

What Will We Eat? Food as Signifier in the Projection of Futurities in Climate Change Fiction

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Introduction

When the draft Intergovernmental Panel on Climate Change special report on climate change and land use came to the attention of public opinion, in the summer of 2019¹ it presented the world community with a clear choice – introduce substantial changes to the current protocols of food production and land management, with a direct impact on consumption, or face the impossibility of keeping global warming within the boundaries of minimal sustainability.

Pointing out that more than 70% of the global ice-free land surface is already used to supply food and other vital resources to the current 7.7 billion humans, a number that is likely to rise to 10 billion in 2050 and more than 11 billion in 2100, according to recent United Nations estimates,² the report describes how intensive industrialised agriculture and livestock breeding,³ deforestation, and the removal of peatlands have increased soil erosion, desertification and raised methane emissions to very dangerous levels, diminishing the capacity of the land to perform its carbon-sink function, and threatening food security for large sections of the world's population.

These predictions and the mitigative recommendations of the report⁴ have imposed on the public debate questions which literary exercises of anticipatory imagination of risk have frequently scrutinised, when, extrapolating from present tendencies, they invoke the indispensable human needs for nourishment to call attention to the cultural implications of food production and consumption that function as evidentiary signs of alternative or possible future horizons.

In these imagined landscapes to come, foodways have been used as symbolic tools to represent loss of or threat to what is perceived to be the natural order and to pinpoint the challenges to human inventiveness and empathy created by the collapse of environmental sustainability, confirming Jean Retzinger's insight that food "not only signifies the needs of the individual biological body and the grammar of a particular society and culture", but also our fundamental connection with the environment "and simultaneously our indebtedness to science and technology" (2008: 371).

This chapter examines the literary history of these productive metaphors, identifying thematic choices and creative strategies in a corpus of twentieth/twenty-first century American

fiction that mobilise them as markers of anxiety about a future depleted world. This analysis is grounded on a discussion of the creative dilemmas of fiction which addresses the consequences of the present (and future) climate crisis directly, using projections that have been proven to be not merely possible, but probable. It will then examine parallel strands in the depiction of food scarcity and control, represented by narratives where climate changes constitute the background for other associated crises, from the nightmarish landscapes of Harry Harrison's demo-dystopia *Make Room, Make Room* (1966) to the post-petroleum "bio-punk" visions of corporate domination of food production in Paolo Bacigalupi's "The Calorie Man" (2008). Finally it will examine how texts that place climate crisis at the very centre of their dystopian scenarios grounded on the threats of extreme drought and extreme flooding caused by sea level rises – Paolo Bacigalupi's *The Water Knife* (2015) and Kim Stanley Robinson's *New York 2140* (2017) – construct alternative human and social responses to the threat to vital water and food resources, ranging from survivalist, self-defeating resignation and despair to imaginative cooperation that allows not only survival but an unexpected utopian resilience and reinvention.

1. Fiction and the climate crisis

The Great Derangement, Amitav Ghosh's influential contribution to the global conversation on the many entanglements of climate change, has become an almost inevitable starting point for any discussion of the fictional imagination of global warming. Asserting that "the climate crisis is also a crisis of culture and thus of the imagination" (Ghosh 2016: 9), he dedicates most the first section of his three part essay to the scrutiny of what he perceives to be the creative failure of mainstream literature to address a concern that, in the face of its urgency "should be the principal preoccupation of writers the world over" but, in his view, is not (*idem*: 8). Asking why climate change "casts a much smaller shadow within the landscape of literary fiction than it does [...] in the public arena" (*idem*: 7), he suggests that this absence has to do with the "uncanny effects of the Anthropocene" which are "too powerful, too grotesque, too dangerous, too accusatory," pointing to the intimacy of our relationship with the nonhuman (*idem*: 66, 32), and imposing on writers a vision of the improbable which "the modern novel has never been forced to confront," radically centred as it is on the human and the self (*idem*: 23). Arguing that "the calculus of probability that is deployed within the imaginary world of a novel is not the same as that which obtains outside it", he concludes that depicting "improbables" such as flash floods, persistent droughts spells of unprecedented heat or sea-level rise rendering cities such as Kolkata, New York and Bangkok uninhabitable in a novel, "courts eviction from the mansion in which serious fiction has long been in residence", and risks "banishment to the humble dwellings that surround the manor house – those generic hothouses [...] that have come to be called 'fantasy', horror' and of science fiction" (*idem*: 24).

