



## CHAPTER 9

# Putting the Earth to Use: Reading Resources in the End Times (Through Science Fiction)

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With increasing strain on all sorts of matter, from oil over wood, fish and bees, even on ‘matters’ as seemingly inexhaustible as water and air, the question of ‘what things and what relations are valuable’ is as important as ever (Moore 2015: 51). Through species loss, rising temperatures, the loss of topsoil, the end of oil and a global population that has more than tripled over the last century, it is becoming increasingly evident that we are caught in a spiral that may lead to the collapse of civilisation as we currently know it.<sup>1</sup> As Jason W. Moore argues in *Capitalism in the Web of Life: Ecology and the Accumulation of Capital* (2015), we therefore need to live up to the fact that we are witnessing the spasms of a system that must soon grind to a halt. For while it is possible to argue that humanity has damaged the environment through wasteful practices through thousands, if not tens of thousands, of years (White Jr. 1996; Flannery 2000), surely capitalism is the system most at odds with a world (or to be specific, *a planet*, singular) that is finite. Hence, as Moore makes clear, ‘there are limits to how much new work capitalism can squeeze out of new working classes, forests, aquifers, oilfields, coal seams, and everything else. Nature is finite. Capital is premised on the infinite’ (2015: 87).

In the Anthropocene, or as Moore and a range of other thinkers prefer to term it, the Capitalocene,<sup>2</sup> such limits are becoming increasingly difficult to deny but, paradoxically, also increasingly difficult to act on. As Slavoj Žižek suggested a decade ago in his evocatively titled *Living in the End Times* (2010), ‘the global capitalist system is approaching an apocalyptic zero-point’ (2010: x). While the apocalyptic zero-point has (perhaps) not yet been reached, Fredric Jameson’s famous statement that ‘it is easier to imagine the end of the world than to imagine the end





of capitalism' nevertheless seems as true as ever (Jameson 2003: 76). For if 'capitalism has become coextensive with the Earth', it follows that to imagine the end of capitalism is indeed also to imagine the end of the world (Bonneuil and Fressoz 2016: 222). It is in the light of such a 'capitalist realist apocalypse' relying on 'a presupposition that resources are infinite' that I will pose three questions in this chapter, all of them framed in the fading light of 'an end' (Fisher 2009: 18). First, the chapter queries the problem of 'reading' the Anthropocene as text and narrative: why do we find it so hard to comprehend and act on both present and future anthropogenic change even while we have plenty of evidence available that makes it glaringly clear that not to act may in fact doom us? Science has provided us with the script, but we do not seem able to shape this into a narrative we fully accept. The chapter asks how literature and literary studies can help us make better sense of the Anthropocene. Second, it asks how a specific genre of literature, namely science fiction – and in particular the science fiction subgenres of apocalyptic and dystopian fiction – can be employed in order to problematise questions of consumption, collapse and depletion in a world of increasingly finite resources. Third, the chapter shows how contemporary examples of science fiction like Paolo Bacigalupi's *The Windup Girl* (2009) can help reframe the question of resources through the lens not just of the human in all its many manifold guises, privileged as well as poor, but possibly also beyond. Is it possible to reorient the distinctly human perspective of 'use' in order to expand it to involve the nonhuman in all its forms, including not just nonhuman species and plants, but matter of any kind, organic as well as inorganic? Can we, through an actual or imagined end of the human as we now know it, expand our horizons of use for less destructive and more inclusive purposes?

### Reading the Anthropocene (Through Resources)

As Benjamin J. Robertson points out in *None of This is Normal: The Fiction of Jeff VanderMeer* (2018), we are living in a 'postnormal world' (2018: 4). The Anthropocene has undermined a wide range of assumptions about the world as we thought we knew it, hence the need to acknowledge that we now live, as Robertson phrases it, on 'a weird planet whose materiality defies human attempts to understand it' (2018: 5). Manifold, complex and perhaps ultimately impossible to fully comprehend, the Anthropocene can at least be summed up by our very inability to grasp the scale of the problem: 'If nothing else, the Anthropocene forces the human subject to confront finitude' (Robertson 2018: 15).



Taking the question of finitude and the human as an entry to discuss the material and the Anthropocene, a range of pertinent questions present themselves. First of all, in what manner do the notions of ‘use’ and ‘resources’ influence our view of matter and materiality once a given mode of engagement with matter ends and a new one begins? For instance, to what extent is our perspective on matter dependent on the invention of new technologies or on novel habits of production and capitalist consumption? Following from this, what do notions of use and resource tell us about ‘us’ once we move away from Anthropocentric/capitalist views of ‘our’ needs and desires and on to the point of view of other species and other (forms of) being(s)? What is and is not useful, valuable and desirable must change drastically if we could somehow view the world from the point of view of an ant or a whale. Even more so, if we are to ‘think like a mountain’, as ecologist Aldo Leopold once provocatively put it, the very concept of relating to the world through ‘use’ surely becomes moot (Leopold 1968: 129–33). While we can never hope ‘to literally feel, or entirely understand, “what it is like” to be a bat or a dog’, reading through ‘resources’ envisioned from the perspective of the nonhuman may at least take us part of the way (Shaviro 2015: 25). Similarly, reconsidering the notion of ‘resources’ in lieu of its anthropocentric origin allows us to probe the fault lines not only of a former worldview in which ‘the environment’ was seen simply as ‘the place where humans went to extract resources’, but also of the very (human) act of perceiving, evaluating and engaging with matter and environment through questions of use and value (Bonneuil and Fressoz 2016: 20). If the act of ‘[t]reating land as a commodity implicitly says that human beings stand outside of nature’, we might usefully ask how imaginaries of other kinds of uses (by nonhuman beings) might change the human perspective as well (Emmett and Nye 2017: 23).

