

## No Windup: Paolo Bacigalupi's Novel Bodily Economies of the Anthropocene

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**Abstract:** Just as it looms large in contemporary consciousness, the figure of the Anthropocene dominates the speculative fiction of the Hugo and Nebula award winning author Paolo Bacigalupi. The post-apocalyptic and post-capitalist settings common to Bacigalupi's oeuvre do not merely seek to depict unsettling Anthropocene landscapes. Rather, Bacigalupi's speculative fiction vicariously demonstrates the crucial role that embodiment plays, and will continue to play, in determining the impact of the Anthropocene upon human life. Our bodies, his works propose, are both the fabric upon which the horrors of the Anthropocene will be written, and the means by which we can learn to adapt to the rigors of our rapidly shifting planetary environment. As such, Bacigalupi's works propose a range of novel bodily economies, which are just as much potential alternatives to the damaging neoliberal ideologies of our contemporary world as they are statements of impending social upheaval and widespread human suffering. Through the textual analysis of a cross-section of Bacigalupi's works, this article demonstrates his emphasis upon the urgency and importance of our own societies learning to construct and implement alternate economic paradigms.

**Keywords:** Anthropocene Economics; Embodiment; Science Fiction; Paolo Bacigalupi

*If we continue to ignore the data that science provides us, if we continue to drive wedges between ourselves... if we continue to promote ignorance instead of competence, hatred instead of compassion, short-term profit over long term prosperity, I suspect our children will look at the broken worlds I've imagined and laugh at all of them, because these ravaged stories that I've created won't look bad to them at all.*

*They'll look like utopias.*

(Bacigalupi, 2017)

In the Anthropocene epoch,<sup>1</sup> it has become imperative to interrogate the value judgments that underpin our societies. Amitav Ghosh, for instance, alleges that the genre of science fiction is fundamentally misguided since, he reasons, literature can only succeed in communicating the import and immediacy of climate change via diegetic worlds "set in a time that is recognizable as our own" (2016, p. 73). Whilst Ghosh queries the enduring value of speculative fiction on the grounds that the Anthropocene is "not an imagined 'other' world apart from ours" (2016, p. 72), this article contrastingly seeks to demonstrate the relevancy of narratives set in futures ulterior to our own present. As I shall proceed to demonstrate, the speculative futures of the American author Paolo Bacigalupi succeed in communicating the immediacy of the Anthropocene through an embodied paradigm. Horrifying Anthropogenic phenomena, such as the devastating Australian bushfires of 2019 and early 2020, and the

continuing devastation of the Amazon rainforest, are increasingly frequent and escalating disasters that can be construed through the lens of our own bodies.

As Emma Rees states, "language fails in the face of embodiment... the visceral rapidly surpasses the linguistic" (2017, p. 5), and the embodied subjectivity of the human body therefore comprises a more effective vehicle for communication than language itself. Through the textual analysis of Bacigalupi's oeuvre, I demonstrate that his works gesture beyond language in precisely this manner, via their figuration of novel bodily economies. By situating otherwise distant and unfathomable visions of the Anthropogenic apocalypse in the bodily realm, Bacigalupi makes these alarming visions viscerally contemporary. Bacigalupi's novel bodily economies expose the insufficiencies of familiar language in describing our Anthropogenic present and future, and resituate the body and

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its phenomenological apparatuses as a principal site of Anthropocene communication.

However, the economic component of Bacigalupi's speculative bodily economies is just as crucial, as is patent in discourses about the Anthropocene. Naomi Klein elucidates that in the drive to reverse ever-rising carbon dioxide emissions, "our economic system and our planetary system are now at war... our economy is at war with many forms of life on earth, including human life" (2015, p. 21). As GDP-led economies are anathema to environmental pursuits, Klein is unequivocal that "the measures we must take to secure a just, equitable, and inspiring transition away from fossil fuels clash directly with our reigning economic orthodoxy at every level" (2015, p. 94). Yet, in long-term economic projections that account for the impact of the Anthropocene on world economies:

climate change promises almost no global growth; in much of the world hit hardest, in fact, negative growth... an impact much more severe than the Great Depression; it would be ten times as deep as the more recent Great Recession... And it would not be temporary.

(Wallace-Wells, 2019, p. 166)

These projections suggest that, in the coming decades, economies based on GDP growth will at first stall, and then shrink uniformly. In this scenario, amidst endemic fiscal uncertainty, economic ideologies of progress will become absurdly irrelevant. Accordingly, new economic conceptions and metrics will prove necessary in the Anthropocene, either as a result of proactionary measures, or compulsorily, as a means of survival upon a scarcely inhabitable planet. If human life is to persist through the Anthropocene, our embodied modes of existence will inevitably metamorphose as a result of altering planetary and economic conditions to an as-yet undetermined extent. By envisioning this ostensibly inexorable shift in embodied consciousness through a diverse range of novel bodily economies, Bacigalupi's novels detail a range of post-capitalist economic systems in an Anthropogenic paradigm.

As Kate Raworth underlines, no matter how we address the complexities of climate change, "one thing is clear: economic theory will play a defining role" (2018, p. 6). Specifically, she states that the twenty-first "century needs economic thinking that unleashes regenerative design in order to create a circular—not linear—economy, and to restore humans as full participants in Earth's cyclical processes of life" (2018, p. 29).