The questionable implicit disdain for non-realist modes, which reflects public perception rather than any literary-grounded fixed hierarchy, is not the point of his argument, but rather the puzzling concept of "improbables" that Ghosh uses to signify visible consequences of climate

change. A significant corpus of recent mainstream fiction that puts global warming in the foreground of the narrative – from Ghosh's own 2004 *Hungry Tide*, to the widely acclaimed and discussed *Flight Behaviour*, by Barbara Kingsolver – is hardly risking "eviction from the manor house" in their descriptions of its uncanny effects. On the other hand, as Ghosh has recently shown with the publication of *Gun Island*, his most recent novel, the weird seems to be losing its distinctiveness. In an interview with Amy Brady, he admits that some of the "improbable events" he has written about in his books have actually happened, from the storm surge in the Sundarbans⁵ he describes in *Hungry Tide*, to the hailstorms and subsequent appearance of poisonous spiders he describes in *Gun Island* (Brady 2019).

This normalisation of the uncanny notwithstanding, the concept of "improbable" may be read as pointing to literary tales of the catastrophic climate collapse that devastates the planet or to the kind of post-apocalyptic imaginary where speculation and extrapolation intersect, present in some dystopian narratives such as Margaret Atwood's biological nightmare in the *MaddAddam* books (2003-2013)⁶ or Jeff VanderMeer's new weird metaphors in the *Southern Reach Trilogy* (2014),⁷ grounded on a speculative rather than on a cautionary rhetoric.

But while Ghosh highlights the difficulties of finding a space for scenarios of catastrophic futures (or presents) in literary discourses that require allegiance to the perceived real, a parallel dilemma haunts most fiction that addresses the anthropogenic climate crisis, dependent on projected reader responses.

Frederick Buell argues, in *From Apocalypse to Way of Life*, that the imagination of catastrophe in narratives that foregrounded extreme ecological and social meltdowns, to which the epithet of "improbable" might be tagged and the "depiction of the environmental crisis as something both all-encompassing and fearfully intimate", may fuel not a call to action on the part of the readers, but the "suspicion that nature and the natural human body are a lost cause" translated in the popularity of a "variety of bizarre fantasies of escape both from earthly ecosystems and from human flesh" (142).

The inevitable implication of this reading of literary texts as parables or metaphors of the anthropogenic global crisis is that they are also part of a public discourse; this is to evaluate them in terms of an implicit communication strategy which, Sarah De Weerdts summarises,⁸ remains divided, weighing whether "doom-and-gloom messages scare people into action, or cause them to give up" and if emphasising hope puts "people in a can-do frame of mind, or reduce their sense of urgency?" (De Weerdts 2019). David Wallace-Wells, asking the same questions, namely whether "hope" can be more motivating than "fear", cites a number of scientific and academic studies, namely those surveyed by a paper published in 2017 in *Nature*⁹ to conclude that there is no single way to "best tell the story of climate change, no single rhetorical approach likely to work on a given audience, and none too dangerous to try" (Wallace-Wells 2019: 157).

The obvious assertion that literature, unlike public or political discourses is not restricted by the demands of "responsible story telling" (*ibidem*), does not erase its effect as, to quote Laurence Buell, an act of environmental imagination, that potentially registers and energises the readers' engagement with the world, in particular by connecting them "vicariously with other's experiences", by directing "thought towards alternative futures" and by affecting their "caring for

the physical world: making it feel more or less precious or endangered or disposable” (Buell 2003: 1-2). Therefore, a more productive way to read a significant corpus of climate change inspired literature beyond the simpler classifications of “uncanny improbable catastrophe”, “fatalist escapism” or “constructive optimism” might be to see it, as Ulrich Beck suggests, in terms of its capacity to project an awareness of risk.

In *The World at Risk*, Beck defines this concept as “a perceptual and cognitive schema according to which a society mobilises itself when confronted with the openness, uncertainty and obstruction of a self-created future” (Beck 2009: 4); in other words, not the paralysing certainty of catastrophe, but its anticipation (*idem*: 4).

Embracing this framework, as Meyer and von Mosser argue in their study *The Anticipation of Catastrophe: Environmental Risk in North American Literature and Culture*, allows fictionalised scenarios of climate crisis to be seen as privileged sites for exploring the individualised impacts of the perceived risks, since, unlike scientific texts, these works of the imagination can foreground a multiplicity of dimensions, from the cultural, social and political to the psychological, “engaging readers imaginatively, intellectually and emotionally through storytelling” (Meyer 2014:12).

It is this juxtaposition of the anticipatory and the cautionary that explains why narratives of disruption of the link between humans and food, their most basic need and as Atkinson argues, “a bridging substance between nature and culture, the human and the natural, the outside and the inside” (Atkinson 1983: 11), are so appealing and effective in mobilising reader’s imagination of plausible webs of environmental risk. That is the case of *Make Room! Make Room!* and “The Calorie Man” whose dystopian landscapes establish an imaginative engagement with the anxieties and public debates of their times.

