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Re-Enchantment with the Waste of the World: Expressing Futures and Representing Wastelands in Chen Qiufan's *Waste Tide*

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> Objects called 'waste' can have a peculiarly telescopic effect on our imaginations. They are things that seem to disclose ways of living, permit certain ways of seeing and give access to wider actions, collectives and environments. (Viney 2014: 1)

> In Silicon Isle, even the trash wasn't as simple as people thought. (Chen 2019: 59)

Introduction

After a year of desk-based research on landscapes ruined by e-waste, in early 2019 I arrived in an informal e-waste market in Delhi to conduct a year-long ethnographic research project.[1] It was an unnerving yet wonderous experience to enter spaces where toxins were said to abound. It was also around the same time that I came across the science fiction 'eco-techno-thriller' *Waste Tide* (2019) by Chen Qiufan, translated by Ken Liu from the original Chinese published in 2013. The novel is set in Silicon Isle, loosely modelled on today's Guiyu, another notorious e-waste processing centre in Guangdong province of China. Strikingly but perhaps not surprisingly, the narrative's futurity rebounded on the metaphors and figures developed in scientific research, documentaries, and environmental advocacy narratives, to evoke charismatically the harm of e-waste and provoke action (Liboiron 2016; Lepawsky 2018). These metaphors sought to make sensible the fast growth of e-waste on an inhuman scale, humanity's increasing intimate entanglement with technology, and the dark side of this intimacy – the resulting toxicity. This raised the questions: to what extent is e-waste's toxic harm conceived of in futuristic imaginations and how could such readings prefigure my experience in the Delhi e-waste market?

Having completed my fieldwork in the e-waste market of a Delhi suburb, I recall my initial reading of Chen Qiufan's novel and the need to interrogate the future imaginaries that are used to imbue with charisma the e-waste and its material effects. The challenge of studying toxicity raises further questions about epistemology and representation. Elsewhere, I have examined the limits to bodily knowledge of toxicity and the question of how such

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limitations undermine representation (Perczel forthcoming). Here, I reverse the interrogation to think about how representations effect the experience of toxic landscapes. Reports and accounts of environmental harm coming from well-respected environmental advocacy groups and NGOs have set the terms of the debate to think about the future of the planet in the light of the devastation wreaked by humans. The Basel Action Network's narrative of North America's toxic dumping of e-waste in Asia (BAN 2002) has been successfully used to push governments to limit transboundary shipments of hazardous wastes and institute e-waste regulations. However, the longer I spent in Delhi studying the effects of the recent E-waste (Management) Rules of 2016, the more I found that descriptions of the dire situation on the ground were, to some extent, divorced of the ethnographic reality. At the same time, my prior readings had determined how I interpreted what I saw at the informal market. In this essay, I use Chen's science-fiction rendering of a Chinese e-waste dismantling site to help peel back the layers of imagination that make up the e-waste problem.

This is not an exercise in comparing pieces of writing across the different genres of fiction, ethnography, and environmental advocacy. It might appear that I am trying to debunk environmentalist claims but that is not my intention. The exploration is necessitated by the affective effects evoked by popular images depicting growing piles of waste and accumulating plastics gyrating in the Atlantic. Landscapes haunted by pollution, toxicity, and decay in the wake of intensifying human activity and then abandonment are now well-worn tropes in narratives of warning of the excesses of humankind. Yet, these are consciously produced imaginaries in the interest of evoking action (Liboiron 2016). Nowhere is the powerful imaginary of growing mountains of waste starker than in the matter of representing the threat of e-waste – which I understand as the refuse left behind by the race to satiate the global hunger for better, faster, high-specification digital lives. Now, such imaginaries, rooted in the wonder produced by the non-human scale of humans altering the planet (Harvey, Krohn-Hansen, and Nustad 2019), are becoming the basis for legislative systems.