More specifically, but following directly from the above, this chapter examines what role literature in general and speculative fiction in particular can play in a debate on dwindling resources in an ever more populous yet also impoverished world. As a range of critics have recently pointed out, literature seems for a long time to have been at an impasse as to how to deal with anthropogenic change like global warming, shifting weather patterns, peak oil, depleting aquifers, microplastics and so on. Adam Trexler’s *Anthropocene Fictions: The Novel in a Time of Climate Change* (2015), Timothy Clark’s *Ecocriticism on the Edge: The Anthropocene as a Threshold Concept* (2015) and Amitav Ghosh’s *The Great Derangement: Climate Change and the Unthinkable* (2016), for instance, all suggest that contemporary



literature has been slow to react to the massive yet paradoxically also imperceptible global changes instigated by the Anthropocene. ‘What tropes are necessary to comprehend climate change or to articulate the possible futures faced by humanity?’, Trexler asks, a question reiterated by Clark’s claim that ‘the Anthropocene names a newly recognized context that entails a chastening recognition of the limits of cultural representation’ (Trexler 2015: 5; Clark 2015: 21). As Clark points out, ‘most mainstream literary critics, it must be said, are oblivious to the Anthropocene and its challenge’, a sentiment that carries over into Ghosh’s lament that ‘contemporary literature finds it . . . hard to deal with climate change’ and other forms of anthropogenic change, due to ‘the peculiar forms of resistance that climate change presents to what is now regarded as serious fiction’ (Clark 2015: 51; Ghosh 2016: 8).

Arguably, such ‘resistance’ to representation is a universal rather than a specifically literary problem of anthropogenic change (see Rust, Monani and Cubitt 2016). There is currently no single academic discipline, in the sciences or the humanities, that has successfully invoked the gravity of anthropogenic change in a manner that poses an effective challenge to our capitalist consumer perspective on the world and our place in it. The data is there but it is difficult to take it all in, for as Timothy Morton points out in his influential study *Hyperobjects: Philosophy and Ecology after the End of the World* (2013), the problem with ‘hyperobjects’ like global warming is that there is no specific ‘object’ one can clearly identify. Accordingly, as Clark states it, ‘the most prominent feature of the Anthropocene [is that] there is no simple or unitary object *directly* to confront, or delimit, let alone to “fix” or to “tackle”’ (2015: 10). In the case of global warming, then, we are never able to see the ‘object’ in its totality:

I only see brief patches of this gigantic object as it intersects with my world. The brief patch I call *hurricane* destroys the infrastructure of New Orleans. The brief patch I call *drought* burns the plains of Russia and the Midwestern United States to a crisp. The back of my neck itches with yesterday’s sunburn. (Morton 2013: 70–2)

Anthropogenic change like global warming is therefore at one and the same time vast and monumental as well as insidious. Anthropogenic change, wherever we meet it and in whatever form, is always simultaneously too much and too little. It is therefore no wonder that individual academic disciplines – and certainly individual observers – struggle to register, comprehend and represent such change. Consequently, as Roy Scranton remarks in his direly titled *Learning to Die in the Anthropocene: Reflections on the End of a Civilization* (2015):



In order for us to adapt to this strange new world, we're going to need more than scientific reports and military policy. We're going to need new myths and new stories, a new conceptual understanding of reality, and a new relationship to the deep polyglot traditions of human culture that carbon-based capitalism has vitiated through commodification and assimilation. (2015: 19)

The problem, as Scranton sees it, is that at present we are at a loss as to what exactly such 'myth and new stories' may be, and in what form and what media we are to shape them.

It is at this critical juncture that contemporary literature takes up a curious position of potential future promise and apparent gridlock. Ghosh suggests that 'the currents of global warming [are] too wild to be navigated in the accustomed barques of narration' and that if 'certain literary forms are unable to negotiate these torrents, then they will have failed' (2016: 8). Prevalent literary forms emerged and developed through a worldview of the environment and materialism that simply is not compatible with the world as we (are beginning to) know it today, hence it is ill equipped to deal with anthropogenic change on a massive scale, Ghosh argues. Accordingly, Trexler adds, 'novels composed in the Anthropocene challenge received literary functions, such as character, setting, milieu, class, time, and representation', leading to the sort of conclusion espoused by Clark, namely that the 'Anthropocene names a newly recognized context that entails a chastening recognition of the limits of cultural representation as a force of change' (Trexler 2015: 16; Clark 2015: 21). In this, all three critics seem to suggest, lies the potential for change, in that literature may paradoxically also find itself in the position of offering the expansive narrative that other forms of 'cultural representation' have as yet failed to do. They thus all to some extent make a call for 'a mode of critical reading newly sensitized by the demands of the Anthropocene' (Clark 2015: 181), which is to say a mode of reading that can perhaps begin to 'encourage more intelligent and sustainable engagements with vibrant matter and lively things' that diverges from 'our earth-destroying fantasies of conquest and consumption' (Bennett 2010: viii-ix).