2. Food in Exhausted Earths

Written in 1966, *Make Room! Make Room!* reflects Malthusian concerns that had become prevalent in the post WWII public discourses, which saw in demographic trends of unprecedented population growth¹⁰ a source of concern that demanded action, in contrast with previous anxieties over low birth rates in the 1930s and ‘40s. Like other *Demo-dystopias*, to use Andreu Domingo’s appellation for literary works which adapted the classical dystopian tropes to the new demographic landscapes¹¹ (Domigo 2008: 729), the novel responds to anxieties of overpopulation, in line with the ruined futures forecast by biologists like Paul R. Ehrlich, whose hugely influential *Population Bomb* (1968) depicted the acceleration of population growth as a global catastrophe, heralding famines and societal collapses.

The urgency of the crisis outlined by Ehrlich was shadowed by environmentalist despair, since he considered that “appeals to nature’s beauty”, or pleas “for mercy for what may well be our only living companions on a vast universe” were likely to fail to move an apathetic majority of the world’s population into action (Ehrlich 1995: 44). Alternatively, presenting a vision of coming doom directly affecting humans, translated in drastic famines, which he predicted would assail

parts of the world as early as the 1970s would be more likely to have the desired effect. Aware of the power of storytelling to push the imagination into action, he called for “novels or plays emphasizing near future worlds in which famine or plagues are changing the very nature of mankind and his society” (*idem*: 175), and that is exactly what Harry Harrison’s novel attempts to do.

The novel (for which Ehrlich wrote the prologue), is set in New York at the end of the twentieth century, and depicts a world already drastically affected by climate change, in the form of storms, floods, long-term droughts, crops poisoned by pesticides, and thoroughly exhausted by the demands to feed a population of 7 billion humans.

The plot, formally invoking the tropes of a crime novel (Andy, one of the main characters is a police detective and the inciting incident is a killing he investigates), presents a metropolis where 35 million humans struggle for survival, packed tight in tiny spaces provided by crowded buildings resembling the turn of the century downtown tenements, competing with the farming hinterland for vital resources in a country described as “one big farm and one big appetite” (142). Farmers, desperate for water after drastic shortages in California and the Dust Bowl states¹² destroy pipes that take it to the city to save the few grain crops that still grow, thus depleting the reserves destined for their urban fellow citizens, who, for their part, are dependent on the protein components farmers produce to make up the ersatz foods that keep them alive. Most of the narrative is constructed around food and the economic hierarchies and conflicts that it sustains. For most citizens the daily diet consists exclusively of oatmeal crackers, coloured with different varieties of seaweed but all with next to no flavour, bought on street markets in once elegant elite areas like Gramercy Park. Welfare Stations distribute these crackers to the very poor, as well as water which for most New Yorkers has to be bought and carried home. Occasionally, the better-off may feast on a rare meal of soylent, a composite of soybeans and lentils but which more often than not is only a concoction of recycled motor oil, plankton, white blubber and algae, so expensive that when one of the characters buys three small burgers made of the substance, her house companions complain that her extravagance will mean “that we don’t eat for the rest of the month” (150). For the very rich, very corrupt or very criminal, clandestine “meateasies” may provide black market meat such as “a good leg of dog” (43) or very expensive flour, enough for a modest bowl of pasta (61).

This precarious social order, which provides the occasional luxury for those able to afford it – the text describes, for example, a bar announcing “BEER TODAY -2p.m.” and we are told that a queue of eager customers had formed since the early morning (39) – turns into violent disorder when an attack on the water supply leads to a radical rationing of water and food, as New Yorkers, led by the Elders, an activist group made up of older people who remember the taste of real coffee and real food, suspect there is a conspiracy to hoard food and keep it away from the starving. It is through the voice of the elderly that the didactic message of the novel comes through, mostly through Sal, an old man who shares a room with Andy and is the carrier of memories of how things used to be, mixing the regret that conservationists “who kept telling us that we should change our ways or our resources would soon be gone” were not heard, with the rejection of laws that made birth control illegal and “that made it a crime for even doctors to talk about contraception” (196). His anger against the paralysis that brought the world to that

point of misery, is summarised by his bitter conclusion: “One time we had the whole world in our hands, but we ate it, and burned it, and it’s gone now” (196).

The science of artificial food production, which had looked so hopeful in the late nineteenth century utopias,¹³ is presented here as ineffectual; its main achievement in the novel seems to be the production of “ener-G”, a tasteless supplement derived from plankton, supposedly containing vitamins, minerals, proteins and carbohydrates (77). This impotence of science to make something out of almost nothing gains a gothic overtone in the novel’s film adaptation in the early 1970s, as *Soylent Green* reveals a brutal reality the novel never pursued – the fact that the oceans no longer produced the plankton from which Soylent Green was partially made, and that it had been replaced by the only available supply of protein matching its composition, human remains, the gruesome conclusion summarized in the film’s famous last line “Soylent Green is people!”