My fieldwork in Delhi focussed on the effects of the E-waste (Management) Laws of 2016. This is a striking legal framework that is the direct result of environmental advocacy work both globally and locally. My interest lay in how rallying points for the advocates and activists become the basis of a legal framework. I found that the same narratives which work well in mobilising people may become the foundation for ill-fitting laws. By tracing the movements of figures and metaphors across generic boundaries, it becomes easier to peel back layers of representation and write reality *and* truth, as anthropologists are meant to

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(Fassin 2014). Beyond the quest for truth, in this essay I examine how waste is leading to a dark, toxic re-enchantment with the world.

Environmental Racism and 'Waste People'

Chen's story is set in the near future, when humans are adapting to an altered environment of toxic saturation. Prosthetic extensions offer limitless possibilities for new addictions and fashions in body modification as well as for adaptation to a radically altered biome. Batteries are fuelled by viruses, electric tattoos flash with their wearers changing emotions, and prosthetic respiratory systems could potentially reduce exposure to pollution. These electric prostheses are also subject to the same obsolescence as today's electronics, a fact that produces an even more hybrid waste, which also threatens to leach organic substances, blood, and other bodily fluids.

The two ailments that plague the waste-strewn landscape of Chen Qiufan's *Waste Tide* are the toxic e-waste that provides livelihood, and the clans that keep both waste and waste people tightly in their hands. The story is set in motion by Scott Brandle, an American who is a representative of TerraGreen Recycling. The recycling company sends Scott to offer a mutually beneficial deal to update the local, manual recycling practices to an advanced technology plant and help clean up the island. Scott is accompanied by Chen Kaizong, an American-raised local dialect interpreter. However, the Chinese representative refuses the offer on the grounds that the US, which had dumped the e-waste in Silicon Isle in the first place, can probably not propose anything that would be good for China.

The tropes mobilised in the main narrative of the novel have their origin in the reports that had warned against the havoc wreaked by e-waste, the fastest growing waste stream (BAN 2002; Toxics Link 2003; Baldé et al. 2017; Forti et al. 2020). Environmental reports have a strong claim to writing objectively about reality. At the same time, their characterisation of that reality aims to have affective effects on readers through an emotively charged language. The compiled records 'documented in China, India, and Pakistan' are intended to 'toll a loud alarm and a clarion call' primarily in the US (BAN 2002: 2). At the time, activism aimed at forcing the US, the largest exporter of e-waste, to ratify the Basel Convention of 1989 and stop transboundary shipments of hazardous waste. To achieve this, the report rallied facts alongside a moralising language of 'a witch's brew of chemicals' and of evading 'the ultimate costs of their hazardous products via export to Asia' (BAN 2002: 3).

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The report also established the intimate relationship between advanced technology in the West and the plight caused by its detritus in Asian countries, framing this behaviour as environmental racism. The goal of freeing Chinese and Indian (more recently Ghanaian) e-waste workers from having to labour under toxic conditions was framed as environmental justice.

The early reports on e-waste, and particularly 'Exporting Harm: The High-Tech Thrashing of Asia' (BAN 2002), set the tone of depictions. The following paragraph from the first page of the most cited document for evidence sums up the background to all subsequent fictional and non-fictional adaptations condemning two of the main harms unleashed by e-waste.

> The open burning, acid baths and toxic dumping pour pollution into the land, air and water and exposes the men, women and children of Asia's poorer peoples to poison. The health and economic costs of this trade are vast and, due to export, are not born by the western consumers nor the waste brokers who benefit from the trade. (BAN 2002: 1)

Chen Qiufan's language is not so different – land, air, water pollution, and the economic cleavages between foreigners, Silicon Isle natives – members of the local clans – and waste workers – migrants from the hinterlands working away at measly wages having been lured away by promises of riches – make up the novum, the world-making principle, of *Waste Tide*. Compare the BAN report to the following:

> Everything was shrouded in a leaden miasma, an amalgamation of the white mist generated by the boiling aqua regia in the acid baths and the black smoke from the unceasing burning of PVC, insulation, and circuit boards in the fields and on the shore of the river. (Chen 2019: 31)

Both texts are driven to metaphoric excesses by the same goal of drawing attention to the harm caused by e-waste and provoke action.