The question, of course, is *how* to carry out such readings in practice. 'The Anthropocene is not an easy story to tell', Tobias Menely and Jesse Oak Taylor acknowledge in their introduction to *Anthropocene Reading: Literary History in Geologic Times* (2017: 4). Yet for that very reason this is potentially a highly exciting time for the field (if not necessarily for the planet) in that the 'Anthropocene provides an opportunity for literary studies to test and transform its methods by examining how the symbolic domain might, or might not, index



a historicity that exceeds the human social relation and encompasses planetary flows of energy and matter' (Menely and Taylor 2017: 5). To some extent, and as one genre in particular has proven particularly rich in examples of this – namely science fiction – such change has in fact been under way for some time, thus offering a counterpoint to the literary trends that Ghosh, Trexler and Clark are otherwise critiquing. In the following, I will therefore pursue the 'indexing' suggested by Menely and Taylor through the lens of the sort of speculative fiction that Trexler and Ghosh identify as being the earliest genres to pick up on anthropogenic change like global warming. While Ghosh identifies a range of other speculative genres, like fantasy and horror, as having the potential to 'confront the centrality of the improbable' (2016: 23) in which he finds the realist novel to be severely lacking, it is science fiction in particular that has over the past decade or so taken centre stage in discussions on anthropogenic change. Not only has the genre seen the birth of the hugely popular subgenre of climate fiction, 'resolutely contemporary and dedicated to creating new narratives adequate to current conditions' (Irr 2017: n.p.), it has also been forcefully argued that 'the Anthropocene itself can usefully be understood as a Science Fiction trope' (Heise 2016: 18). While acknowledging that other speculative genres can offer useful perspectives on anthropogenic change that the realist novel cannot,<sup>3</sup> I will in the following continue this trend by examining not just how science fiction can be employed to engage with 'the challenge of how to understand the alien, how to convey experience from a non-anthropocentric view', but also how science fiction has problematised 'the shift toward a capitalist economy that increasingly regards the world as resource, and toward a rationalised conception of the universe that turns everything into object for the human subject' (Vint 2010: 14, 26). As a genre preoccupied with the future – like the finitude and scarcity of dystopias, but also the seeming limitlessness of utopias – science fiction is uniquely positioned to reimagine and redirect the question of resources in terms other than human privilege and entitlement. In the following, we shall look more closely at the question of scarcity and depletion as they are imagined in the genres of apocalyptic and dystopian fictions and the question of endings.

### Spending the Future: Science Fiction, Dystopian Fiction and Apocalyptic Fiction

Once we begin to view anthropogenic change through the specific lens of *resources*, future tense and the notion of an end become significant:



as the world is perceived in terms of use, the notion of finitude and future depletion of a given source of matter inevitably appears on the horizon. We see this first of all in the general division of the world into renewable and non-renewable resources. Coal is at present a far more abundantly available resource than oil, promising a couple of hundred years more use at given rates of consumption. Solar power, on the other hand, is considered renewable and virtually infinite. In fact, however, no resource can ever be considered truly renewable. In comparison to the time estimate on the remaining oil in the world (say fifty more years) and coal (say two hundred more years), the amount of solar energy available for consumption is of a different order of magnitude (at least a couple of billion years) but not infinite. At some point, the sun will fizzle out, too, and humanity – if it still exists – will have to locate some alternative source of energy. Once we think of the world in terms of resources, then, we inescapably also begin to think about scarcity and, ultimately, of an end.

This is vividly illustrated in the most hotly debated of such contemporary discussions, namely that of peak oil. Through the advent of a range of novel technologies, oil was itself the instigator of ‘an end’, namely of the age of coal as steam-driven trains and ships were replaced with cars and planes. With the imminent or perhaps already happening event of so-called peak oil, we are witnessing yet another shift of energy regimes. Importantly, this is a shift that may be far more disruptive than that of coal to oil. Indeed, as Stephanie LeMenager asks in *Living Oil: Petroleum Culture in the American Century* (2014): ‘Can the category of the human persist, practically speaking, without such forms indebted to fossil fuels?’ (LeMenager 2014: 6). With so much invested in oil as a way of life, to the extent that we are seemingly willing to toss all other concerns aside as long as the oil keeps flowing, we are at present witnessing ‘an unprecedented devotion, even love’ (LeMenager 2014: 4) for oil as we go ever deeper, ever more extreme (fracking) and ever further (the Arctic, the deep sea). How will we react when this former love of ours passes on? Will we grudgingly accept the potential limitations forced upon our daily lives by the disappearance of the material that gave us plastics, cars and jet flight? Or will the world as we know it descend into war-torn chaos and existential crisis? Judging by the titles of books on peak oil that include the word ‘crisis’, ‘collapse’ or ‘apocalypse’ in their titles (see for instance, Winter 2006; Ruppert 2010; Schneider-Mayerson 2015), there seems to be a widespread belief that the collapse of the age of oil may cast us all back in the dark ages, literally

and figuratively speaking. As we at present have no clear idea of what is to replace oil as our main source of portable energy, the ever-closer future of a world bereft of oil has generated a vast amount of speculation about the physical as well as the sociological, psychological and ethical ramifications of an oil-starved world.