If *Make Room! Make Room!* responded to anxieties about an earth exhausted by both environmental neglect and population explosion, in Paolo Bacigalupi’s “The Calorie Man,” published in *Pump Six and Other Stories*, variously labelled as an agri-punk or bio-punk¹⁴ text, sketches the world that he would further develop in the novel *The Windup Girl* (2009), mobilising the reader’s critical imagination to contemplate a dystopian future extrapolated from two parallel concerns of the twenty first century – the collapse of fossil fuel resources before the full establishment of alternative energies, predicted by peak oil discourses, and the investment of corporate interests in genetically modified seed patenting.

Peak oil, understood as “the moment when the world will achieve its maximum rate of all extraction” (Heinberg 2007:1), after which it will necessarily dwindle, is used in the narrative as sign of human incapacity to resist what Rob Nixon describes as “those twinned calamities of squandered time: oil’s receding tides and the advancing tides of climate change, sped on by our brief, rapacious age of hydrocarbon extraction and combustion” (Nixon 2011: 102). The short novella is set in the post-petroleum age of *Contraction* that emerged after the world-wide collapse of fossil fuel energy production that had sustained the era of *Expansion*. In this depleted world most markers of the contemporary have vanished, made impossible by the scarcity of energy that is now physically produced, mostly by genetically modified work animals such as *mulies* and *megadonts*, working incessantly on treadmills to produce kinetic energy stored in “kink springs”, a new type of battery. In this projected future of diminished humanity, energy production had returned, as Lars Schmeink points out, to a pre-Anthropocene age, depending on muscles and on the calories needed to sustain them (2016: 79). This unending need is sustained by new hypercapitalist formations in the shape of Calorie Companies like *AgriGen*, *HiGro* and *PureCal* which assume the roles of the now extinct fossil fuel empires, dominating both the energy market and the systems of food production through the imposition of their own patented seeds.

Their absolute power comes from a successful business strategy that mirrors the one used by some contemporary agro-businesses – first they created plagues and pests like weevils and leafcurl that devastated unpatented traditional crops, then they sold their own disease resistant strains of the same plant. As all human life depends on these patent-protected mono-cultures, which have become both food and energy (without eating them the animals that generate kinetic

energy cannot work), these companies control in fact all aspects of human life, unchecked by any semblance of functioning governments, protected by the ubiquitous *Intellectual Property* private police corps (IPs) with the power to inspect anyone and to destroy all vestiges of unpatented, and therefore illegal, crops.

Lalji, the Indian protagonist now living in the United States, sailing up and down the Mississippi, working as a seller of Expansion era artefacts that calorie company executives like to exhibit in their offices – items like paper cups or computer monitors – recalls the devastation created by the company-induced plagues, when “the genehack weevil came” and “the soil turned into alcohol”, “before U-Tex and HiGro and the rest all showed up so conveniently” and “sat behind their fences and guards waiting for people with the money to buy” their resistant seeds (Bacigalupi 2008: 102-103), and also the brutal realisation that they were one-crop-only, sterile strains that would not propagate:

He remembered planting. Squatting with his father in desert heat, yellow dust all around them, burying the seeds they had stored away, saved when they might have been eaten [...] his father smiling, saying, “These seeds will make hundreds of new seeds and then we will eat well [...] He sat every night [...] watching the seed rows, waiting, watering, praying [...] until his father shook his head and said it was no use [...] and dug up the seeds one by one and found them decomposed, tiny corpses in his hand, rotted. As dead in his palm as the day he and his father has planted them (112).

Unlike *Make Room! Make Room!* which can be read as a critical dystopia in the sense that it places a residue of hope extra-diegetically, in the relationship between the text and the reader, who it tries to move into a state of awareness, “The Calorie Man” enacts it in the very fabric of the text, in the shape of a planned act of bio-sabotage of the calorie companies’ extortionary practices, designed by Charles Bowman, a genetic engineer hunted by the intellectual property police, who Lalji agrees to hide and transport in his boat.

Using his scientific skills to develop quasi heirloom plants, unpatented and fecund, Bowman intends to stop the “genetic dead-end”, “the one-way street” caused by the Calorie Companies, that forces the world to pay “for a privilege that nature once provided willingly, for just a little labor” (114), by dropping the “bastardizing pollens” of these free strains in the midst of the oceans of SoyPro and HiGro crops, contaminating them with fertility, and then let the unsuspecting companies deliver to the world seeds that are no longer the “locked boxes” they once were but were instead “fat with breeding potential” (115). “Imagine”, Bowman asks Lalji, all these seeds “unbelievably fecund, ripe, fat with breeding potential”, resistant to the company-created plagues, with a high calorie content, “distributed across the world by the very cuckolds who have clutched them so tightly, all of these seeds lusting to produce their own fine offspring, full of the same pollen that polluted the crown jewels in the first place” (*idem*).