Bacigalupi's speculative bodily economies foreground humankind's embedded role within the Earth's ecologies, demonstrate the pitfalls and opportunities of novel economic paradigms, and depict the difficulties of implementing alternate economies as a workable alternative to GDP-led capitalist economies. Bacigalupi's speculative figuration of bodily economies therefore delineates a range of ulterior post-capitalist economies, while concurrently employing the viscerality of bodies to ground grotesque Anthropogenic visions within an intelligible paradigm. As this article demonstrates, via analyses of his short stories "The Pasho" (2004) and "Pop Squad" (2006); his novels *The Windup Girl* (2009) and *The Water Knife* (2015); and his novella, *The Children of Khaim* (2018), novel bodily economies are pivotal components throughout Bacigalupi's oeuvre.<sup>2</sup>

**"The Pasho" and "Pop Squad"**

The diegetic worlds of "The Pasho" and "Pop Squad" are ostensibly unrelated, and as such, their novel bodily economies are strikingly dissimilar. Importantly, the post-apocalyptic world of "The Pasho" is overshadowed by "the bones of the old city... a tangled mass of steel and concrete ruin, silent and abandoned for more generations than even the Jai could remember" (p. 69). As the subjective accentuation of this scenic description underscores, its characters' understandings of history, and of their lifeworld, are resolutely embodied. Symbolically, "the old city stood silent" (p. 83), as the readily accessible knowledge of our technocultural age is now largely inaccessible. All surviving knowledge predating the collapse of their ancestors' society survives only in the bodies

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of individuals, and so the Jai and Keli peoples can only comprehend their lifeworlds within the parameters delimited by their own phenomenological experiences and cultural referents. All knowledge of our pre-apocalyptic world is now deliberately incarcerated within the bodies of a small number of individuals, such that the hubristic mistakes of our own age are not repeated.

The Jai and Keli peoples, respectively, populate two extremes within a devastated planetary landscape—an arid desert, and a flooded “water city” (p. 77)—both of which are intensely hostile to life. As Elizabeth Kolbert emphasizes, paleontological accounts of Earth’s prehistoric history reveal that whenever “the world changes faster than species can adapt, many fall out. This is the case whether the agent drops from the sky in a fiery streak or drives to work in a Honda” (2014, p. 266). On aggregate, contemporary societies have an immensely significant impact upon our planet, an impact which is greatly unfavourable to the continued existence of our species. Human “activity has transformed between a third and a half of the land surface of the planet” already, and as a result, “those of us alive today not only are witnessing one of the rarest events in life’s history, we are also causing it” (2014, pp. 108, 7-8). In “The Pasho,” the acute necessity of the Jai and Keli peoples’ wariness of their ancestors’ ruinous heritage, and their simultaneous avoidance of re-enacting their ancestors’ short-sightedness, is accomplished via the titular bodily economy of controlled knowledge.

The intellectual Pasho caste remains excruciatingly aware that their ancestors’ societies, in spite of their superior scientific and technological prowess, were decimated as a result of their forebears’ callous attitudes towards both their environment and their embodied situation. Their novel bodily economic paradigm accordingly ensures that technological development is carefully controlled and mediated, as it would only take a “few knowledgeable men” to “sweep the planet clean of all that remains” of human life (p. 88). The Pasho are consequently described

as “dandelion seeds... palms... roots” (p. 82); as such naturalistic imagery emphasizes, the surviving humans in the story have been forced to comprehend their embodied positionality as bodily agents within complex ecosystems which extend beyond their own comprehension.

The Pashos’ economic mission is centered upon the principle that “*Slow change is a virtue*” (Bacigalupe, 2010, p. 71) in the restoration of civilization. They readily acknowledge that their “*work is already generations long, and will be many more generations before it is complete*” (p. 89), and thus transform their own bodies into vessels of communal knowledge. The tattoos of a Pasho body are:

hooks into the core of Pasho knowledge, each one a memory aid and mark of passage. They covered his body in the spiking calligraphy of the ancients, sometimes a mere symbol to hook a bound tome’s worth of knowledge, something to recall, and ensure that all Pasho trained later might have access to an unchanging spring of wisdom. (p. 72)

Tattooed Pasho bodies literalize the distressing reality that first and foremost, the human traumas of climate change will ultimately be inscribed on the bodies of our descendants. Since “tattoos operate as semiotic devices that render entire bodies as readable texts” (Barron, 2017, p. 60), Pasho bodies recall that our species’ ecological short-sightedness will be our enduring legacy, inscribed on the bodies of successive generations.

The Pasho ensure that the knowledge of their societies is intractably tied to their bodies and the land that they live upon, thereby guaranteeing that societal developments are always posed in synergism with embodied experience. Their novel bodily economy comprises a mode of redress to the expansionist mistakes made by their ancestors, who engendered and exacerbated the Anthropocene by refusing to acknowledge the embeddedness of human existence within our planetary environment. By inscribing the knowledge of their society in the form of tattoos,

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Pasho bodies become instruments that surpass the vagaries of individualistic hubris and implicate themselves within their agential role as mediators of ecological reparation. Just as the tattoos of elderly Pasho are invariably “faded into the folds” of their skin (p. 77), embodied knowledge is the only valuable form of knowledge in the post-apocalyptic landscape that they strive to rehabilitate.