While oil is currently the most visible and urgently debated of soon-to-be-depleted resources, other forms of matter are also becoming scarce. Indeed, as journalist Richard Heinberg has phrased it, we are heading towards not only peak oil but ‘peak everything’ (Heinberg 2007), whether it is that of fish (Costa and Chilese 2014), mushrooms (Tsing 2015), or even something as basic as the water we drink (Shiva 2016) or the air we breathe.<sup>4</sup> In addition to the most dominant discipline of petrocultural studies, recent years have seen the emergence of a range of other resource-related critical fields such as critical animal studies, critical plant studies and blue humanities. While such critical fields have much to offer in terms of disentangling what LeMenager terms ‘the regional frame’ (2014: 13) as of the specifics of a given kind of matter, much is to be gained from reading widely as well as specifically. Petrocultural studies has in recent years shed as much needed light on both the local and global problems of the oil industry, for instance, as on the capitalist system as a whole through regional-specific iterations of oil extraction (Barrett and Worden 2014; Wilson, Carlson and Szeman 2017), yet the broader lens made available by energy humanities (Szeman and Boyer 2017; Smil 2017) offers perspectives on human extraction and consumption of energy that petrocultural studies alone cannot hope to provide. A broader ‘reading for resources’ can thus perhaps provide perspectives that, in tandem with readings of specific types of resources (from oil over wood and coal and on to bees and fish), may help shed light on larger, structural problems pertaining to an Anthropocene world that go beyond the implications of any one given resource, particularly so when considered in the light of depletion and endings.

And so we return to the question of endings considered through futurity. Considered broadly, it is significant that polemical non-fiction texts on diminishing resources of the present, oil and otherwise, share many traits with science fiction, and particularly so that of post-apocalyptic fiction. As political scientist Claire P. Curtis remarks in *Postapocalyptic Fiction and the Social Contract* (2012), the speculative post-apocalyptic tale can therefore be a useful means to rethink the present:

There is a kind of fictional realism to the postapocalyptic account because it takes us from where we are now to a place we can easily imagine being. It then uses that space to think about *how* it is we really want to live. (2012: 6)

In effect, post-apocalyptic narrative literally and figuratively questions *what matter matters*. Whether it is in novels, in films, computer games or television, the governing question of survival in such tales intimately ties in the acquisition of brute matter (e.g. food, water, oil) with ethical imperatives of the limits to which one would go simply to keep on living. This is illustrated, for instance, by Cormac McCarthy's novel *The Road* (2006), one of a handful of post-apocalyptic texts analysed in depth by Curtis. In the book, a father and a son travel across a post-apocalyptic America in constant search of food and shelter. In their desperate search for salvage in a world increasingly bereft of resources or renewal of any kind, the reader is again and again made painfully aware of just how much supposedly essential human characteristics like kindness and empathy are directly dependent upon surplus caloric energy rather than any inherent traits of the human mind and/or soul. Indeed, the central premise of the book is not so much the futuristic rendering of a world gone wrong as much as the question of ethics and its dependence upon material surplus. As the book unfolds, and the father is forced to take increasingly violent measures to gather and protect their resources, we witness a constant tug of war between the father, whose sole purpose in life is to ensure the survival of his son ('My job is to take care of you'; McCarthy 2007: 65), and the young boy who insists that mere physical survival is not sufficient to live a full human life.

Reimagining the present in the light of a post-apocalyptic future, the genre thus typically asks of us, the readers in the present, what we would value most (in a speculative future) once scarcity sets in. If faced with the dilemma of running short on matter X, Y or Z, what would we choose over the other? Even more poignantly, if we wanted matter X, but had to take it from someone else, by violence or other means, would we be willing and able to do without, or would we forcibly take it from those who are weaker than us? 'Postapocalyptic stories have always had a lot to say about where we're headed if we don't right our wrongs. They warn us about our reliance on fossil fuels, our abuse of the environment, and where those will lead us', science fiction writer Kameron Hurley tells us (2016: 85). In this, they function as a potential corrective to our current relation to, and use of, resources that we may deplete in the future. Yet they also force us to reconsider just how much matter matters in the present, even for seemingly immaterial and ephemeral matters such as 'ethics', 'civilisation' and 'culture'. The post-apocalyptic genre is thus split – but also converges – along an axis of material want, ethical concern and cultural meaning. To quote the *Guardian's* George Monbiot, pos-tapocalyptic fiction like *The Road*



reminds us that: ‘our dependence on biological production remains absolute. Civilisation is just a russetting on the skin of the biosphere, never immune from being rubbed against the sleeve of environmental change’ (Monbiot 2007: n.p.). After centuries of trying to escape the weight of the world through rational thought and a Cartesian dualism of (human) mind over matter, such speculative fictions can help pose

a challenge to some of the most basic assumptions that have underpinned the modern world, including its normative sense of the human and its beliefs about human agency, but also regarding its practices such as the ways we labor on, exploit, and interact with nature. (Coole and Frost 2010: 4)

