Natural Contract (Ann Arbor: University of Michigan Press, 1995); p.17.
[13] Marina Alberti, Cristian Correa, John M. Marzluff, Andrew P. Hendry, Eric P. Palkovacs, Kiyoko M. Gotanda, Victoria M. Hunt, Travis M. Apgar YuYu Zhou, 'Global urban signatures of phenotypic change in animal and plant populations' Proceedings of the National Academy of Sciences of the United States of America (PNAS), 2017.
[14] See Ricky Burdett and Deyan Sudjic (eds.) The Endless City (Phaidon Press, 2008); Ricky Burdett and Deyan Sudjic (eds.), Living in the Endless City (Phaidon Press, 2011)
[15] Timothy W. Luke, 'Urbanism as Cyborganicity: Tracking the Materialities of the Anthropocene', in Daniel Ibenez and Nikos Katsikis (eds.) New Geographies 06: Grounding Metabolism (Harvard University Press, 2014): 38 –51.
[16] See Neil Brenner and Christian Schmid, 'Planetary urbanization,' in Matthew Gandy ed., Urban Constellations (Berlin: Jovis, 2012);pp. 10-13; and Neil Brenner, (ed.) Implosions/Explosions: Towards a Study of Planetary Urbanization (Berlin: Jovis, 2013).
[17]UN Habitat, *State of the World's Cities 2012/2013: Prosperity of Cities* (New York: Earthscan, Routledge, 2013); p. v.
[18] Nigel Clark, 'Turbulent Prospects: Sustaining Urbanism on a Dynamic Planet' in Malcolm Miles and Tim Hall (eds.) Urban Futures: Critical Commentaries on Shaping the City (London and New York: Routledge, 2003); pp. 182– 193; p.182.
[19] Mike Davis, 'Who will build the ark?' New Left Review, 61 (Jan–Feb) (2010), 29–45. http://newleftreview.org/II/61/mike-davis-who-will-build-the-ark; accessed 20 July 2011.
[20] Mike Davis, 'Who will build the ark?' New Left Review, 61 (Jan–Feb) (2010), 29–45. http://newleftreview.org/II/61/mike-davis-who-will-build-the-ark; accessed 20 July 2011.
[21] Armiero, Marco, 'Of the Titanic, the Bounty, and Other Shipwrecks,' intervalla: Vol. 3, 2015
[22] See Rob Nixon, 'The Anthropocene: The Promise and Pitfalls of an Epochal Idea.' The Edge Effects (6 November 2014); http://edgeeffects.net/anthropocene-promise-and-pitfalls/
[23] Timothy W. Luke, 'Urbanism as Cyborganicity: Tracking the Materialities of the Anthropocene', in Daniel Ibenez and Nikos Katsikis (eds.) New Geographies 06: Grounding Metabolism (Harvard University Press, 2014): 38 –51; p. 49.
[24] Georges Bataille, The Accursed Share, vol. 1 (New York: Zone Books,1991); p. 23.
[25] AbdouMaliq Simone, 'Ghostly Cracks and Urban Deceptions: Jakarta' in Mohsen Mohstafavi (ed). In the Life of Cities (Zurich: Lars Muller Publishers, 2012), pp.105–119; p. 107.
[26] Edward W.Soja, Postmetropolis: Critical Studies of Cities and Regions (London: Blackwell, 2000); p.xii.
[27] Zygmunt Bauman, 'City of Fears, City of Hopes' (London: Goldsmiths' College, Centre for Urban and Community Research, 2003); pp. 4-5.
[28] Friedrich Nietzsche, 'On the Uses and Disadvantages of History for Life', in Untimely Meditations, translated by R.J. Hollingdale, (Cambridge: Cambridge University Press, 1983); p.120.

[29] Bruno Latour, 'Agency at the time of the Anthropocene', New Literary History 2014 Vol. 45, pp. 1-18; p.2.
[30] Vladimir Nabokov Speak, Memory: An Autobiography Revisited (Vintage International, 1989); p.40.