There is trash everywhere, 'the waste people' live among 'metal chassis, broken displays, circuit boards, plastic components and wires' (Chen 2019: 31). And the way it is made sense of is by evoking the language of nature likening the piles of rubbish to 'piles of manure, with labourers […] flitting between the piles like flies' (Chen 2019: 31). The overlap between nature and trash is made strong by such a metaphor, the ground of which has been provided by a vocabulary of recycling. According to Graeber (2012), recycling gives a false sense of a

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cycle because of the parallels drawn by the lifecycle of bodies. Yet, production processes make it hard to individuate objects in the same way as bodies. Still, the strong parallels between organic and inorganic bodies continues to fuel the imagination. The above move of likening e-waste to manure and the waste people to flies has the double effect of demonstrating the demeaning situation of people and the humongous quantities of waste – if humans are like flies, then how large are the piles? In addition, the image of flitting flies also plays into the stereotypes of waste people held by Silicon Isle natives, members of the clans, as dirty and pestilent.

Since the report, the threat of e-waste has been presented in the same frame of a violence done by the powerful digitally advanced Western people to the innocent Asian poor. Such strategies do not raise issues as long as they are employed in the pursuit of environmental justice as they had been in the early 2000s (Pellow 2006). However, the problem begins once the movements are successful and such reports become the basis for legal action and persecution as Lepawsky (2018) examined. Various publications, for example, use the picture of a young boy sitting on mountains of electronic discards, originally the cover image of the BAN report. Lepawsky (2018) had traced the picture across the internet, revealing it is the most reproduced image when it comes to demonstrating the ills of e-waste. He argues that the juxtaposition of a mountain of waste with a toddler masks the ways in which e-waste sites become important hubs of revaluation. In an interview, Chen also mentions the effect this picture had on him (Scarano 2019). In the same interview, he also narrates the story of how, despite being a native of Shantou, the nearest urban centre to Guiyu, he only got to know about the presence of the waste processing site two years before writing the novel (Scarano 2019). Thus, his narrative in *Waste Tide*, and the sharp inequalities between the foreigners, Silicon Isle natives, and waste workers reflects both the global and the local effects of postcolonial power relations – US technological supremacy, and the deep class divisions in China.

Scott and Kaizong's visit is occasioned by TerraGreen Recycling's offer to Silicon Isle, for, allegedly, what they 'need is technology and modern management practices to increase efficiency and reduce pollution' (Chen 2019: 26). The details of the offer of a different future, or a potential to redeem this foiled future, are: superior technology, green jobs, 'blue skies and clear water' (Chen 2019: 28). However, negotiations stall as soon as the seemingly beneficial plan is voiced.

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> Interesting. Americans will dump all their trash on another's doorstep and then, a few moments later, show up and say they're here to help you clean up and that it's all for your own good. Mr. Scott, what kind of national strategy would you call that? (Chen 2019: 25)

The reason why negotiations stall is not without a dose of a 'healthy, self-reflective' Orientalism (Said 2003). The dynamic of power is divided between the colonising Americans and the local Oriental despots, the heads of clans who keep politicians and waste people firmly in their hands. The clans have divided the land between themselves and have almost complete control over the waste people who live and work on their 'territories.' These entrenched interests would be challenged if the Americans were to set up shop.

The novel, while based on environmental advocacy narratives, goes further to show why technological advancement, however, cannot be the antidote of environmental racism (Smith, Sonnenfeld, and Pellow 2006). In Chen's vision, the only thing that can be worse than having the US dump its waste in China is to have them trying to clean it up. Chattopadhyay (2022) shows that faltering urban infrastructural systems often become the main world-making principle for science fiction from the Global South. Science fiction narratives from the margins can effectively put forward such a perspective, which challenges both environmental racism and the Messianic technological solutions. The Chinese representative of Silicon Isle, Director Lin's figure stands in the middle of the culture war. He is relatively non-aligned, for he sees the need to improve the conditions of Silicon Isle, yet he is also mired in the toxic entanglement of profits and a wish for a better education for his children. The threat of more waste and toxicity is not a strong enough reason to begin to trust these two foreigners. And not for no reason. In a powerful critique of green-washing as a façade for advancing US imperialist interests, Scott is revealed to have intentions beyond striking a deal. He has the sinister epithet of an 'economic hit man' who had served murky interests from Ahmedabad to Myanmar (Chen 2019: 170). Thus, green recycling offers no salvation, greed is pitted against greed, clan interest against the economic interest of an international conglomerate.

