



Research paper

A Posthumanist Reconfiguration of Moral Agency: Ecologically Distributed Vitality and the Intra-Active Emergence of the More-Than-Human in Bacigalupi's *The Windup Girl*

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ABSTRACT

This paper argues that Bacigalupi's *The Windup Girl* destabilizes the anthropocentric foundations of moral agency by staging their inadequacy against a bioengineered subject they were structurally designed to exclude. Through a sustained textual analysis of Emiko—a "New Person" engineered for servile compliance, legally classified as property, and systematically denied political recognition—this article demonstrates that the Kantian criteria of rational autonomy and the Arendtian criterion of recognized speech are exposed as historically contingent mechanisms of exclusion rather than ontological thresholds of moral worth. Emiko's somatic resistance, affective interiority, and capacity for self-directed action materialize a form of agency that the anthropocentric tradition cannot accommodate. Furthermore, the article argues that the novel distributes causality across a network of other-than-human actants—including rising sea levels, calorie plagues, megadonts, and feral engineered organisms—drawing on Jane Bennett's thing-power, Karen Barad's agential realism, and Cary Wolfe's posthuman decentering to reveal how ecological entanglement renders the sovereign human subject ontologically untenable.

1. Introduction

In Bacigalupi's (2009) *The Windup Girl*, the bioengineered subject, Emiko, tests the limits of anthropocentric moral agency and intra-acts with its foundational criteria in ways that examine their very coherence. It further presents their historical contingency against the vibrant, relational ontologies of matter, affect, and ecological entanglement that make sovereign human autonomy ontologically untenable. The novel distributes agency across a dense layering of somatic resistance—affective intensities circulating across disrupted interiority, and distributed material causalities, such as rising seas that press against levees blessed with sacred thread yet ultimately overwhelmed by monsoonal flood, mutating calorie plagues that relentlessly outpace corporate gene-hacks, megadont labor that powers yet exhausts the industrial economy, and feral cheshires that embody the escaped, dominant vitality of flawed design. Through this distribution, Bacigalupi reveals agency as emergent. He achieves it through the processes that Bennett (2010) terms thing-power, that Barad (2007) frames as agential realism, and that Braidotti (2013) calls as an affirmative understanding of relational subjectivity grounded in zoe. It is the generative non-anthropocentric life in deviation from the conventional foundations of moral agency, i.e. transcendental reason or recognized speech alone. Emiko, engineered as genetic trash yet enacting lethal self-determination at speeds that expose the fatal underestimation of her captors (Bacigalupi,

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2009), becomes the limit case that forces a radical politico-ethical understanding that moral agency is an emergent, materially conditioned phenomenon arising within more-than-human assemblages of becoming and is no longer the exclusive property of a rational human subject (Braidotti, 2013; Wolfe, 2010; Bennett, 2010).

2. Approach

This study first traces the anthropocentric enclosure that the novel systematically deconstructs through its narrative syntax and point of view. It attends to the layered subordinate clauses that render Emiko's presence as an object of perception before revealing the resistant vitality beneath. It then traces Emiko's embodied becoming as a site of fractured interiority and resistant vitality that exceeds her programming in moments of affective deliberation and somatic eruption. The study then shifts to the broader ecological assemblages that distribute agency across other-than-human actants in ways that make sovereign individuality untenable. Throughout, the analysis attends to the novel's careful syntactic rhythms, which are both mechanical obedience and coiled potential; to its etymological resonances; and to the ways in which the novel's relational ontology is illuminated by juxtaposing Kantian autonomy and Arendtian speech with the New Materialist frameworks. What comes to the fore is the dissolution of the human sphere of moral concern into processes of "becoming-with" (running, freezing, surrender, striking) that combat compromised agency in a sympoietic process of recomposition amidst biocapitalism and climatic collapse. (Idema, 2020; Jensen, 2018; Straetz, 2017; Hageman, 2012).