In the end, the IP men kill Bowman, but his “beautiful infection” that could free the world from the stronghold of the calorie companies is still available to Lalji, who had unknowingly been carrying Bowman’s seed bank in his boat, and who intends to complete the plan, his mind fixated on the hopes of a father praying for hundreds of seeds that the soil never fertilised.

“The Calorie Man” (not unlike *Make Room! Make Room!*) is evidence of a deliberate creative choice to treat climate change as a backdrop for other intimately related but less scrutinised risks, in this case those related to resource level questions less present in scarcity fiction, be they energy or food, but its cautionary power derives mostly from its undisguised targeting of the predatory behaviour of the agrochemical giants which already control much of the seed market with their patented strains (the four¹⁵ most powerful global multinationals, including Monsanto, already dominate 60% of the trade (Barber 2019: 13, 15). The court cases pending in the United States against Monsanto, brought by farmers whose unpatented crops have been destroyed by the weed killer chemicals matched with the company’s patented seeds used by their neighbours, show how events in the present can be so easily extrapolated to such very possible and probable futures.

That is also the case of the two novels that are discussed next. They push climate change from the background to the centre of their plots, imagining the cultural grammar and social responses to two of its most egregious risks – extreme drought and extreme flooding.

3. Surviving, losing and finding hope

The scenarios of climate crisis discussed in Paolo Bacigalupi’s *The Water Knife* (2015) and Kim Stanley Robinson’s *New York 2140* (2017) confront readers directly with two dystopian scenarios – a desiccated ravaged American Southwest and a drowned Metropolis can be read as bookending responses to the challenges of climate catastrophe, ranging from resignation and despair when lack of access to water implies the collapse of any sense of civic coexistence, to imaginative cooperation, when citizens envisage strategies for survival and food production and consumption that allow not only endurance but a kind of reinvention.

The *Water Knife* draws, in sharp images, a devastating possible future of an America without water security resulting from climate change, but also from the control of the dwindling resources by private companies, the new robber barons of the late twenty-first century which have jurisdiction over the Colorado River. This fictional premise is sustained by a real agreement, *The Colorado River Compact*, signed in 1922 by seven states,¹⁶ which allocated the lower basin allotments and water rights each states would have access to in a way some states found unfair.

In the novel, the landscape of the Southwest is a new Dust Bowl, with temperatures reaching 50 degrees Celsius, where people do not venture out without goggles and masks, where cities like Phoenix barely cling to life, surrounded by ghost towns that were once prosperous suburbs but which have become worthless to anybody but squatters since the water supplies were shut off, and where “desiccated” refugees from Texas, and other desperate states, wander, stinking “of fear and stale sweat that had moistened and dried” and “of one another from lying crammed together

in the plywood ghettos that they’d packed in, closer to wherever the Red Cross had spiked relief pumps into the ground” (39).

Here, water wars are also business wars, in which companies such as the Las Vegas based *South Nevada Water Authority*, decide who survives and who does not, based on their business calculations and on their fierce competition with other similar companies from other states, especially California, the richest of the Compact members.

“Water-knifing”, as we understand from the first pages of the novel, refers to the practice of “cutting off the water” from communities in conflicts about jurisdiction and control of the river and local aquifers. The novel begins with one such operation, when we follow Angel Velazquez, a water-knife working for the South Nevada Water Company headed by Catherine Case, “the queen of the Colorado,” as he blows up a rival water processing plant in the city of Carver. This is a night operation before the courts reopen and re-establish the local rights to their share of the Colorado water, condemning all who live there to an impossible future where the choices are death by thirst and starvation or an escape that will render them refugees in their own country.

The federal government offers no relief against this savage form of capitalism, having been rendered ineffectual by the crisis and by corporate influence, and the very notion of a Federal state with freedom of circulation has collapsed. The Western states have formed their own militias to protect their borders – Nevada, which controls much of the water sources has its volunteers with names like the South Border Marauders, or Desert Dogs (79) – and with their help shut their borders against the desperate internal refugees, deprecatorily referred to as Zoners, if they are from Arizona, Merry Perries, if they are from Texas.¹⁷ Under pressure from Eastern States to repress the actions of these militias, the inept Western state governments occasionally parade “theatrical arrests in front of the cameras”, but as soon as the cameras go dark, “the cuffs come off” and the patrols resume (80). This practice is also commonly used by the rich State of California the place most refugees risk their lives to reach, unable to even dream of the northern states or Canada, the promised lands where it still rains.

In this dystopian, possible future, water and access to it structure every aspect of life, magnifying economic and social imbalances, placing geography at the heart of the calculation of who survives and who loses everything. Those with substantial means have moved indoors into arcologies, many of them built and maintained by the very companies that hold water rights. Their exceptionality is summarised by this recognition – “outside, there was only desert and death. But inside, surrounded by jungle greenery and koi ponds, there was life” (50).