Tattoos serve as a constant reminder of the collective Pasho drive to create an equitable, sustainable, and ecologically-conscious economic system out of the ashes of their ancestors’ individualistic greed, which debased the futures of unborn generations. Subsequently, the Pasho guardianship of future generations resonates strongly with the rhetoric of worldwide school and student climate strikes—such as Fridays For Future—which have drawn significant attention to environmental issues over the last two years. As Greta Thunberg exhorts, “we will never stop fighting for this planet, and for ourselves, our futures, and for the futures of our children and our grandchildren” (2019, p. 53). As she emphasizes, humans have a tremendous responsibility to future generations to enact sustainable economies. As in “The Pasho,” these auspicious school strikes have transformed bodies into powerful political agents, and demonstrated that, in a profound role reversal, the young are far more prepared to act as conscientious custodians of Earth than their elders have ever been.

Meanwhile, children are implicated in the novel bodily economy of “Pop Squad” in a drastically different manner than in “The Pasho.” Set in a future Canada which is almost entirely underwater as a result of drastic sea level increases, the human population of “Pop Squad” has become immortal following the advent of the drug, rejoy. As a summary measure to prevent overpopulation, procreation has been outlawed. Children are consequently illegal, and they are methodically exterminated by licensed pop squad agents. The culling of infants ensures that the adult members of the story’s stationary society have sufficient means of nutrition and space to live comfortably without encountering resource scarcity. Their

institutionalized practice of annihilating life that they deem dispensable draws a conspicuous parallel with the widespread maceration of infant chickens in our reality, which proves cost-effective since male chickens “do not have any use in poultry production” and so “are culled after hatching” (Reithmayer, 2019, p. 4539). In either instance, an anthropocentric hierarchization of life leads to the normalized slaughter of organisms considered surplus to requirements. The declarative tone of one passage where the first person narrator of “Pop Squad” exterminates three children at point blank range is conspicuous:

Their heads kick back in successive jerks, bang bang bang down the line, holes appearing on their foreheads like paint and their brains spattering out the back. Their bodies flip and skid on the black mirror floor. They land in jumbled piles of misaligned limbs. (p. 139)

His job is entirely commonplace to him, so much so that his “brain takes a vacation and” his “hands do the work” reflexively (p. 141). Although he finds it “depressing to come into these scenes” (p. 137), that is only because he finds it repulsive to come into contact with the pregnant mothers. As when he remarks “it’s against procedure to waste the kid in front of the mother” (p. 148), the gruesome viscera of the practice are rendered in detached, quotidian terms. Bacigalupi thus implies that the narrator is as completely habituated to the regime as we are to our own everyday lives—despite the damage we do daily to our planet, and to its future inhabitants. As readers may infer from the numerous passages of the text which depict the slaughter of children in explicit terms, by perpetuating environmentally exploitative economies, contemporary societies are killing their children, too, just indirectly. Just as the society of “Pop Squad” has killed the future of its children in ecological terms, so it continues to affect their murder in very literal terms as well.

These infant corpses subsequently “end up as compost” (p. 147)—a perverse parody of the ineffectuality of contemporary recycling initiatives in societies governed by consumerist ideologies. As in our

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own societies, consumerist lifestyles persist despite the rising seas; the text's characters are significantly more concerned with "color coordinating and classy appliances" (p. 139) than with the tide which threatens to swallow their cities. Pointedly, their society has only implemented climate change "mitigation" (p. 142) measures, rather than undergoing systemic economic change. Yet, since the predilections of the Anthropocene lie beyond human control, they have been forced to adopt a novel bodily economy through necessity in the form of wholesale infanticide. Their rampant materialism and individualistic ideologies directly necessitate their policies of extermination, this violence facilitating their conversion into immortal consumers. As Bacigalupi suggests, the willful ignorance of capitalist regimes is written violently upon the bodies of their dispossessed.

In stark contrast with the novel bodily economy of "The Pasho," its hegemonic counterpart in "Pop Squad" is a resounding failure; it repudiates phenomenological accounts of embodiment, and hence occludes the primacy of lived bodily experience. Poignantly, however, the physicality of the text's fugitive mothers and their children is evoked consummately by Bacigalupi's rendering of them in haptic, olfactory, and auditory terms. As the narrator's senses are simultaneously affronted by the "shit smell," the "piercing shrieks," and the "cereal crunch" beneath his feet, the submersion of his perceptions within the extremely visceral quality of the scene emphasizes that the extermination of these infant bodies is fundamentally implicated in his own bodily existence (p. 138). Bacigalupi's rendering of the parents who choose to sacrifice their own immortality to give birth to "dumb terminal kids" (p. 147) in explicitly visceral terms therefore comprises an advocacy of their resistance to the abhorrent hegemonic bodily economy of the story.

Likewise, the narrator soon begins to notice that the "babies are everywhere, popping up like toadstools after rain" (p. 154). The naturalistic quality of this metaphor underscores the text's critique of anthropocentrism. Although the humans of "Pop Squad" are entirely absorbed with their own lives, the text con-

trastingly demonstrates the incontrovertible embeddedness of humans in nature. Despite it literally killing them, significant numbers of men and women in the text's society choose to quit rejuo treatments in order to procreate, and "so two people kill themselves for a kid" (p. 159) time and time again.