3. Findings and Discussion

3.1 Anthropocentric Moral Agency

The philosophical legacy that grounds moral agency with a uniquely human capacity, that of rational self-legislation and linguistically articulated action, involves the construction of Man as universal measure, a normative figure whose supposedly autonomous grounding is both the foundation of moral agency and also gives justification for the instrumentalization of all else (Braidotti, 2013). Kant (1948) codifies this through the categorical imperative that the human exists as end-in-itself precisely because of the capacity for pure reason to legislate universalizable maxims, which forces beings lacking such autonomy outside the kingdom of ends. Arendt (2019) complements this with a political ontology wherein action and speech intertwine in the public sphere. For Arendt (2019) only the speaking subject who discloses a unique "who" through praxis and lexis achieves the moral-political recognition, as "speechless action would no longer be action because there would no longer be an actor". These criteria, however, function less as ontological truths than as historically contingent mechanisms of violent enclosure, apparatuses that help preserve human exceptionalism by making the technological, the animal, and the ecological as matter available for extraction (Rancière, 2013; Agamben, 1998; Nietzsche, 2007).

3.2. Emiko as the Limit Case of Humanism

3.2.1 Emiko's Design of Negation

Emiko is biologically designed to both lack moral agency and to embody its absolute somatic impossibility. Her foundational genetic code functions as an ideological and physiological instruction that forces such engineered beings to be servile: "New People serve and do not question" (Bacigalupi, 2009, p. 36). Emiko has not internalized this absolute compliance through cultural conditioning, as a social norm. This servility is the result of the genetic code inscribed into her neural architecture. It is the result of the same genetic engineering that shaped her pores for a rich man's climate-controlled apartment and her skin for his aesthetic pleasure (Bacigalupi, 2009). The corporate that genetically engineered her "had no illusions about the many uses a New Person might be put to" (p. 36), and her training under Mizumi-sensei helped in systematic ontological negation. This doctrine is reinforced in Emiko through a religious repetition:

"What are you?" / "New People." / "What is your honor?" / "It is my honor to serve." / "Who do you honor?" / "I honor my patron." (p. 145)

Mizumi-sensei, who is described as "swift with a switch, 100 years old and terrifying" (p. 145), instilled a doctrine in Emiko stating that absolute servitude was both Emiko's function and her highest possible attainment. The metaphysical promise underlying this ontological negation is that if New People serve their masters flawlessly, "their reward would come in the next life, when they became fully human" (p. 145). Thus service is

framed as an ontological aspiration that the engineered being aspires to reach. Through actions of selflessness, she is promised a future toward the humanity she has been denied. The cruelty of this ideology is that it forces the subject to embrace subordination as dignity. Emiko is taught that her basic impulse toward self-preservation or resistance is the "evil half" of her nature, "ruled by the animal hungers of their genes," while her "civilized self" is the one that "comprehends its place in the hierarchies" and performs its duty without complaint (p. 146). Anderson Lake notices this inner conflict as he observes Emiko over several weeks at Raleigh's place:

She is an animal. Servile as a dog. And yet if he is careful to make no demands, to leave the air between them open, another version of the windup girl emerges. As precious and rare as a living bo tree. Her soul, emerging from within the strangling strands of her engineered DNA. (Bacigalupi, 2009, p. 174)

His perspective still remains patronizing, relies on animalistic tropes and implies that her soul can only achieve agency by transcending the biological constraints of her body. Furthermore, his observation reinforces the novel's portrayal of a fractured subjectivity, in which Emiko is shaped through systematic programming, attained through genetic engineering and Mizumi sensei's doctrine, while a latent consciousness struggles against this structural conditioning. The text reinforces her engineered subordination by examining her presence through the objectifying lens of human characters. When Emiko appears in the scene, she is persistently viewed as an object of perception rather than a perceiving subject. The black-bearded gaijin who watches her performance stares "as if he is examining an insect under a magnifying glass: fascinated, and yet also repulsed" (Bacigalupi, 2009, p. 36). When Emiko is perceived in this manner, she is denied the reciprocity of the gaze that constitutes basic social recognition. She is treated as a biological specimen rather than an interlocutor with equal agency. Similarly, Raleigh treats her with the frank transactionalism of a property owner when he states that she is "expensive" because she requires ice and political bribes to function in the tropical heat (p. 39). It fails to acknowledge that she possesses capacity for suffering. Further, Anderson, before becoming her closest ally, judges her with a similar corporate lens. After observing her skin he claims, "It makes sense, your model must only sell to elites. . . they'd have climate control" (p. 43). Here, she is evaluated against her corporate specifications, where her body is serving as a site of capital accumulation.