Questioning human privilege and the supposed right of humankind to exploit the Earth for its own benefit, reading such texts through resources can help us redirect and undermine such assumptions even as it employs the very human notion of ‘use’ in the first place.

Going back to the perspective of science fiction in general rather than the genre specifics particular to post-apocalyptic fiction, Ghosh identifies what he sees as two problematic aspects of the genre, namely those of futurity and alterity. To Ghosh, the otherworldliness and the future tense of science fiction disqualifies the genre as an effective tool for writing about a present in which the new normal is abnormal in that it is ‘uncanny’, ‘improbable’ and ‘grotesque’. It is also, Ghosh argues, somehow all too familiar in such moments of alterity that ‘we recognize something that we had turned away from: that is to say, the presence and proximity of nonhuman interlocuters’ (2016: 30). For if any genre is concerned with alterity and the nonhuman, surely it is science fiction: ‘SF is in some central sense about the encounter with difference’, hence it ‘is a form of cultural discourse . . . that involves a world-view differentiated in one way or another from the actual world in which its readers live’ (Roberts 2003: 28; 2007: 2). Yet that is of course also precisely what Ghosh finds so problematic with the genre, namely the insistence of a worldview differentiated from ‘the actual world’.

The question, though, is whether the Anthropocene can perhaps best be described as ‘a world-view differentiated’. Hauntingly familiar yet otherworldly strange, perhaps the Anthropocene can ‘actually’ be most fully represented through a temporality and an ontology that is fluid and unbound by the restrictions of ‘serious fiction’. First of all, the Anthropocene examined through the lens of resources is inextricably intermeshed with the notion of futurity and of the central ontological split of a cycle/status quo of sustainability and renewability versus that of endings, depletion and finitude. The potential of science fiction to present to us a



‘world-view differentiated’ of the catastrophic consequences of our use and consumption of matter, as of the manner in which our constantly increasing needs have irrevocably changed the environment, is perhaps therefore a case of reality being stranger than fiction; which is another way of saying that maybe Ghosh got his argument upside down. Rather than make the genre fit reality, perhaps reality finally fits the genre. With ‘the actual world’ turning out to be both familiar and strange, serious ‘realist’ fiction may not be all that realistic anymore, at least not as long as it refuses to reimagine the present through different temporalities and otherworldly worlds. Much of the environmental damage we are currently witnessing is, after all, not the result of our actions now, yesterday or even a year or a decade ago. Indeed, it is to some extent not ‘ours’ at all, in that cause and effect often involves a time lag of decades if not centuries, and that individual action in the present can be hard to link to the net result of the combined action of billions of people acting now and in the past.

In order to fully represent the effects of peak oil, for instance, both its end date and the damaging effects of a century’s worth of emissions, one needs to look at the present through decades if not centuries of resource extraction and consumption, by others long dead as well as people yet to be born. The actions of people living in the past as well as in the future, collectively and individually, should ideally be incorporated with the specific subjective position of our (own) present. In such an endeavour, science fiction offers us advantages of scale and temporality as well as of nonhuman matter(s) that ‘serious fiction’, stubbornly sticking to the present (or at most a distinctly human past) and to a privileged human perspective, does not. Through science fiction, a genre that has ‘from its very beginnings . . . given us stories about how technoscience is making us strange to ourselves’, hence also the means ‘to think through the genuine encounter with difference’, we can perhaps more fully grapple with the fact ‘that the human has always coevolved, coexisted, or collaborated with the nonhuman – and that the human is characterized precisely by this indistinction from the nonhuman’ (Hollinger 2011: 270; Easterbrook 2011: 384; Grusin 2015: ix–x).

### Winding Up and Gearing Down: Spending and Expenditure in *The Windup Girl*

Hailed as a successor to influential cyberpunk writer William Gibson (1948–), the author of the seminal *Neuromancer* (1984) and the coiner of the word ‘cyberspace’, American science fiction writer Paolo Bacigalupi’s