As Bacigalupi implies, their collectivist rebellion comprises a far more naturalistic bodily economy. Although the narrator has been unable to sustain an erection during foreplay with his immortal partner, while in the presence of a pregnant mother soon after, he "can barely sit because [his] pants are so tight" (p. 157). "Pop Squad" thus posits the pregnant body and that of the child as modes of resistance against the neoliberal ideologies of its diegetic world and evinces a firm belief in the redemptive possibilities enclosed by natural cycles of life. Despite their futuristic settings, the underlying ruminations of "The Pasho" and "Pop Squad" on the generational violence of capitalist systems succeed in creatively making the impact of economic policy in the Anthropocene resonant with readers.

### *The Windup Girl*

The long-term impact of short-sighted, contemporary economic policies also dominate Bacigalupi's debut novel, *The Windup Girl*. Nevertheless, as Heather J. Hicks asserts, in post-apocalyptic novels, rather than "being framed exclusively as the origin of environmental destruction and rationalized terror, modernity also now seems a potential basis of environmental solutions and a bulwark against the voracious energies of neoliberal capital" (2016, p. 171). Such a tense oscillation—between the entrenched economic systems of capitalism and new bodily economies—pervades every aspect of *The Windup Girl*. The hegemonic bodily economy of the novel's future Thailand is set in opposition to our familiar GDP-led economic policies—the collapse of which has precipitated a global economic contraction—but the country nevertheless struggles to evade the enduring thrall of capitalist dogma.

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Their ecologically conscious bodily economy centers upon the biological basis of calories and is underpinned by an understanding that even “*the richest and the most powerful are only meat for cheshires in the end. We are all nothing but walking corpses and to forget it is folly*” (Bacigalupi, 2010, p. 396. Original emphasis). One important principle of the Thai calorie economy is a post-anthropocentric understanding that human bodies are not sacred, but part of a circular and profoundly interrelated ecosystem. This economic transformation proves a workably straightforward solution to resource scarcity:

Yellow cards crowd around the tower entrances, Malayan Chinese men and women trying to look hopeful as they wait for labor opportunities that have already faded in the heat of the afternoon. And yet they still try to look vital, try to show their bony limbs have calories to spare, if only someone will allow them to burn. (p. 193)

The cost of labor is now measured by the “joules” (p. 142) it expends, providing a direct means of recompense for workers’ labor—a more logical means of payment, oriented towards subsistence, as opposed to profit. By stressing the primacy of the connection between sustenance and labor, the calorie economy discourages dogmas of “Money at any cost. Wealth at any price” (p. 182). It is an appropriate economic paradigm for the period of Contraction that has resulted from the ill effects of climate change, fossil fuel scarcity, and unremitting waves of genetically engineered epidemics. In place of the investment and loan of capital, amphetamine sticks are used by workers “to keep working, to burn calories that they do not have” (p. 154), their cost repaid after the investment has been earned back. Accordingly, the priorities of the novel’s characters have been distilled down to the fundamentals of subsistence, and hence, although monetary considerations are still important, they are no longer an economic object in and of themselves.

As a result of fossil fuel scarcity, calories are now the direct energy source for the few utile technological devices. For example, if Thai citizens wish to ride

a powered boat, they must hand crank the engine themselves; for the electrical supply of their emergency command center, the Trade Ministry employs “megodont teams in the basement” (p. 434). Technology now provides no easy solutions, as its use always requires either the user’s labor or their purchase of outsourced labor. When a worker demonstrates the process of winding energy into a kink-spring for storage, the tactility of his labor is patent; he “leans against the pedals” and his exertion dampens his “brow” with sweat (p. 200). As this implies, the inexorable directness imparted to economic transactions ensures that all labor and its products principally remain bodily phenomena. By fixating on this biological dynamic, the Thai Kingdom obviates the expansionist ideologies which precipitated the Contraction.

When the entrepreneur Hock Seng visits an unusually affluent man, he is treated to the absurd extravagance of transportation via elevator. This familiar article of technology must, however, be powered by a work group of “ballast men” (p. 194), who have been employed to counterweight the lift. They will be paid for the energy they have burned over the course of the day—running back to their starting position at the top of the shaft—with sufficient currency to purchase replacement calories. Fittingly, Seng is only granted this prestigious extravagance to encourage him to supply the Dung Lord with a remarkably efficient prototype kink-spring, capable of storing a “gigajoule” (p. 197) of energy. As both parties acutely understand, this immensely innovative technological development holds the potential to reverse the Thai Kingdom’s fortunes. Since the Kingdom’s prosperity is closely tied to its populace’s bodily productivity, and its ability to stockpile its labor output, the calorie economy demands that humans are conscious of their positionality within the planet’s ecologies, and greatly streamlines the complex outsourcings of labor characteristic of capitalist economic systems.