Most significantly, Emiko's otherness is embodied in her unique physical form and somatic movements. The phrase "stutter-stop flash-bulb strange" that is used to explain her somatic movements recurs throughout the text like a somatic brand (Bacigalupi, 2009, p. 35). Selisker (2015) argues that this description functions as an "aesthetics of disgust" that complicates the distinction between mechanical and natural life (p. 501). His account of the "stutter-stop flash-bulb strange" motif treats it as a representational solution to a problem of scale rather than as a mechanism of social exclusion. Yet, it also functions as an index of ontological subordination. This stutter-stop motion is always what others see when they look at Emiko, which eventually provides the visual cue that allows the patrons at Raleigh's club to "make faces of disgust that she exists at all" (Bacigalupi, 2009, p. 37). She exists within what Rancière (2013) terms a "distribution of the sensible," which is a political regime that determines who counts as a visible subject and who is reduced to noise (p. 8). Within this sensory regime, Emiko's physical presence is established as a somatic transgression, "an affront to niche and nature" (Bacigalupi, 2009, p. 37). It is a dangerous category error that the anthropocentric social order must contain through structural violence. Where Selisker locates the novel's critical work in its aesthetic innovation, its success at making the molecular scale humanly intelligible, this paper locates it in the novel's exposure of how that very intelligibility is weaponized, how Emiko's legibility as "other" becomes the precondition for the structural violence enacted against her. Selisker's framework of scale treats the disgust Emiko's body provokes as something the novel works to move past, while this paper's framework treats that disgust as constitutive of her subordination throughout, never fully displaced even in moments that gesture toward recognition.

The oppressive tropical climate of Bangkok functions as a consistent material reminder of her engineered vulnerability. Emiko's pore structure was optimized for a Japanese master's climate-controlled apartments making it unsuitable for a humid city where she has been abandoned. The material consequence is a lasting bodily crisis. She bathes from a bucket on a rooftop at sunset, "scouring herself of the previous night's insults" (Bacigalupi, 2009, p. 98), performing this ritual "as deliberately as Jo No Mai, each move choreographed, a worship of scarcity" (p. 98). Even in this passage, the text shows both the discipline of her training and the reality of her suffering simultaneously. "If she were to scrub for a thousand years she would not be clean, but she is too tired to care" (p. 98). Her body is at once a site of conditioned discipline and permanent violation. When she moves through the

city during daylight, violating Raleigh's rules of confinement (Bacigalupi, 2009), her body becomes a liability she must constantly manage: "Out on the streets, she tries to blend into the daylight street activity. . . if she wears pha sin, and does not swing her arms—she almost passes" (p. 98). Here, the qualification is almost. She doesn't pass as a human, she almost passes. Her survival requires the absolute performance of human behavior, and her invisibility is guaranteed only so long as her engineered body does not betray her. When a corrupt officer detains her at a bridge, demanding her import permits, it requires every resource of her somatic discipline—"slowly, slowly, smoothly, smoothly, not a single stutter, not a single jerk"—to maintain her cover before her physiology fails and forces her to flee (p. 239).

3.2.2 What the Design Cannot Contain: Affect, Reflection, and Resistance

The objectification of Emiko in the text hints for the emergence of what her programming ultimately fails to suppress. Emiko is not devoid of an inner life; rather, her subjectivity is repressed through sustained conditioning, and the narrative repeatedly reveals the inadequacy of this disciplinary control. The episode where Emiko is sitting at the bar before a performance shows the emergence of her subjective agency. Here, she actively negotiates with her own psychological degradation as she awaits her humiliation:

A part of her still struggles against it but the rest of her. . . doesn't have the energy to fight. And then she wonders if she has it backwards, if the part that struggles to maintain her illusions of self-respect is the part intent upon her destruction. (Bacigalupi, 2009, p. 34)

This passage presents evaluative cognition, which is a self-reflective deliberation about competing psychological and survival requirements, rather than mechanical obedience. This internal doubling presents that Emiko is never fully identical to her programming. She is also the subject that observes, evaluates, and suffers that programming. When Mizumi-sensei's teachings surface in her memory—"It is my honor to serve" (Bacigalupi, 2009, p. 145)—it is immediately contested by its material antithesis that makes her ask, "And what has service gotten her? People like Raleigh. And Kannika" (p. 147). She inhabits this duality unable to fully escape either position, and this uncertainty signifies the complexity of a subject under formation rather than a predictable automaton.