authorship revolves around concerns shared with Gibson: namely capitalism, corporate power and the growth of urban megacities. In contrast to Gibson, however, whose focus is on the near future and (mostly) on technology that could conceivably be constructed within a couple of decades, Bacigalupi's fictive worlds are more speculative both in setting and technology. This is particularly the case in his debut *The Windup Girl* (2009), but also in the young adult novels *Ship Breaker* (2010) and *The Drowned Cities* (2012), in which we are treated to a mix of cyberpunk derivative genres like springpunk (also known as clockpunk), biopunk and agripunk in a fusion of retro-futurism and futurism proper.<sup>5</sup> With *The Water Knife* (2015), however, which takes place in a drought-ridden near-future version of the American Southwest, Bacigalupi has been moving into territory more akin to Gibson's, which is to say technologies and settings that could conceivably happen within a couple of decades. Common to all his fiction, however, regardless of the degree of their speculative qualities, is a focus on a world radically altered and impoverished by climate change, by diminishing resources, whether it is water (*The Water Knife*), oil (*Ship Breaker* and *The Drowned Cities*) or 'natural' biology like seeds, fruits and animals unmodified by human hand (*The Windup Girl*). As dystopian fiction dealing with a society characterised by scarcity and partial rather than complete system collapse, 'the world of the Windup stories focuses . . . on energy sources and their depletion, a topic, Bacigalupi argues, that garners too little interest from sf' (Schmeink 2016: 79), hence it is as good a place as any to begin to locate Žižek's 'apocalyptic zero-point' of the global capitalist system, or Fisher's 'capitalist realist apocalypse' discussed at the beginning of this chapter.

Set in a future in which global warming has flooded many of the world's former metropolises, and published at the end of the first decade of the twenty-first century, *The Windup Girl* has grown to become a modern biopunk classic of a world in which 'hypercapitalism has brought about a commodification of any and all life on earth' (Schmeink 2016: 75). With the disappearance of New York, Rangoon, Mumbai and New Orleans between the waves, 'the time when petroleum was cheap and men and women crossed the globe in hours instead of weeks' are long gone, too (Schmeink 2016: 24). Some former urban megacities, like Bangkok in which the book is set, still stand; but only precariously, just barely managing to keep the waters at bay. This is a world in which fossil fuels have either been depleted or banned and replaced with various forms of biological or 'windup' technologies that are supposed to be less harmful to the atmosphere. Rather than coal and oil, we find 'genehacked animals' like the elephantine 'megodonts'



that provide ‘energy for conveyor lines and venting fans and manufacturing machinery’ (Bacigalupi 2009: 13). Repurposed waste is burnt off in ‘methane composters’ so that ‘kink springs’ can be charged with kinetic energy and released at a later date, while gene-manipulated food is engineered to contain the highest amount of calories, thus most effectively fuelling the teeming masses of human labour that have once again become a mainstay of the global economy (2010: 32, 302). Finally, we have the titular ‘windups’, bio-engineered posthumans (tellingly referred to as ‘New People’) designed to deliver the most efficient work per calorie ratio invested in them through superior strength, enhanced immune systems and extra limbs.

This is thus, to some extent, a world ‘dominated by energy production after the depletion of fossil fuels, returned to a state as it was before the Anthropocene’ (Schmeink 2016: 79), but with a distinct sense of irreversibility due to depletion of any and all conceivable resources, as of a slate of technologies that are both futuristic (advanced gene technologies and the invention of androids) and nostalgic (the almost Victorian obsession with springs and mechanics). In the world of *The Windup Girl*, as in the earlier short stories ‘The Calorie Man’ (2005) and ‘Yellow Card Man’ (2006), set in the Windup universe, we see the end point of Moore’s hypothesis as presented in *Capitalism in the Web of Life* that this chapter opened with, namely that we are currently witnessing the clash of ‘the finite character of the biosphere and the infinite character of capital’s demand’ (2015: 112). With capitalism based on ‘endless accumulation’, it is a system dependent on the ‘extension of capitalist power to new, uncommodified spaces’ (Moore 2015: 63), a practice that could be sustained as long as there was space left to commodify, but presently proving exceedingly difficult to uphold. As argued by Moore elsewhere, ‘Capitalism has been able to outrun the rising costs of production by co-producing manifold Cheap Nature strategies, locating, creating, mapping, and quantifying natures external to capitalism but within reach of its power. Today there is nowhere to run’ (2016: 114). This is literally so the case in ‘The Calorie Man’ (2005), in which the eponymous character of the title is unsuccessfully trying to outrun the reach of the multinational calorie companies that rule the world, but it is figuratively so also the case for capitalism itself. While still operative as the single most dominant global system, capitalism as envisioned by Bacigalupi in the Windup world has come to an impasse, struggling to survive in a world it has itself been instrumental in dismantling on every level. Having expanded to the point of cataclysmic collapse through a series of endings (animal extinction, loss of



plant diversity, the weather system, the depletion/impossibility of fossil fuels), the world has seen the end of what Moore terms Cheap Nature, the era beginning in the long sixteenth century and ending at some point in the not too far future of Bacigalupi's text in what his characters refer to as the end and eventual regression of 'the Expansion'.