In an effective move, Chen also rescripts the narrative around 'waste people' (Chen 2019: 31). Mimi, a 'waste girl' (Chen 2019: 57) and a lightweight user of digital opiates, gets accidentally infected with the brain function of a long-deceased woman by a cast-off prosthetic device. In the end it turns out that Scott's real mission is to retrieve a prosthetic.

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The action is set against the background of a low intensity class war on the verge of eruption. The 'waste people' are led to a worker's rebellion by Mimi 2.0 the mysterious super intellect leaching off the waste girl's fragile body.

Through giving superpowers to Mimi, Chen challenges the parallels that are often drawn between those who live with waste and capitalism's discards. Capitalism may appear to produce 'wasted lives' (Bauman 2004). But there is a limit to the comparison of living beings with matter out of place (Douglas 1966). For human beings have the capacity to challenge and rearrange value regimes (Appadurai 1986), one of which is through scripting stories that reindividuate lives on the margins and imbue them with meaning and agency (Harrison 2017). On the face of it, Mimi is just as much matter out of place as are the electronic cast offs of high-tech humanity. She is exposed to dangerous substances as there is no law that effectively regulates what happens to electronics with proliferating functions. Scott and Kaizong, harbingers of western corporate interests to turn a profit out of waste, appear to be on a mission to save people like Mimi. However, acquiring superpowers, Mimi becomes the most powerful human in the story causing cataclysmic shifts leading workers to claim justice for themselves.

In a much smaller way, I found in Delhi's informal e-waste markets a similar refusal of victimhood by e-waste dealers. My interlocutors may not be leading a workers' revolution but neither are they the hapless victims of foreign capital they are often portrayed as. Through their work of revaluing e-waste, there is a complicity of e-waste dealers that makes it difficult to them to take a political stance against the conditions of their lives. However, the sense that technological development would deepen environmental injustice rather than solve it was widely palpable in my fieldsite, too.

The Toxic Time of a Landscape Ruined by E-Waste

It is night-time and Chen Kaisong and Mimi are on a date in a boat on the toxic waters of the Silicon Isle lagoon. The depressing scene is suddenly lit up by the 'blue-green LED lights' of jelly fish that breed in the toxic, warm waters of the nuclear power plant discharge and glow in the sea 'like the trembling, whirling starry sky under Van Gogh's brush' (Chen 2019: 79). The moment's beauty is destroyed again as the power plant sucks the jelly fish in with the water, and they clog the pipes. The moment of the date passes, and the reader is plunged back into the decay and breakdown of technological advancement and human society, and the dead

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jelly fish become a metaphor for abandonment. Mimi asks, '"What kind of parents leave their babies in such a dangerous, poisonous place?"' thinking about the jelly fish without realising that she is similarly a victim of the same place.

The jelly fish present a remarkable moment when, through a rich and horrific description, a ruined landscape is revealed in which life prevails. The jelly fish metaphor presents a literary device through which this world, altered beyond repair by toxicity, becomes even aesthetic and appealing. This is the world that will be the future of the present day, the future contained in present accumulation of giant piles of e-waste. It is a thought experiment that allows us to think of our present, of what it would appear like as a quaint past, along with the hope that perhaps there is still time to avoid the horrendous future. Chen thus joins SF writers who claim to write, not to make prophecies, but to warn against certain possible outcomes, as he confirmed in an interview (Scarano 2019).

Chen Qiufan spends considerable time leading the reader into the scene and thus building up what the world might become if the havoc wreaked by e-waste were allowed to go on. Elsewhere, the surface of dark green ponds is covered with polyester film, women do laundry 'in the black water with their bare hands, the soap bubbles forming a silver edge around floating mats of duckweed' (Chen 2019: 31), and the air is pungent all-around Silicon Isle. This is only one step further from the kind of images that had spread about Guiyu in which water foams and waterways are clogged up with the discarded plastic frames of computers.