In a world of such acute scarcity, their bodies are all that the Thai people have left, and so they readily comprehend the need to act in a symbiotic manner with their planet’s ecologies. Hence, when the city’s

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methane supply is temporarily disconnected, the “strange silence” that “has settled over the city” (p. 469) suggests that all of its citizens understand the severity of the situation with absolute clarity. They cannot cook without the methane supply, and so the city will starve unless the supply is reopened. As Nancy Tuana robustly illustrates, “corporate wealth was in turn grounded in both racism and environmental exploitation”, and hence, “No study of the causes of climate change that overlooks the complexity of such lineages will fully understand what is needed for climate justice” (2019, p. 18). By demonstrating the racial dimensions of climate adaptation and the economic role of bodily precarity in the extensive perpetuation of social inequalities, Bacigalupi’s novel provokes a recognition that “sedimented, systematic beliefs and dispositions regarding racial superiority are at the heart of decisions about whose lives and lifeways are worth protecting and whose are expendable” (2019, p. 10) in the Anthropocene.

Likewise, when the undercover AgriGen agent Anderson “wakes with a start” one morning, his abrupt awakening occurs because the “crank fan has stopped, run out of joules. He’s covered in sweat” (p. 378). Even for wealthy visitors, there is an inescapably direct relation between the amount of energy that individual bodies expend, and their level of removal from the harsh realities of life in the heat-scarred cityscape of Bangkok. Likewise, the labor contributions that outsiders make to the perseverance of the city are enduringly inscribed upon their bodies:

Tattooed farmers make wais of respect as Kanya cycles past. By the stamps on their arms, most of them have already done corvée labor for the year. A few others are marked for the start of the rainy season when they will be required to come to the city and shore up its dikes for the deluge. (p. 340)

Their debt of labor leaves them inscribed with a permanent artifact of Bangkok, which rewards them for their good labor. It also serves, however, as a means of identification should their outsourced labor on the city’s flood defenses prove deficient. In either case,

the tattoos implicate them unconditionally in the city’s project of survival. Patently, the implications of Bangkok’s calorie economy extend beyond its own borders, and hence, these corvée labor tattoos gesture towards the Kingdom’s novel economic paradigm on a scale which exceeds the text’s immediate setting.

Nonetheless, Western companies such as AgriGen wait on the periphery of Bangkok “amid stockpiles of calories, all of them waiting patiently for a crop failure or plague to beat aside the Kingdom’s trade barriers” (p. 151). It is necessary that the Thai calorie economy model continues to succeed in praxis, or else the GDP-led ideologies of the West will begin to make inroads into the Kingdom again. In their own words, all that the Americans waiting patiently outside Thailand are “interested in is a free market” (p. 213), and hence, they desire only to affect a return to the same neoliberal dogma that has already precipitated a blanket collapse of global economies once.

Plainly, it is non-Western nations that have had the ingenuity to conceptualise and implement such novel bodily economies, capable of revolutionising the economic structures that govern the world. Just as the Environment Ministry must labor to engineer resistance to epidemics such as “H7V9; cibiscosis111.b, c, d; *fa’ gan fringe*” (p. 174), the Thai people on aggregate must constantly labor to remain self-sufficient, in order to maintain the integrity of their Kingdom’s independent economy.

This is no simple task, particularly as Western “money comes surging in as strong and deep as the ocean against the seawalls” (p. 244), attempting to persuade the Kingdom to return to a free market model and re-open its borders to trade. Contrastingly, these Western companies’ concerns about the establishment of trade relations with Thailand are by no degree existential, but rather, revolve around whether “the finance people will fight” and whether a deal would “undercut profits” (p. 334). Their offers of assistance are not born of necessity, but of contemptuousness for the calorie economics that the Thai people understand first-hand. However, since

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the waiting Western companies represent an offer to the Kingdom of “calorie security that hasn’t been enjoyed since the Expansion” (p. 329), their proffered trade opportunities prove too tempting to resist indefinitely.

### *The Water Knife*

Antithetically, the characters of *The Water Knife*—set in a future Phoenix affected by endemic water scarcity—are guided by no such ecological acumen. The economic model of the text’s America is comprehensively centered upon water, to the extent that Western states openly and violently compete between themselves to attain water rights to the Colorado River:

If Phoenix shows up in court, waving these senior Pima water rights, everything changes. For everyone. Phoenix could have the Bureau of Reclamation drain Lake Mead. Send all the water down to Lake Havasu for Phoenix’s personal use. They could make Los Angeles and San Diego stop pumping. Or they could sell the water off to the highest bidder. They could build a coalition against California, keep all the water in the Upper Basin States. (p. 284)

In the world of the text, any state capable of producing water rights superior to those of neighbouring states can annex aquatic assets “worth billions” (p. 317). Hence, the consolidation of aquatic resources has become far more meaningful than the pursuit of capital. As a result of this comprehensive shift in the country’s economic ambitions, states have become adversaries, readily willing to enact suffering on rival populaces when doing so helps to preserve their own. For all Western states, the Colorado River is a precarious “lifeline, always threatened and always vulnerable” (p. 9) to drying up—its resources are unable to provide sustenance for all of their populations.

Resultantly, fluid metaphors permeate the vernacular of their populaces, making the image of water eerily omnipresent in light of its literal scarcity. A per-

son inexperienced in the everyday violence of life in Phoenix is either “wet and soft” (p. 78), or capable only of seeing the world “cloudy” (p. 51). Meanwhile, tenacious survivors are “icy” (p. 196), and it is an erudite accomplishment to see “the world clear” (p. 157) in all of its horrific corporeality. Even when they are ostensibly discussing other matters, the high prevalence of water metaphors in casual conversations remind residents of Western states that all matters pertain to that necessary, yet now rare, means of sustenance.