In these vast self-contained sealed biodomes that use natural symbiotic processes to recirculate water with great efficiency, an elite known as the Fivers (those with five digit arcology addresses) live and work, thanks to the filtered, recycled and plentiful water taken from the Colorado River to which they have unique access. These arcologies have fountains and vertical farms that provide abundant fresh food to serve their several thousand residential units whose dwellers never need go outside, and who live in comfort, insulated not just from the effects of climate change, but from the violence that sustains their security.

Those who are left outside, live like the young Texan refugee Maria Villarosa, displaced and torn from the middle class of her birth, surviving by her wits in the dangerous criminal fringes of the decaying society, in a vortex of poverty, prostitution and violence, trying to find a way to pay people smugglers to take her to the north where the rain still falls. For her, as for millions of others, fresh food – but especially water – is something you are ready to sacrifice almost everything to buy from local Red Cross pumping stations. For Maria it will eventually become a possible source of income when she figures out how to get it for less than its usual price so she can sell it by cups and mugs to industrial workers, for a small profit. This is how water is measured, for most drought refugees, in cups and mugs.

The nightmarish narrative of the *Water Knife* offers several perspectives on the social and personal effects of the drought, as it is told from the point of view of three characters, Angel, the former corporate enforcer, Maria the refugee, and Lucy Monroe, an East Coast journalist. She is known for her work in “collapse porn” – that is, the voyeuristic documentation of the decay of the Southwest – who initially positioned as a detached observer gets emotionally involved with the fate of the people of Phoenix. The plot eventually assumes the tropes of a thriller, when all three characters find themselves involved in the search for a new water source, but two features of the narrative that engage both the discourses of the environmental crisis and the dystopian imagination are of particular relevance.

First, unlike in most climate fiction, notably in Bacigalupi’s “The Calorie Man” and *The Windup Girl*, the causes of the disaster are projected, at least by its characters as intensely localised, grounded on a historicised desire to counter nature, followed by an irresponsible inability to understand the limits of that gesture. Looking at the desperate dry lands Angel, who likes the desert “for its lack of illusions” says of places like Nebraska, Kansas, Oklahoma and Texas that they

had thrown on the garments of fertility for a century, pretending to greenery and growth as they mined glacial water from ten-thousand-year-old aquifers, playing dress-up in green and pretending it could last forever [...]. They’d pumped up the Ice Age and spread it across the land and for a while they turned their dry lands lush. Cotton, wheat, corn, soybeans – vast green acreages, all because someone could get a pump going. Those places had dreamt of being different from what they were. They’d had aspirations. And then the water ran out (78).

And, voicing an insight that resonates with contemporary debates about the urgency of change if we are to protect our climate in the future, another character concludes: “We knew it was all going to go to hell and we just stood by and watched it happen anyway. There ought to be a prize for that kind of stupidity” (29).

A second and perhaps more vital point is, as Sheryl Vint observes in a review of the novel, the fact that the narrative functions not only in a cautionary mode by asking “if this world of water wars is a destination we desire”, but also as an investigation of the psychology of disaster, asking readers to ponder “what kinds of people we might become if we continue down that

road” (Vint 2015) and it is here that the novel is truly dystopian (or perhaps realistic). If there are no caricatured villains, and no larger-than-life generous heroes, as Vint points out, there is also no sense of resistance, of solidarity, of community, no capacity to think of a way to live slightly better. As Lucy, the journalist muses, “when people lose hope, they sometimes lose their humanity too” and then “desperate people become avatars of unexpected tragedy” (155). For her, but especially for Angel, the depleted world they experience matches the findings of the Stanford prison experiment they discuss: “you give people something to do and that’s what they are [...] Put them on the border, tell them to keep the refugees out, they turn into a border militia. Put them on the other side – they beg for mercy and get themselves scalped” (191). Readers will look in vain for a grand gesture of selflessness, of true collective cooperation and rebellious resistance. In this scenario of radical environmental, social and psychological disharmonies, marked by completion for the bare necessities of food and water, there are no whispers of hope within the narrative, signalling that the risk that this kind of drastic climate upset may destroy not only the economic and social networks upon which we depend, but our very own sense of ethical compass.

In contrast, this kind of emotional paralysis before environmental loss is singularly absent in Kim Stanley Robinson’s *New York 2140*. Where *Water Knife* takes us to a very near future, Robinson’s novel sends us to distant underwater downtown New York, after a “second pulse” of catastrophic climate-change-driven rises in sea level. After the first decade-long pulse in the 2050s when the water had risen by about three meters and humanity had finally begun assessing the seriousness of the risks hovering over them. Though some argued that “it was too late” and that “having torched the world” humanity might as well go with the flow, ride the wave, enjoy the last efflorescence of civilization and stop trying to fix things”, all were shaken by “the food panic of 2079” when, as the narrator explains

hunger, famine and death gave everyone, and this time everyone, the rude awareness that even food, that necessity that so many had assumed had been a problem solved or even whipped by the wonders of modern agriculture, was something that was made uncertain by the circumstances thrust on them by climate change, among other anthropogenic hammerings on the planet (377).