The role of waste in terms of setting up the time of the story is twofold. In the much-recorded mode, waste is a relic of the past and thus garbology, the study of waste from worlds that have passed, becomes relevant (Rathje and Murphy 2001). While waste often emphasises the pastness of materials (Viney 2014), e-waste seemed to have a futuristic quality about it from the beginning of its conception as a problem. This futurity, together with the wonder produced by the aesthetics of chemically polluted landscapes, indicates a re-enchantment with the world, from where the e-waste problem originates. Landy and Saler (2009) argue that contrary to Weber's prediction that science and rationality will produce a disenchantment with the world without magic, the secular age offers much occasions for re-enchantment. Their dialectical approach 'posits modernity itself as inherently irrational, a mythic construct, no less enchanted than the myth it sought to overcome' (Landy and Saler 2009: 4). The scene with the jelly fish offers a particularly potent example of a dark, toxic re-enchantment through scientifically explainable beauty.

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Yet, scientific explanations only go so far. Because waste continues from the past along with a place's inhabitants, those who live with it become habituated to it beyond recognising its strangeness. It is through the inexperienced gaze of the two outsiders, Scott and Kaizong, that commonplace scenes and sights for locals and 'waste people' produce a moment of wonder. Their bodies provide the occasion to learn of what a toxic wasteland feels like on a visceral level. Kaizong's body has the hybridity of being from there and at the same time being from abroad. Through his eyes and senses we learn of the changes that had radically distorted the place from the rural bucolic idyll of his childhood to the land laid apocalyptic by e-waste in the present. Scott is not from the area but has experienced many like it, thus his body allows for lateral comparisons to other waste sites where he had gone on previous assignments. Due to his experience, he knows better than the locals – those who had grown accustomed to the fumes and acidic wafts – a knowledge which pushes him to wear a facemask. He is like the environmental activists and reportage writers who enter zones of pollution to see what it is like and then leave when the atmosphere proves unbearable or the job is done. Such transferability rests on the assumption that there is continuity between one wasteland and another.

Having gotten to know about Guiyu, Chen travelled to the site, and the novel *Waste Tide* is the result of that experience. 'Unfortunately, I could not stay for any longer. My eyes, skin, respiratory system and lungs were all protesting against the heavily polluted air, so I left, utterly defeated. I put all my *real* feelings and experiences into that novel' (Scarano 2019, emphasis added). The story of heavy pollution experienced by the author's body is again an important trope in reporting on e-waste's toxicity. A visual example of this can be found in the Australian SBS network's video (SBS Dateline 2011), where the foreign journalist quizzes a local in Accra, Ghana, about the effects of the thick black smoke. While the local shoe seller stands his ground smiling as the black smoke turns with the wind and envelopes him, the foreign journalist is forced to retreat. There is a contradiction between the outsiders' acute reactions upon entering such spaces, and those of the locals whose bodies had become habituated to the toxic urban cocktail (Senanayake and King 2019).

Cutting through locals' habituated responses it is thus through the bodily and mental reactions of Scott that we get the greatest sense of ruination. While Kaizong, who has recently returned to Silicon Isle, sits in a restaurant and excitedly explains how the food of his childhood is made, Scott is concerned about the risk of heavy metals in his food. Due to the suspicion, he chooses the plainest options of rice porridge and soup. He also must fight the

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urge to get his field-testing kit out, because augmented-reality technology cannot be of use in determining the composition of things – food, air, water, and soil – due to a politically controlled bitrate. Toxic contamination is more of an uncanny feeling than concrete knowledge based on the knowledge of other sites. Yet, there is no need for its substantiation because the suspicion is enough to generate the feeling of estrangement that creates the atmosphere of science fiction.