[31] Timothy Morton, Hyperobjects: Philosophy and Ecology after the End of the World (Minneapolis and London: University of Minnesota Press, 2013); p. 15.
[32] Jacques Derrida, The Gift of Death (Second Edition) & Literature in Secret, trans. David Wills (Chicago: University of Chicago Press, 2008); p.55.
[33] Timothy Morton, Hyperobjects: Philosophy and Ecology after the End of the World (Minneapolis and London: University of Minnesota Press, 2013); p. 16;
[34] Timothy Morton, 'Ecology without the Present', The Oxford Literary Review 34.2 (2012): 229–238; p. 232.
[35] Timothy Morton, Hyperobjects: Philosophy and Ecology after the End of the World (Minneapolis and London: University of Minnesota Press, 2013); p. 21.
[36] Timothy Morton, Hyperobjects: Philosophy and Ecology after the End of the World (Minneapolis and London: University of Minnesota Press, 2013); p. 19; p. 94.
[37] Michel Serres,The Natural Contract (Ann Arbor: University of Michigan Press, 1995); p.86.
[38] Graham Harman Guerilla Metaphysics Phenomenology and the Carpentry of Things (Chicago and La Salle, Illinois: Open Court, 2005); p.243.
[39] Nigel Clark, Inhuman Nature: Sociable Life on a Dynamic Planet (London: Sage, 2011), p. xiv.
[40] See Agnes Wooley,'"There's a Storm Coming!": Reading the Threat of Climate Change in Jeff Nichols's Take Shelter' Interdisciplinary Studies in Literature and Environment 21.1 (Winter 2014).
[41] Mark Lynas, 'Global warming: the final warning. According to yesterday's UN report, the world will be a much hotter place by 2100. This will be the impact ...' The Independent Saturday 3 February 2007. http://worldnewstrust.com/global-warming-the-final-warning-mark-lynas741; accessed 20 September 2016.
[42] Frederick Buell, From Apocalypse to Way of Life: Environmental Crisis in the American Century (London: Routledge, 2003); pp. 205-206.
[43] Kim Stanley Robinson, 2312 (London, Orbit, 2013); p.305.
[44] See Robert Costanza, Lisa J. Graumlich and Will Steffen (eds.), Sustainability or Collapse?: An Integrated History and Future of People on Earth (Cambridge MA. And London UK: MIT Press, 2007).
[45] William McWhirter 'I Am One of the 10 Most Famous Obscure Americans' Life, 12/6/68; cf. Sharon Ghamari-Tabrizi, The Worlds of Herman Kahn: The Intuitive Science of Thermonuclear War (Cambridge MA. And London, England: Harvard University Press, 2005); p. 204.
[46] On for example, the IHOPE initiative (Integrated History and Future of People on Earth) See Libby Robin and Will Steffen, 'History for the Anthropocene', History Compass 5/5 (2007) 1694-1719.
[47] On the 'Anthropozoic era' see Antonio Stoppani, Corso di Geologia (1873); on 'noosphere' see V. Vernadsky, 'The biosphere and the noosphere', American Scientist (1945) 33: 1-12; on 'anthrocene' see Andy Revkin, Global Warming: Understanding the Forecast (Abbeville Press, 1992); see also Will Steffen et al., 'The Anthropocene: Conceptual and Historical Perspectives' Philosophical Transactions of the Royal Society A, (2011) 369: 842–867; 842.
[48] Elizabeth Johnson et al. 'After the Anthropocene: Politics and geographic inquiry for a new epoch' Progress in Human Geography (2014): 1–18; p. 2.
[49] Robert McFarlane, 'Generation Anthropocene: How humans have altered the planet forever' The Guardian, 1 April 2016; https://www.theguardian.com/books/2016/apr/01/generation-anthropocene-altered-planet-for-ever
[50] Doreen Massey 'Landscape as a provocation: reflections on moving mountains'. Journal of Material Culture (2006),11(1-2) pp. 33–48.
[51] Isabelle Stengers, In Catastrophic Times: Resisting the Coming Barbarism trans. Andre Goffey (Open Humanties Press, 2015); p. 39.