When she is left alone in Anderson's apartment, without a human master watching, she openly exhibits the image of this internal conflict. First, she measures rice perfectly by sight—"knowing precisely how much she needed. . . settling that rice into a perfect layer as if it were a gravel garden" (Bacigalupi, 2009, p. 237). Later, when she recognizes that this domestic perfection is still a performance of service, the hands of Mizumi-sensei moving through her muscles, she recoils. "She sees that she was trained to excellence, to the eternal service of a master" (p. 237). And then:

She lashes out. The rice bowl shatters, shards spinning in different directions, the pot of water flying, scalding jewels gleaming. Emiko stands amidst the whirlwind, watching droplets fly, rice grains suspended, all of it stopped in motion, as if grain and water are windups, stuttering in flight as she herself is forced to stumble herky-jerky through the world. (p. 238)

Here, the broken rice bowl represents an act of critical recognition on Emiko's part. Emiko is not expressing a fit of irrational frustration. Instead, she realizes how her mundane act of measuring rice is the direct consequence of the systematic conditioning and physically destroys the symbol of her servility through evaluative cognition. She then "stifles the urge to clean up the rice, to make things neat for Anderson-sama when he returns. Instead, she makes herself stare at the mess" (p. 238). This resistance, where she chooses to inhabit the disorder, is as philosophically significant as her subsequent acts of overt violence. She is learning to see her own obedience as a conscious choice rather than a biological necessity, concluding that "she is something else. Something different. Optimal in her own way" (p. 238).

Throughout the narrative, her affective life repeatedly surpasses the constraints of her programming. When she learns of a mythical village of New People in the northern territories—"a place where her own kind live and have no masters. Where New People serve only themselves" (Bacigalupi, 2009, p. 238)—her entire subjective horizon shifts. "The hope of it runs through Emiko's head every day, every minute, every second" (p. 145). She is not hoping for a more benevolent master, but for a form of life completely outside the current hierarchical structure. She imagines herself as a falcon whose "jesses" have been cut (p. 238). This imagery of

falconry shows that she is stepping out of her historical confinement and into the irreversible freedom she now conceives.

The encounter with a violent, drug-addled predator on the street, who follows her into an alley, tests what Emiko's body can accomplish when survival is at stake. As the man openly shows his contemptuous nature—"You think I'd soil myself that way? With an animal like you?" (Bacigalupi, 2009, p. 102)—and holds a knife to her throat, the text presents the sudden eruption of her engineered physical capabilities:

Emiko closes her eyes and prays to Mizuko Jizo Bodhisattva, and then the bakeneko cheshire spirit for good measure. She takes a breath, and then with all her strength she slams her hand against the knife. The blade slices past her neck, a searing line. / 'Arai wa?!' the man shouts. / Emiko shoves hard against him and ducks under his flailing knife. (p. 102)

She runs, "not caring that she shows herself as a windup, not caring that in running she will burn up and die" (p. 102). Once she reaches maximum velocity, her sensory perception takes a turn and she realizes that "people move as if they're suspended in honey. Only she is moving.... She sees that her pursuer has fallen far behind. He's astonishingly slow. Amazing that she even feared him. She laughs at the absurdity of this suspended world" (p. 103). Her engineered body, which has been a primary source of shame and vulnerability throughout her life, reveals physical capabilities that have been suppressed by Mizumi-sensei's training. At full speed, "she marvels at the movements of her body, how startlingly fluid she becomes, as if she is finally being true to her nature. As if all the training and lashes from Mizumi-sensei were designed to keep this knowledge buried" (p. 240). The training was designed to enforce obedience in Emiko and to obscure her own strength. The discovery of this speed is the discovery of a somatic agency she was engineered to possess but was conditioned to be oblivious about.