Governments refocused attention on agriculture and on cutting dependence on fossil fuel, and “people stopped burning carbon much faster than they thought they could” (139), but “despite ‘changing everything’ and decarbonizing as fast as they should have fifty years earlier” (*idem*) attempting to cope with the great economic depression that ensued, they were too late to prevent a second disaster, at the beginning of the twenty-second century, when the waters rose a further 15 meters. We are told by the nameless narrator known as “the citizen,” who functions as the conveyor of background facts, that this Second Pulse “thrashed all the coastlines of the world, causing a refugee crisis rated at ten thousand Katrinas” (144). As one eighth of the world’s population living near coastlines were engaged in food related activities, from fishing to aquaculture and agriculture, one third of humanity’s food was directly impacted. The newly drowned world’s coastlines, were

“at first abandoned, then quickly reoccupied by desperate scavengers and squatters [...] the water rats as they were called” (145), although basic services like electricity, water, sewage and police were paralysed. But, as “the citizen” tells us “history is humankind trying to get a grip” though, as she/he sardonically adds, it would have gone better, if we had “paid a little more attention to certain details, like for instance our planet” (*idem*). Still, a lot of infrastructure survived in devastated places, where the “water rats” could try new experiments in “living wet” (*ibidem*).

That experiment had met with reasonable success in New York. Downtown, the “intertidal” zone had not been abandoned, and resilient citizens built a new kind of Venice both below and above the water. Each street had become a canal, every skyscraper an island, linked by sky bridges and boat taxis that allow people to move and commute. As “the citizen” explains, as the unimaginative escaped to Denver, the new financial centre of the country, the imaginative turned downtown into an experiment. As “hegemony had drowned”, alternative words occupied the social vacuum with “a proliferation of cooperatives, neighbourhood associations, communes, squats, barter, alternative currencies, gift economies, solar usufruct, fishing village cultures, mondragons, unions”. In parallel, a new wave of cultural innovation emerged, represented by concepts like “submarine technoculture,” “art-not-work,” “amphibiguity” that flourished, alongside “free open universities, free trade schools, and free art schools.” “Lower Manhattan” the citizen explains, “became a veritable hotbed of theory and practice, like it always used to say it was, but this time for real” (209). “Possibly”, he or she adds, “New York had never yet been this interesting” (210).

None of this resilience and inventiveness would exist without access to food, the most basic of necessities, and the main concern of all citizens, since, as a character comments “that’s the real value, food in your belly. Because you can’t eat money” (3). Because the story is told from the perspective of eight different characters all living in the same skyscraper, the MetLife Tower, their daily comings and goings illuminate the ways inventiveness and cooperation have been mobilised to turn that building, and most others in the area, into a kind of utopian community that provides its members with the precious food that has become more valuable than money, isolated as they are from most of the still operating farming areas of the country. Since the first 10 floors of the Tower were flooded and rendered inhabitable, the building dwellers had created a farm on the top floors of the open walled loggia from the 31st to the 35th floor, with planter boxes filled in the summer, when the narrative begins, with ready-to-pick crops – tomatoes and squash, beans, cucumbers and other vegetables. For those who still like their meat, the building’s animal floors also provide the occasional treat. The building which is more like an autonomous village has employees who are also residents; but taking care of the farm is a collective job, as is most of the eating, which is provided in the large common dining room in shifts compatible with the schedules and working hours of the members. This utopia of survival predicts nonetheless, private joys and autonomous moments. People who love to cook, who want to do it on their own, or with their own friends just have to put in some extra time taking care of the farm to claim the vegetables they have earned.

In contrast with the dystopian renderings of a New York plagued by food scarcity in *Make Room! Make Room!*, and the cruel landscapes of the dry Southwest drawn by *Water Knife*, Kim

Stanley Robinson’s text harbours a kind of paradoxical ambiguity, somewhere between a chilling assessment of risk, in the perception that, as Gerry Canavan points out “climate change is in an intensifying feedback loop that we cannot really interrupt and cannot reverse, but can only contain, delay or prepare for” (2017), and the proposition that humanity will “get a grip” and will not let itself be reduced to the abject condition of total inhumanity. Whether the survival of utopian impulses in imagining attractive post-climate devastation futures diminishes the power of the narrative of environmental disruption, is the open question addressed by Frederick Buell and David Wallace-Wells in the first part of this discussion. Equally debatable is the quality of the risk the narrative projects, since, as Buell comments, referring to the old catastrophic narratives he decries, “old disasters age quickly” (Buell 2003: xvii). Others, however, have a way to return to public discourses under different frameworks. Such is the case of the demographic-related crisis predicted in the *Population Bomb*, as the IPCC report on land management demonstrates, since factoring in a population growth from the current 7 to 10 billion in 2050 and more than 11 billion in 2100 amplifies the risks and challenges humanity faces.