As if to confirm Jameson's statement about the end of the world being easier to imagine than the end of capitalism, it seems capitalism itself is, however, unwilling to concede defeat even as its central tenet has been sabotaged by none other than its own operative procedures played out in extremis. As one of Bacigalupi's characters muses when confronted with an employee of a Western calorie company, such representatives of capitalism appear 'too stupid to have possibly taken over the world once, let alone twice. That they succeeded in the Expansion and then – after the energy collapse beat them back to their own shores – that they returned again' seem not only improbably but outright 'supernatural' (Bacigalupi 2009: 40). This is, of course, absolutely to the point in that capitalism has at this point turned supernatural – not only in that it continues to refuse limits and boundaries of the natural even after the world of Cheap Nature has ended, but also that seeing as nature is no more, it now needs to go beyond and over ('super') nature in order to reaffirm itself and its principles in a post-natural world. In its lack of distinction between different forms of resources and a breakdown into calories pure and simple, the Windup world is an impoverished world in which everything seems to have run its course, and certainly Capitalism's reliance on 'a mode of distinction that presumed separation' (Moore 2016: 87) between human and nature, useful and useless, goods and waste.

Late capitalism as we know it in its twenty-first-century variant thus goes on about its business much as usual in the Windup universe. For while globalisation has to some extent been hampered by a lack of mobility due to the depletion of oil, the world continues to be governed by globally expansive corporations with names like 'AgriGen' and 'Pur-Cal', so-called calorie companies whose gene-manipulated agriculture the world depends on for its continued survival and progress. 'The shift from petroleum to "calories" as a leading world trade commodity is shown to consolidate the power of corporations rather than undermine them', and by setting his novel in Bangkok rather than, say, London or Los Angeles, 'Bacigalupi transfers our present day Global South from periphery to center' and thereby 'complicates the idea of the Global North as the primary, if not the exclusive, engine of development for global economics' (Donnelly 2014: 161; Hageman 2012: 285). Bacigalupi's



critique of capital, however, goes beyond the present's unfair distribution of power in which consumption of the planet's resources is vastly skewed, whether through national and regional inequalities or corporate monopolies. Similarly, the account of the damaging effects of unbridled capitalism's exploitation of Cheap Nature as it is presented in *The Windup Girl* is framed not solely as nostalgic lament but to some extent as liberating. As one of the characters, Gibbons, informs us, we should not regret the passing of nature as we once knew it: 'Don't cling too tightly to what is natural. . . . We are nature. Our every tinkering is nature, our every biological striving. We are what we are, and the world is ours' (2009: 344). In this, Gibbons cherishes a fully Anthropocene world, even if such a state of affairs might paradoxically mean the passing of the human too: 'Nature has become something new. It is ours now, truly. And if our creation devours us, how poetic will that be?' (2009: 350). Having served its purpose and time on the evolutionary ladder, it is time for humanity (and our anthropocentric worldview) to recede in order to allow the post- and nonhuman (and their respective worldviews) to flourish.

While there are many such instances of 'poetic justice' threatening the extinction of 'the human' throughout *The Windup Girl*, the eponymous heroine of the book is the most obvious example of the eventual demise of our species, as 'nature' as we once knew it. Reminiscent of the 'replicant' Pris of Ridley Scott's *Blade Runner* (1982) as well as a range of other beautiful yet lethal cinematic robot-women going all the way back to Fritz Lang's Maria of *Metropolis* (1927), Bacigalupi's inclusion of a female posthuman protagonist undoubtedly addresses issues of gender as well as the status of the nonhuman. Forced to work in a sex club and engineered so as to achieve orgasm regardless of her own desires, the windup girl obviously brings issues of gender and sex to the fore, not least when she finally rebels and, in another bout of poetic justice, starts punishing those who formerly abused her. It is as 'the potential instigator of a post-human world', however, that the windup girl provides us with 'the text's most fundamental solution to the problem of capital: the destructions of humans brought on by their own meddling with ecological systems' (Donnelly 2014: 166–7). As the novel nears its conclusion, it is hinted that the end of the human race may be near and that, 'Some-day, perhaps, all people will be New People and you will look back on us as we now look back on the poor Neanderthals' (Bacigalupi 2009: 505). In this, the conclusion of the novel seems to be in accord with critical posthumanist thought that 'criticize[s] human-centred (anthropocentric) ways of understanding life and reality' and 'does not see the human



as the centre of all things' (Roden 2015: 10; Nayar 2014: 5). For while the conclusion is ambivalent with regard to the eventual outcome, it certainly seems to employ the posthuman as 'a generative tool to help us re-think the basic unit of reference for the human in the bio-genetic age known as "anthropocene",' in that 'it forces us to rethink our taken-for-granted modes of human experience' that we are not otherwise capable of discerning (Braidotti 2013: 5; Wolfe 2010: xxv).