The deepest challenge to her engineered nature occurs after an episode of systematic abuse at the hands of Kannika and Raleigh's VIP guests. This episode of degradation was so severe that the novel depicts it in a clinical, almost dissociative prose style. Emiko sits broken against the bar wall and asks the cleaning person, "Why don't you throw me away?" (Bacigalupi, 2009, p. 243). She screams it in Thai, "Throw me away, why not? I'm trash, too. Throw me away!" (p. 243). In this scene, Emiko is confronting the logic of her commodification. Agamben's (1998) concept of "bare life" illuminates her position here. Bare life is life that is included in the political order only through its systematic capacity for exclusion and exposure to violence without the protection of bios (politically qualified life) (p. 8). Emiko can be exploited or discarded without legal consequence. Yet, when she demands to be treated as trash, the world refuses to discard her because she remains economically valuable. Her usefulness depends entirely on her not being recognized as a subject whose suffering matters, yet that very usefulness prevents her from being completely erased. It is from within this economic contradiction that her agency emerges. This ends in the episode where she looks at Raleigh drinking cool water, completely indifferent to her pain. The internal struggle is over, and Emiko fully identifies as a subject:

The falcon dangles dead. She is dead. Mulch for composters. Meat for the city, rot for gaslights. Emiko stares at Raleigh. The falcon lies dead. / And then she thinks that some things are worse than dying. Some things can never be borne. / Her fist is very fast. Raleigh-san's throat is soft. (Bacigalupi, 2009, p. 244)

This represents the novel's most compelling illustration of moral agency. The act of killing is not explained through internal monologue. The text does not narrate her psychological deliberation because the choice has been made in the white space between paragraphs. What the narrative does provide is immediate physical consequence: "The old man topples, hands flying to his throat, eyes wide with shock. It is all slow-motion. . . By the time Raleigh hits the floor, Emiko is already bolting across the room" (p. 245). Her speed—the trait that previously marked her as mechanically nonhuman—here becomes the vehicle of self-determination. Here, her statement, "None of them are New People" shows an ontological assertion (p. 245). She has used her engineered body to shatter the political framework that defined her as an instrument. After the killings, the Thai authorities give her a new found agency "She killed three men and their bodyguards. Eight trained men" (Bacigalupi, 2009, p. 257). Yet she has not been integrated into humanism; rather, she has become ungovernable, and within a highly controlled political world, ungovernability constitutes a form of agency that the existing legal architecture has no category to contain.

3.2.3 Personhood: Language, Recognition, and Futurity

That Emiko speaks is not in question; she converses fluently in Japanese, Thai, Mandarin Chinese, English, and French, with a linguistic range that exceeds that of most human characters in the text. But within Arendt's (2019) framework, speech alone does not constitute political recognition; what matters is whether that speech is received as the utterance of a rational subject (logos) or the output of a mechanism (phone). Throughout the novel, Emiko's speech is consistently misreceived or disqualified. When she identifies Anderson's corporate profession as "a calorie man" from his accent (Bacigalupi, 2009, p. 44), he responds with an immediate alarm: "his smile remains, frozen, but his eyes now evaluate her the way a mongoose evaluates a cobra" (p. 44). Her perception, in this scene, is treated as a security threat rather than evidence of interiority.

When Emiko asks Raleigh for assistance in leaving Bangkok, the events show how her speech is structurally disqualified. She approaches him three times before managing to articulate her request. She is paralyzed because "her voice has failed her, leaving the question unasked" (Bacigalupi, 2009, p. 145). When she finally states, "I wish to leave this place" (p. 149), Raleigh completely denies her communicative recognition. He hears her words but treats her petition as a minor commercial inconvenience. He then resorts to lecture her, "The problem, Emiko, is that you've got nothing to give" (p. 150). When she persists, he silences her with physical violence. When she resists her trained reflex of submission and refuses to bow her head and accept the blow, the text presents her internal refusal: "You are not a dog, she reminds herself. You are not a servant. Service has gotten you abandoned amongst demons in a city of divine beings. If you act like a servant, you will die like a dog" (p. 150). The obedience instilled into her by her creators and the training of Mizumi sensei is dismantled by her own reflective thought.