As with waste-strewn toxic landscapes today, one way to demonstrate the severity of degradation is by quoting numbers that demonstrate pollution levels. In the museum building where Scott is shown the past of Silicon Isle, the figures that would stand for pollution are present in their absence:

> [The museum] was infused with a false, shallow technological optimism. In this building, there was no Basel Convention, no dioxins and furans, no acid fog, no water whose lead content exceeded the safe threshold by 2,400 times, no soil whose chromium concentration exceeded the EPA limit by 1338 times, and of course nothing about the men and women who had to drink this water and sleep on this soil. (Chen 2019: 22)

At the same time, Kaizong happens to know that 'incidence of respiratory diseases, kidney stones, and blood disorders among inhabitants of Silicon Isle was about five to eight times higher than in surrounding areas' (Chen 2019: 50). Then, there is a high percentage of cancer in the villages with one in every family; but how does one, as part of the general population, know what counts as high? Quoting numbers and safe thresholds have long been an important tool in creating a sense of magnitude in environmental destruction. So much so that they often end up with nothing more than 'confusing information dumps' in environmental writings (Morton 2018: xiii). In Chen's novel the numbers do not need to be understood, rather they are included to invoke the sense of being overwhelmed.

At the official reception dinner in honour of Scott, he is served a 'wild lobster' with three claws, and a patched-up carapace to hide the origin of the paranormal third limb (Chen 2019: 23). The strange things Scott and Kaizong notice have a looming threatening effect. At the same time, the image of the lobster with an abnormal anatomy creates an aesthetic that allows the reader to take in this strangely familiar world as a warning of what is to come.

However, the threat of undisentangleable hybridity is perhaps the most threatening of all the horrors to come. A dead dog continues to wag its tail when someone approaches him, a

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sight which creeps out Mimi. The fact that he still wags his tail in death, casts doubt on the relationship she had with the dog while he lived – was its friendliness merely programmed into an eternally wagging tail? In a gesture to utter dystopia, the dead chipped dog exposes the horror of Latour's hybridity (1993), which is in stark unsettling contrast to Bhabha's empowering hybridity of the postcolonial condition (Bhabha 1994). By bringing electronics one step closer to being integrated into the body, making bodies resemble flesh replenishable by bodily fluids, the writer puts present day electronics consumption in a different light. A US army reserve robot arm, operating on reserve batteries with three degrees freedom is severed from the body that would operate it, and crushes the head of one of the waste people. In each of these moves the writer offers a glimpse of the apocalypse that present-day reliance on digital technology and electronics is about to produce. As cognition and bodily function are increasingly bound up with digital devices, mankind is marching towards the time of *Waste Tide*. This time is perhaps even less far ahead than even Chen imagined, with Elon Musk's most recent brain machine interface experiments on chipped pigs (BBC News 2020).

This dark re-enchantment despite appearances has much to do with the wonder channelled by Thoreau in *Walden* (Thoreau 2004), where the context is the absolute degradation of nature. As Nightingale (2009) argues, wonder for Thoreau is caused by those moments when scientific explanations leave a sense of limited knowledge. As with Thoreau's wonder, rooted in 'broken knowledge,'(Nightingale 2009: 15) the threat of toxicity is most effective because there is only so little that science can explain about its effects. Beyond that, there remains the eerie feeling of presence.

Re-Enchantment with Apocalyptic Wastelands

In Delhi I was faced with recurrent denial on the part of the workers of the effects that pollution exerts on them. I found that workers, those most affected by the e-waste trade and dismantling, rather than being victims of machinations by waste brokers, are active participants in producing pollution. Their complicity meant that when I pressed them on the issue, they explained away my interest and concern through the fact that my body was different from theirs. According to them, given their long-term exposure they were less affected by pollution, than my previously unexposed body. I interpreted this contradiction both as an indication of a tacit acknowledgment of toxicity, and a powerful question posed to outsiders, report makers, and writers, questioning their narratives that they had written having

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visited such landscapes for merely a few hours. The experience also foregrounded the problems of representation and of how reading such texts effected my perception when I started fieldwork.