The windup girl is the most obvious and, due to her human form and shape, recognisable of posthuman 'generative tools' presented to us in *The Windup Girl*. Acting as readily decoded cipher for a rich science fiction tradition of cyborgs, robots and replicants, it is, however, not in the familiar body of the rather human posthuman of the windups (the 'New People'), but in distinctly nonhuman forms of being that 'this novel exemplifies the interconnectedness of all beings through disease and death' that leads to the novel's perhaps most salient point, namely that all 'bodies' are dirty (Hageman 2012: 293). For in the *The Windup Girl*, bodies are not only everywhere but *in* everywhere; human bodies, posthuman and nonhuman bodies, organic or non-organic bodies, political or social bodies constantly 'intra-act', as Karen Barad would phrase it (Barad 2007).<sup>6</sup> 'Bodies dominate this text as sites of dirt, mutation and calorie use; they are hence nodes of potential change in exchanges with a grimy environment', in effect addressing 'spatially microscopic phenomena and ecological scales of temporal duration, as well as questions about human agency in relation to these very large and very small processes' (Sullivan 2012: 521; Selisker 2015: 501). In such a world, the human body, and the human body politic, is but one of many actors on a playing field on which the human matters very little. Or rather, it is a world in which that which is distinctly human – set apart from the animal, the bacterial and the material, indeed of the entirety of creation – is hardly significant or distinct at all.

In presenting a world to his readers in which everything, and everyone, can be reduced to a number (of calories) that can be sold to the highest bidder, *The Windup Girl* may at first seem to imply a world thoroughly governed by (human) capital and an anthropocentric worldview. Yet, in another sense, we are treated to a world that, viewed solely through the perspective of resource extraction and consumption, has been 'used up', only to present us with 'the strange limbo of those left in the wreckage of American modernity' (Hicks 2016: 146). Like the retro-technology of clockwork and springs on which much of the kinetic technology of the novel relies, the planet has virtually ground almost to a halt, at least in the sense that all that which was formerly deemed 'natural' has now been



spent. Whether it is through melting poles and rising temperatures and waters, of humanly induced disease and pollution, or of bodies themselves – bacterial, animal, human, posthuman and planetary – nothing remains in *The Windup Girl* that has not in some way or other been modified by human behaviour, whether on purpose or by accident. Yet this is nevertheless a world in which the human (and human capital) is just barely keeping ahead of the curve. Constantly trying to rewind the clock on the sort of reckless consumption that has led to rising seas and temperatures, super-adaptive bacterial, vegetable, animal and posthuman species, ‘the human’ in Bacigalupi’s world, is seemingly on the edge of an inevitable and self-imposed extinction.

Ultimately, Bacigalupi tasks his readers with imagining the consequences of ‘spending’ the planet. ‘Cheap nature’ has run out, as has, it seems, the brief but vastly disruptive age of human mastery of matter. Something else, it is obvious, must take their place, but it is unclear what. Resource fiction like *The Windup Girl* thus ultimately asks the question: who gets to spend the future and what will it look like? Yet it also makes clear to us the ‘unhappy limitation on the future growth of wealth’ that drives home not only the uncomfortable truth of ‘what is at stake: our ability to live on planet Earth, to have a future as a civilization’ (Canavan 2014: 9), but also of the potential redundancy of the human observer placed in an ‘environment’ outside of ‘us’. Indeed, what science fiction texts like Bacigalupi’s are so apt at portraying is that the distinction between humanity and the rest of creation, nature and culture, consumer and resource never has been, nor ever will be, separate. In this, Bacigalupi’s texts asks whether, as Fisher puts it in counterpoint to Jameson, there is indeed ‘no alternative’ to capitalism? Or if can we ‘develop strategies against a Capital which presents itself as ontologically, as well as geographically, ubiquitous’ (Fisher 2009: 77)? For while reading literature like *The Windup Girl* is unlikely to fundamentally and miraculously change the reader’s basic assumption regarding resource use overnight, or fully reorient an anthropocentric worldview, it nevertheless asks vital questions regarding consumption, collapse and depletion in a manner that at very least may make us question what might happen at the other side of Žižek’s ‘apocalyptic zero-point’ and Fisher’s ‘capitalist realist apocalypse’.

### Notes

1. For some recent examples of this apocalyptic trend, see, for example, Diamond (2005), Homer-Dixon (2006), Heinberg (2007), Skrimshire (2010),



- Žižek (2010), Klare (2012), Emmott (2014), Klein (2014), Dahlberg, Rubin and Vendelø (2016), Danowski and Castro (2017).
2. See Moore (2016), Haraway (2015) and Malm (2016) for compelling arguments as to why Capitalocene is to be preferred over Anthropocene. As admitted by T. J. Demos in *Against the Anthropocene: Visual Culture and Environment Today*, a thinker otherwise strongly critical of the term, ‘the term Anthropocene is likely here to stay’ – if for nothing else but the fact that it is now so widely employed even if it is arguably also problematic (Demos 2017: 85).
  3. See, for instance, *Gothic in the Anthropocene: Dark Scenes from Damaged Earth* (2020), edited by Justin D. Edwards, Rune Graulund and Johan Höglund.
  4. The company Aethaer is at the time of writing offering five different jars of ‘580ml of naturally occurring, clean fresh air’, including Summerset, Dorset and Wales ([www.aethaer.com/](http://www.aethaer.com/)).
  5. For more on the difficulty of genre-coding of *The Windup Girl*, see Hageman (2012: 301, n.4).
  6. As Barad explains, ‘in contrast to the usual “interaction,” which assumes that there are separate individual agencies that precede their interaction, the notion of intra-action recognizes that distinct agencies do not precede, but rather emerge through, their intra-action’ (2007: 33).



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