As the evolution of their language implies, the brutal realities of their new bodily economy divorce them so far from our own time—characterised by environmental apathy and ignorance—that the vocabularies of the two eras are fast becoming mutually exclusive. The text’s novel bodily economy is accordingly a mindset as much as it is a physical practice, a new means of conceptualizing the positionality of the human body in an ecologically devastated world, and a radical rewriting of our own entirely insufficient frames of ecological reference.

In this light, Bacigalupi specifically emphasizes just how absolutely crucial water is to all aspects of human existence. In their transformed Phoenix, state-funded toilet cubicles roam the streets perpetually, “ferrying piss and shit into remaining water-treatment plants, trying to keep disease down with functioning sewer lines gone” (p. 123). Likewise, sweat now entirely encompasses “a body’s history, compressed into jewels” (p. 1), a new bodily means of status, and the only one which ultimately matters in this parched landscape. The history and personal wealth of any individual is inconsequential in comparison to the rate at which they are sweating their precious reserves of water away. Whoever endeavours to stay hydrated has “to sweat for it” (p. 89) first, and this severe feedback loop of “borrowed time” (p. 154) accordingly comprises the basis of a bodily economy into which Phoenix’s citizens are invariably interpellated. Every individual must recycle every drop of their body’s fluid that they can:

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Maria closed the door and looped string over a nail to lock it. She crouched over the trench, wrinkling her nose at the stink, opened the ClearSacs, and peed into it. When she was finished, she hung the sac on a nail, then finished her business, wiping with ragged squares of newsprint that she and Sarah had torn from *Río de Sangre*. She pulled up her shorts and hurried out, carrying the half-full ClearSacs, glad to be back out in dawn's open smoky air again. (p. 91)

Hence, the most ubiquitous novel technology of the text's speculative fiction landscape is a completely banal one, which filters the toxins out of urine in order to make it drinkable. Plainly, the only technologies worthy of development in the text's diegetic world are those that are comprehensively bodily. Intriguingly, Hicks argues that Bacigalupi's post-apocalyptic landscapes espouse "a forward-looking perspective that understands [Anthropogenic life] as an inevitable future which will call on technological innovation and new social formations" (2016, p. 159).

In contrast to Hicks' assertion, technological innovations in *The Water Knife* only ever supplement the bodily economies of its diegetic world, and they thus play a comparatively auxiliary role in its characters' adaptation to their Anthropogenic environment. Demonstrably, the transition into this new economic paradigm was a tangible culture shock; people "started out squeamish about ClearSacs, but eventually even the fussiest were grateful for them" (p. 360). As Bacigalupi insinuates, although the major economic recalibrations necessary to survive in the Anthropocene will require us to become attuned to significantly abnormal configurations of embodied life, economic and lifestyle adaptation are inevitable if our species is to survive at all.

Bacigalupi thus implicates the Central Arizona Project—"three hundred miles of canal system, all taking water to a burned-out city in the middle of a blazing desert" (p. 431)—in his text in order to demonstrate the results of our contemporary hubris. As a result of their anthropocentric presumptions, our contemporary

economic policies have been responsible for engendering the violent social collapse of the text's future Phoenix. Implicated in *The Water Knife* in this manner, the CAP is symbolic of the vast amount of hubris that our societies are built upon; its figuration emphasizes that our ignorance of the embeddedness of human bodies in our planet's ecologies will inevitably prove fatal. Bacigalupi takes Mark Reisner's assertion that such ill-conceived American projects are "a vandalization of both our natural heritage and our economic future," for which "the reckoning has not even begun" (1993, p. 485) as a means of demonstrating that the text's parched hellscape is an environment that is rapidly "becoming real" (Bacigalupi, 2016, p. 449).

In Bacigalupi's rendering of the collapse of the Blue Mesa Dam following Californian sabotage, "people were specks on the edges of the dam, all fleeing. The scale was almost too big to understand, the people tiny beside the jetting waters that blasted through the dam under pressure" (p. 226). Any anthropocentric delusions held by the characters who witness this natural manifestation of such raw power are stripped away in a moment. The transient value of individual human bodies becomes utterly plain in the face of the enduring puissance of water.

One pervasive aspect of Phoenix life in the text is the body *lotería*; a daily sweepstakes that allows residents to gamble upon the city's homicide rate that day, in which "Over One-fifty" (p. 165) is a perfectly reasonable bet. As this macabre form of entertainment makes plain, the only viable way for individuals to profit within the stark realities of the city's novel bodily economy is upon the misfortunes of others. Yet, as Bacigalupi implies, his readers profit by similar means: we all-but sacrifice the bodies of our descendants by continuing to wreak environmental destruction upon the Earth for our own short-term gain. To the same extent, when colonists "set out to make the future of the American West secure; what we really did was make ourselves rich and our descendants insecure" (Reisner, 1993, p. 486). Bacigalupi's analogy is clear. As our own economic systems do, Phoenix allows only a few human bodies to profit from the

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misfortunes of a multitude of unseen others. The loss of future generations through our selfishness is also literalized in the text, since conditions have become so bad that many “people just gave up and sold their children” (p. 170).