One of the reasons behind conceiving of this article is to think about the question of how toxic wastelands and attempts at environmentally and socially responsible recycling are represented. Through this analysis I intend to cut through the repetition of accepted facts about e-waste and get to 'the truth,' by which I refer to Fassin's (2014) useful distinction between 'reality' and 'truth.' For Fassin, these terms signal the difference between fiction and ethnographic modes of writings, where ethnography tries to get at both. The first is that which is 'horizontal, existing on the surface of fact' while the latter is 'deeper, sharper, more precise than much of what takes place in life' (Fassin quoting Nussbaum on literature 2014: 41). It is in the hope of finding a language to get closer to this kind of truth that I invoked science fiction and environmental reports. Environmental advocates' narratives may try to describe reality to push people to action, but their reality becomes warped by the emotive employed. At the same time, such descriptions need to be re-examined when governments start framing laws to solve the e-waste issue. This section examines the fictitious effects of environmental narratives.

With an increasing awareness of the irreversible harm caused by humans to the planet, the body of literature that imagines apocalyptic futures based on today's prospects is also on the rise. Critical engagements celebrate 'the power of fiction' (Fassin 2014: 50) in conveying 'the truth' of a world irrevocably altered by human activity. Despite such celebrations, in *The Great Derangement*, Amitav Ghosh blames 'serious fiction' (2016: 64), particularly the novel, for failing to lead the way in forging powerful imaginaries about climate change that would help humans grapple with the cataclysmic shifts that are happening in the earth's biome. Strikingly, Ghosh leaves unexamined the power of science fiction to create imaginaries, as well as advocacy narratives. Perhaps this is the side effect of his prejudice for highbrow literature. For the development of the bourgeois novel, he argues, staying within the realm of plausibility has been crucial. Thus, bringing back descriptions of extreme weather events may appear too much like divine intervention in previous genres. Ghosh also seems to miss those aspects of global environmental crisis, which are unfolding at an imperceptible pace and not through extreme weather events. To me particularly interesting are these fictions that try to depict what Nixon calls 'slow violence,' by which he means that, which 'occurs out of sight, a violence of delayed destruction that is dispersed across time and

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space, an attritional violence that is typically not viewed as violence at all' (2011: 2). The pace of slow violence often makes changes imperceptible to those who live with it, requiring the use of 'epistemological alliances' to understand the full scale of degradation (Vorbrugg 2022: 454-6).

Thus, science fiction imagination fulfils a crucial function by including the relationship between cognition and the estrangement that Suvin (1979) understands to be the main characteristic of this literature. Such an estrangement, for example through descriptions of toxicity, is required to draw attention to the uncanny wonder caused by planetary changes. Andersen examines the narrative templates that underlie the relatively new genre of climate fiction. Such an endeavour is important, for 'global warming cannot be reduced to a chemical process in the atmosphere' (Andersen 2020: 2). However, cli-fi is often restrictively defined as a genre that has anthropogenic global warming as its primary worlding principle. Yet, Anthropocene thinking embraces the much wider capacity of human beings to alter the planetary biome in more ways than one (Harvey, Krohn-Hansen, and Nustad 2019). This capacity also includes wastes leaking into the biosphere.

Swanson et al. (Swanson, Bubandt, and Tsing 2015) argue that Anthropocene thinking, which recognises the human as a geological force shaping Planet Earth, is already science fictional. On top of the 'structure of feeling' (Williams 1977: 132-4) of the planetary age, science fiction provides a 'diagnosis, a warning, a call to understanding and action, and – most important – a mapping of possible alternatives' (Suvin 1979: 12). Chen (Scarano 2019) joins sociologists Milner and Burgmann (2020) and anthropologists Jensen and Kemiksiz (2019), in extolling science fiction's importance as a genre that presents the 'truth' of the day and provides space for imagination. Especially important is the fact that sci-fi does not predict but provides affectively fleshed out scenarios based potentially on current states of development in science to warn of possible disastrous futures.