What might be unquestionable is the imaginative impact of anchoring narratives of future climate-related risks on the lived experiences of food shared by all humans, since scarcity, estrangement, access, texture and quality carry emotional implications that are easily relatable, working as signifiers of what we need, want to secure or want to prevent.

If we see climate fiction, in all its variations, as writing stories of possible futures, either just around the corner or more distant but not only possible but also “probable”, then we need, as we contemplate uncertainty and risks, to be reminded that the unique link between our bodies and what daily sustains them is also a connection with a precarious natural world upon which they wholly depend.

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Notes

1. This special report produced for the Intergovernmental Panel on Climate Change, about greenhouse gas fluxes in land-based ecosystems, examines the issues of desertification, land degradation, sustainable land management and food security. It was requested by the Panel in 2016, together with two other reports, one which examines the impacts of global warming when temperature rises 1.5 °C above preindustrial levels (*Global Warming of 1.5 Special Report*, published in 2018) and the other dedicated to the impact of climate change on ocean, coastal, polar and mountain ecosystems (*Special Report on the Ocean and Cryosphere in a Changing Climate*, issued in 2018).
2. Estimates by the United Nations Population Division of the Department of Economic and Social Affairs of the United Nations Secretariat published in *2019 Revision of World Population Prospects* <https://population.un.org/wpp/>.
3. Livestock now use 30 percent of the earth's entire land surface, including 33 percent of the global arable land, for producing feed such as soybeans.
4. These include a more sustainable model of land management, the restoration of peat lands a reduction of food waste and, perhaps more significantly, cutting down on meat consumption, necessary to reduce methane emissions.
5. The Sundarbans, covering around 10,000km², is a mangrove area in the delta formed by the confluence of Ganges, Brahmaputra and Meghna Rivers in the Bay of Bengal, regularly affected by micro- and macro-tidal cycles and by yearly submergence during the monsoon. Parts of the area are listed as UNESCO World Heritage Sites, as they provide habitat for 453 faunal wildlife species, including bird, fish, mammal, reptile and amphibian species. In 2007, the landfall of Cyclone Sidr damaged around 40% of the Sundarbans and in 2009 Cyclone Aila devastated the area again with massive casualties.
6. *Oryx and Crake* (2003), *The Year of the Flood* (2009) and *MaddAddam* (2013).
7. *Annihilation, Authority, and Acceptance* (2014)
8. The findings discussed are presented in Marlon J.R. et al (2019), "How Hope and Doubt Affect Climate Change Mobilization", *Frontiers in Communication* <https://www.frontiersin.org/articles/10.3389/fcomm.2019.00020/full> (last accessed 21 August 2019)
9. Daniel A. Chapman et al. (2017), "Reassessing Emotion in Climate Change Communication," *Nature Climate Change*, November, 850-852.
10. Both these trends emerged in fictionalised forms, as Lionel Shriver documents in her 2003 study "Population in Literature," which identifies three parallel fears – of population decline, of population excess, and also of population professionals who direct the course of demographic change.
11. Other notable examples would be Anthony Burgess's *The Wanting Seed*, 1962, John Brunner's *Stand on Zanzibar*, 1968, and Kurt Vonnegut's short story "Tomorrow, and Tomorrow and Tomorrow", published in *Welcome to the Monkey House*, 1968.
12. The area of Great Plains states affected in the 1930s, during the Great Depression, by severe droughts and sandstorms, covering around 400,000 km² from Texas and Oklahoma to sections of New Mexico, Colorado, and Kansas, which led to tens of thousands of small farmers losing their properties and livelihood.

13. See for example Arthur Bird's *Looking Forward: A Dream of the United States of the Americas*, (1899) or Mary E. Bradley Lane's *Mizora* (1889).
14. Bacigalupi states that he prefers the term *agripunk* to describe both "The Calorie Man" and the *Windup Girl*, to *biopunk*, which tends to refer to texts that explore negative aspects of biotechnology, explaining that while bioengineering is central to their plots, the thing he cares about are "seed corporations" (Bacigalupi, Interview with James Long, 2011).
15. Besides Monsanto, now acquired by Bayer, the three other giants are Corveta, BASF and ChemChina (Barber 2019: 13)
16. The seven states are Colorado, New Mexico, Utah and Wyoming (which correspond to the Upper Division of the river basin) and Nevada, Arizona and California (the Lower Division). The Compact regulates the access to the river's resources and ensures, in principle, that the Upper Division states do not overuse them and deplete supply to the Lower Division states.
17. The term is a reference to Rick Perry, the former governor of Texas, who during the drought of 2011 asked Texans to pray for rain.