In the text’s timeframe, there is no escape from the Anthropogenic milieu of the city, since the very air of Phoenix is heavy with the “char of faraway forest fires and the dust of dead farms” (p. 183). Hence, its populace must constantly inhale the effects of theirs and their ancestors’ disregard for the Earth, to the sobering extent that human environmental failures have become physicalized pollutants of the human body. In harsh contrast, the “arcologies” of the novel are populated by “Ferns and waterfalls and coffee shops” (p. 7) and are thus inordinately desirable residences. For the dispossessed, the towering arcologies are impenetrable, almost mythical places where the fluid and atmospheric concerns etched into the fabric of their daily lives in Phoenix would be erased in a moment, if only they were able to gain residence there. Thus, the desire to attain “housing permits” (p. 4) within an arcology is the impetus that keeps many of the city’s residents laboring. It is precisely this desire for the alleviation of the incessant precarity that they experience on a daily basis that prevents the complete collapse of Phoenix’s stagnant economy.

Nevertheless, as a direct result of their exacerbation of extant class inequalities, the discrete environs of the arcologies demonstrate the principles of an incredibly successful bodily economy in miniature. Since each arcology is exhaustively defended by armed “security guards” (p. 48), its abundant water supply belongs to a closed ecology which is inaccessible to outsiders. The principles of their design are conspicuously redolent of Raworth’s Doughnut model of economics, which proposes that the linear processes which underpin industrial economies “are fundamentally flawed because [they run] counter to the living world, which thrives by continually recycling life’s building blocks” (2018, p. 212) in natural cycles. Correspondingly, each arcology is capable of running “on its own water for up to three months at a stretch without even having

to dip into the Colorado River” (p. 62), by running sewage water “through filters and mushrooms and reeds and... into lily ponds and carp farms and snail beds,” so that “by the time it comes out the other end, that water, it’s cleaner than what they pump up from underground” (p. 111). Irrefutably, the non-anthropocentric bodily economy that the arcologies comprise is far more successful than the anthropocentric ones found elsewhere in the text, and elsewhere in Bacigalupi’s oeuvre.

### *The Children of Khaim*

Although Bacigalupi’s novella, *The Children of Khaim*, is one of his less frequent forays into the genre of fantasy, it provides just as significant a rumination on the Anthropocene epoch as any of his science fiction works do. As one quarter of the jointly authored collection *The Tangled Lands*, the novella reprises the diegetic world collaboratively established within Bacigalupi’s 2010 novella *The Alchemist*, and within Tobias S. Buckell’s novellas *The Executioness* and *The Blacksmith’s Daughter*. *Khaim*’s post-apocalyptic landscape centres upon the eponymous Khaim, a city perpetually under threat of being swallowed by bramble. A highly poisonous and inordinately proliferative weed, bramble sprouts whenever Khaim’s populace uses magic, whereupon it manifests at random in locations nearby. Since those pricked by the weed’s thorns lapse into a permanent state of living death, there is a direct causal effect between the use of magic and the growth of bramble. As the dangers of bramble are not necessarily visited on its perpetrator, magic therefore comprises an allegory for carbon footprints.

Specifically, the wealthy’s continued use of magic is “emblematic of the very system of neoliberal economic and social regulation from which the apocalypse might have” otherwise freed the citizens of Khaim (Hicks, 2016, p. 127). By policing magic in public, and continuing to use it in private, Khaim’s wealthy have reinstated the social order following the apocalyptic fall of Jhandpara by simply substituting magic for money as the prime commodity of their economy. Nevertheless, as a substitute currency, magic is inherently un-

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attractive to hoard; since its use can be detected and punished, it bears “demurrage, a small fee incurred for holding money, so that it tends to lose rather than gain in value the longer it is held” (Raworth, 2018, p. 274). Thus, since there is no longer any incentive to hoard the currency, magic gestures towards a viable alternate economic model. Nevertheless, the other novel economic model explicated within the novella is just as significant, and vehemently bodily.

After watching his sister Rain succumb to bramble kiss while clearing a thicket of bramble, the orphan Mop spends the remainder of the text’s narrative attempting first to revive her, and, failing that, to merely preserve her body. He wonders at every moment whether he should simply euthanize her comatose body “*before dogs and men come sniffing for her*” (p. 164), and the latter danger proves to be the most significant by far. Lee Edelman argues that contemporary societies position “the Child as the emblem of futurity’s unquestioned value” (2004, p. 4), and he proposes that this figuration is so culturally inscribed that it shimmers “with the iridescent promise of Noah’s rainbow, serving like the rainbow as the pledge of a covenant that shields us against the persistent threat of apocalypse now—or later” (2004, p. 18). Edelman terms this pervasive ideology “reproductive futurity,” and his theoretical apparatus provides a pragmatic means of interpreting Mop’s and Rain’s ordeal in *The Children of Khaim*. Bacigalupi precisely subverts the trope of the invulnerable child throughout the novella.<sup>3</sup>

Mop is urged on numerous occasions to “sell the sleeping” (p. 164) bramble body that he assiduously attempts to protect, and this recurrent narrative thread is suggestive of the odious bodily economy that the text’s diegetic world centres upon. Although murals throughout the city depict images of “children protected by the alertness of the Mayor” (p. 170), that ideological fantasy could not be further from the truth, as Bacigalupi’s own successive images of Khaim’s more covert economy underscores. As gradually becomes apparent in increasingly graphic terms, Rain’s

new positionality as a bramble body—and in particular, a prepubescent bramble body—means that she has become a valuable sexual commodity. Pleasure houses throughout the city are frequented by men who use bramble bodies to enact their sexual desires and fantasies, since these comatose subjects cannot “protest their worst advances” (p. 173).