In addition, science fiction and its subgenre cli-fi is also an 'imaginative' entry point to thinking across worlds – a project that has also been at the heart of anthropology (Jensen 2018; Jensen and Kemiksiz 2019). With a growing interest in anthropology toward science fiction, a space is opening to treat fictional narratives within the same frame as accounts of the real world (Jensen 2018). I take on the suggestion that anthropology may bring within the same frame of analysis science fiction narratives and ethnographic data of the Mekong delta to arrive at the truth of the real toll of environmental degradation (Jensen 2018). For anthropologists, science fiction provides a parallel to the ethnographic project of imagining

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what it must mean to live in radically different settings. The science fiction device of estrangement helps conceiving of the present as if already telling of what will come (Wolf-Meyer 2018). *Waste Tide* with its emphasis on the increasing hybridity of biological substances and electronics may be orienting our thinking in the present day to prepare for what is to come. However, even more importantly, the novel provides an affective depiction of the reasons why e-waste has become such an enchanting waste form to work with.

As the scene with the jelly fish demonstrates, the cognitive estrangement of science fiction's exaggeration of scientific observations produces a dark, toxic re-enchantment. This sense of wonder at the strangeness of the world is in turn produced by the realisation that there is a limit to how much scientific explanations may help us apprehend the real world. Saler (2009) argues that Wittgenstein in his later philosophy turned to mass culture and genre fiction for the experimental space it provides for finding sources of an enchantment that is compatible with secular rationality. It is in this sense that I turn to science fiction, and the subgenre of cli-fi, for it highlights how waste and the specific toxic wastelands produced by e-waste become the source of such re-enchantments. As Saler argues, re-enchantment works like the gift in fairy tales, which is a treasure within the magic castle but appears as an unalluring piece of metal outside of it. Upon reading apocalyptic representations such as environmental advocacy reports or sci-fi like Chen's *Waste Tide*, the informal e-waste market in North-eastern Delhi in my eyes turned into an enchanted landscape saturated with eerie substances and toxicants.

Conclusion

In this article I traced how science fiction imaginaries may move in and out of non-fiction narratives. Having started with the narratives of the environmental advocacy movement, I showed how the growing piles of toxic e-waste became a very effective future world building principle in the deft hand of Chen Qiufan. These effects have been well explored and described in the past twenty years since the publication of the BAN report 'Exporting Harm' (2002). Through reading science fiction with an ethnographic gaze, it became possible to examine in one frame e-waste recycling sites and to modes of environmental advocacy writing about them (Jensen 2018: 196). My intention was to investigate the ways in which the real world leaks into fiction (Jensen 2018), while suggesting that in turn fiction also leaks back into the real world. How this operates was demonstrated through tracing the aesthetics

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of pollution and biologically altered non-human life forms. The tropes of 'information dumps' (Morton 2018: xiii), environmental racism, and e-waste's undisentangleable hybridity from one genre to another are deeply rooted in present day concerns about reality.

The elements of futurity used by Chen help reveal the imaginative and fantastic elements in the original science and advocacy narratives. Furthermore, the harms of e-waste, which unfold at the pace of slow violence provide an occasion for dark, toxic re-enchantment with the world. Having done anthropological research in a toxic place, I found that the representation of e-waste sites as toxic wastelands significantly altered my perceptions on the ground. Casting an ethnographic gaze on *Waste Tide* helped me understand the source of such wonder and awe. E-waste has been made into a charismatic waste through affectively effective narratives, which were successful at pushing the environmentalist agenda (Liboiron 2016). However, on the ground they created a gap between perception and cognition, providing a shaky ground for government policies in trying to solve the e-waste problem.

My concern has been with the relationship between the worlds of science fiction and what is termed in quotation marks 'real.' Thus, thinking anthropologically about science fiction is also 'an effort to replace an understanding that sees "real" and "fictional" worlds as fundamentally, ontologically distinctive, with images of looping, recursive implication, lateral movements, and blurred zones of interaction' (Jensen and Kemiksiz 2019). In *Waste Tide* the difference between the fictional and the 'real' world, like in many other science fiction books, is just enough to produce an estranging effect. This estrangement is produced through the presentation of the same world in different times, where the difference in time is produced through the environmental and social effects of growing mounds of e-waste.

In this way, environmental reports appear as primary spaces where imaginaries about the future are produced. Thus, by highlighting the centrality of environmental advocacy reports to producing imaginaries in the future, it becomes possible to speculate about the effects of science fiction on the imaginaries that feed into Anthropocene science.

Notes

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