When Mop visits one such pleasure house in an attempt to locate and retrieve his sister’s body, the depravity of the establishment is palpable. Their stockpile of bramble bodies is advertised as “your hungers, unbounded” (p. 181), and is voluminous:

The dolls lay stacked upon the floor, piled by age and size. Girls and women, nude and clothed. Wealthy and poor. Boys and men on another wall. Tangled stacks and mounds of them, splayed and discarded. (p. 182)

This menagerie of living sex toys, it transpires, comprises the sinister backbone of Khaim’s economy. In a conspicuous parallel with our own world, Khaim’s default routes of economic “prosperity” are those which are deeply detrimental to its environment, and those whose effects are wrought in turn upon its own populace’s bodies. In Khaim’s post-apocalyptic environ, these bramble bodies, heaped in “piles and drifts” (p. 184), form a damning metaphor for the willingness, through studied ignorance, of capitalist economic systems to feed on the ashes of their own destruction. This metaphorical feeding is literalized in some instances, as a number of Khaim’s men do not merely mutilate their living sex dolls with “curved blades,” but additionally, often keep themselves “fed” upon the entirely pliant flesh they have paid to abuse (p. 184).

By Edelman’s logic, even as it becomes less and less likely that Mop can succeed in even protecting Rain, the reader is trained to expect a *deus ex machina* ending to the novella that will see her miraculously revived. Bacigalupi, however, eventually confirms that the ideologies of our own world have no sway in Khaim’s stark Anthropogenic landscape. Despite her and her brother’s failing fortunes, Rain had kept hold

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of a comb, her “last treasured luxury from a time when their lives had been soft and comfortable, held to her, even as their lives fell to rags” (pp. 193-194). Symbolically, it is this item—her last vestige of innocence in an increasingly grotesque world—which Mop uses to repeatedly impale and murder her eventual assailant, immediately after the last signifier of her childhood purity has been perverted. When Mop stares at his sister’s bramble body, lying “like a broken doll” with the “linemaster’s body draped naked across her,” Bacigalupi employs the image of Rain’s perverted childhood innocence to demonstrate the insufficiency of familiar human referents in an increasingly Anthropogenic context (p. 203).

Accordingly, bramble vine is seemingly sentient, displaying tropisms such as “sniffing the air” (p. 198), and “slithering slowly” (p. 199) to predate upon magic users. Mop, in one instance, watches as “a great bramble bough eased in through a window, blotting out the moon, a branching trunk as thick as a man’s waist” (p. 199), seeking out his body in order to feast upon the residue of magic he has recently used. Khaim’s humans are thus predated upon by their Anthropogenic environment; a devastated nature repaying in kind the casual violence wrought upon it by human life. Although there can plainly be no return to the times before Khaim “was threatened so greatly by bramble” (p. 187), the ignorance of those times is nevertheless writ large on every aspect of the city’s present. In a manner pointedly redolent of locked in global warming, the lives of their ancestors who used magic casually weigh heavily upon the citizens of the present day.

## Conclusion

As this paper has demonstrated, Bacigalupi’s oeuvre implores the necessity and urgency of systemic economic change. A well-publicized statistic reveals that approximately half of all carbon dioxide emissions “can be attributed to the richest 10% of people around the world,” and, furthermore, that the “average footprint of the richest 1% of people globally could be 175 times that of the poorest 10%” (Gore, 2015). Nev-

ertheless, the poorest 10% of the Earth’s population “live overwhelmingly in the countries most vulnerable to climate change” (Ibid). Accurate or otherwise, this statistic only provides ammunition for the entrenched interests of the wealthy, who will never be motivated to solve the climate crisis while they continue to profit from economic exploitation born of ecologically callous economic systems. Systemic economic change is the only solution to the Anthropocene.

Likewise, this cross-section of Bacigalupi’s works prompts us to recall that no matter what Anthropogenic future we arrive at, its ravages will be written on our bodies. Collectively, Bacigalupi’s novel bodily economies comprise a statement that our bodies are both our best means of comprehending the Anthropocene epoch, and the medium on which its traumas will inevitably be written. Since “the solution to global warming is not to fix the world, it is to fix ourselves” (Klein, 2015, p. 279), humans have risen to the challenge with varying degrees of success in Bacigalupi’s post-capitalist and post-apocalyptic diegetic worlds. The extent to which Bacigalupi’s successive fictions will continue to explore the quiddity of bodily economies remains to be determined, and equally, it remains to be determined whether the world’s economic systems will change in response to, or be forcibly reshaped by, the Anthropocene.

## Notes

<sup>1</sup> For definitions of the Anthropocene, see Crutzen & Stoermer, 2000, and Hay, 2019.

<sup>2</sup> For a critical appraisal of the environmental credentials of Bacigalupi’s Young Adult fiction, see Schmeink, 2018.

<sup>3</sup> As he also does in “Pop Squad.”

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