Following the killings, as Emiko hides within the flooded ruins of the city, the novel presents her speech under conditions of extreme precarity. When Anderson discovers her and asks, "Did you kill him? Really?" she refuses to lie, though she can see he desires a convenient falsehood: "I am sorry, Anderson-sama" (Bacigalupi, 2009, p. 321). When he pushes further regarding the bodyguards, she responds with a statement that is ontologically simple yet morally dense, "They hurt me" (p. 321). She is not trying to provide an abstract legal defense. Her statement provides a material, causal claim that the anthropocentric framework is unequipped to evaluate. Under what humanist framework can the pain of an engineered entity ground a right to lethal self-defense? The novel refuses to answer this directly, thus forcing the reader to recognize that the existing ethical frameworks are structurally incapable of resolving the question.

During her encounter with Gibbons in the flooded epilogue, Emiko's narrative shifts from being perceived as noise to a speech act. For the first time, Emiko is addressed as an interlocutor with ontological standing, which is a sharp departure from earlier encounters where she was treated as property or trash. Gibbons commands "Stand up!" and though "Emiko is standing before she knows it. Standing and shaking with fear and the urge to obey," she recovers from this momentary servility and asserts her physical capacity. She states, "They also made me strong. I can hurt you" (Bacigalupi, 2009, p. 338). When Gibbons informs her that her stutter-stop motion "is not a required trait" (p. 339)—that the physical limitations she has endured are corporate choices rather than evolutionary necessities—she shifts from a passive recipient of information to an active negotiator of her own future as she asks, "You can do this, truly?" (p. 339). This question is an agential demand, a claim upon history. Gibbons' response—"I can do that for you. And much, much more" (p. 339)—constitutes the novel's closest approach to a recognition scene. Emiko is addressed as a being whose desires are legitimate and whose future is imaginable. By this point, she has demonstrated Nietzsche's (2007) formulation that "there is no 'being' behind the deed"—that subjectivity is not a transcendental essence but the accumulated effect of actions and physical enactments (p. I:13). Her agency materializes through what her body performs and endures.

3.3. Distributed Agency and the Ecology of the More-Than-Human

Emiko destabilizes anthropocentric moral criteria at the level of individual subjectivity, and the ecological world of *The Windup Girl* destabilizes them at the level of ontology. The novel locates material causality away from the sovereign human individuals, within complex socio-ecological assemblages composed of pathogens, changing climates, engineered organisms, animal labor, and industrial infrastructure. Reading this environment through Bennett's (2010) concept of "thing-power" helps to recognize that Bacigalupi distributes agency across a material network in which no single human actor controls political outcomes (p. 4). According to

Bennett, thing-power is the capacity of inanimate matter and nonhuman bodies to act and produce historic effects that are neither fully intentional nor entirely mechanical. The anthropocentric assumption that moral consideration belongs exclusively to rational human subjects becomes untenable in a world where seeds, plagues, and rising sea levels exercise more decisive historical power than any of the novel's human characters. Each of these other-than-human actant challenge the assumption that the moral and causal significance require rational, intentional, individually sovereign agency.

In the novel, water operates as a persistent and overwhelming more-than-human agent, which despite possessing neither rationality nor intentionality, has historical effects far greater than any human actor in the novel. Bangkok exists in a state of permanent ecological emergency. Its survival is dependent on a fragile system of concrete barriers, diesel pumps, and sacred thread blessed by the monkhood. The text describes this infrastructure as, "Every morning the monks of a different temple bless the thread, adding spiritual support to the physical defenses that push back the hungry sea" (Bacigalupi, 2009, p. 100). This thoughtful conjunction of the technological (pumps, levees) with the religious (monks, saisin thread) shows the degree to which the human community must mobilize every available resource—material, social, and ideological—to maintain the possibility of urban habitation. It shows that no human institution alone is sovereign over the outcome of ecological destruction. The pump stations "squat like a massive toad on the embankment's edge" (p. 71), are powerful yet are perpetually vulnerable to the ocean they are engineered to displace. Idema (2020) argues that the novel's "watery rhetoric represents the environment as an event in which different bodies and their meanings intermingle, challenging hierarchical and binary thinking" (p. 56). In addition to threatening the city from the outside, water also constitutes the material conditions of the entire political narrative. When the levees are ultimately breached through human sabotage—"twelve coils of smoke rose like naga along the levees"—the more-than-human agent rushes in to dissolve the existing political architecture:

The monsoons came and the last attempts at holding back the ocean were abandoned. Rain gushed down, a vast deluge sweeping out dust and debris, sending every bit of the city swirling and rising. People swarmed from their homes with their belongings on their heads. The city slowly filled with water, becoming a vast lake lapping around second-story windows. (Bacigalupi, 2009, p. 336)

The ocean, operating together with human factional warfare, rewrites the social structure of the city. So, causality here belongs to no single sovereign will, human or otherwise.

Where water shows agency without intention, the bioengineered megodonts offer an equally complex form of more-than-human agency that proves intentionality is not what separates moral subject from instrumental object. The novel gives megodonts biological interiority without granting them any corresponding moral standing. These elephantine creatures power Bangkok's industrial core through circular labor (Bacigalupi, 2009). They serve as the city's primary energy supply system, manufacture base, and logistical backbone. The novel's economic discourse returns to them constantly. The Ministry of Environment's systemic corruption relates directly to megodont delivery schedules; the emergency command center operates on "megodont teams in the basement sending up power" (p. 291); and Hock Seng's commercial operation depends on brokering megodont labor to foreign factories. Still, they get treated as living biological beings subject to physical exhaustion, cellular breakdown, and the unpredictability of animal life. Nonetheless, megodont is an active participant whose physical capacities and biological vulnerabilities are structurally intertwined with Bangkok's political economy. Their engineered status makes them simultaneously infrastructure and organism and collapses the distinction between organism and machine that the humanist tradition historically used to strengthen the boundary between moral agents and instrumental objects. When Emiko flees through the city streets and nearly collides with a megodont's "great columnar legs" (p. 103), the encounter brings together two engineered entities, each manufactured to serve human capital, colliding in an environment that is rapidly ceasing to be organized around human mastery.

Unlike water or the megodonts, the calorie plagues possess no interiority whatsoever, and yet they reorganize global political power. It shows that historical consequence in this novel is detached from consciousness. The corporate-engineered calorie plagues represent the novel's more-than-human causality. Contrary to Cibiscosis, blister rust, scabis mold, and the Nippon genehack weevil being the static background threats, they are active agents in the global balance of power. "Blister rust is mutating every three seasons now" (Bacigalupi, 2009, p. 7). The pathogens rapidly mutate despite the calorie companies' human genetic

countermeasures. This makes every bioengineered defense obsolete and keeps the global food supply in a state of permanent precarity. Jensen (2018) describes this dynamic through the image of a "kink-spring approaching its limits" (p. 197). It's a socio-technical system under extreme tension, where every technological intervention generates unpredictable material pressures elsewhere. The plagues do not have conscious intention, but they reshape human civilization more permanently and efficiently than any parliamentary decree. Even the Environment Ministry's authoritarian efforts to contain them through its armed inspections, quarantine zones, and burning of contaminated crops are continuously outpaced by the genetic mutation of the viruses. It inverts the anthropocentric assumption that only rational actors set the terms of political history. At the end, the pathogen that has driven global geopolitics becomes the factor of the narrative's ending as the cibiscosis ultimately infects Anderson Lake, establishing the physical conditions for his death and Emiko's final act of care.

Barad's (2007) theory of "intra-action" provides the ontological vocabulary for this distributed causality (p. 128). Whereas the traditional concept of interaction presupposes independent, pre-existing entities that subsequently enter into relationships, intra-action claims that distinct entities and their specific properties emerge through their co-constitutive relations known as entanglement (Barad, 2007). In *The Windup Girl*, the levees, the rising ocean, the megodonts, the mutating plagues, the international calorie corporations, and the New People do not operate as independent variables as in the traditional concept but rather intra-actively constitute one another. Bangkok's trade policies are shaped by global crop survival; crop survival is shaped by pathogen mutations; mutations are driven by corporate gene-manipulation; and gene-manipulation reshapes local ecologies. So, agential force is distributed across this entire material network rather than localized within a sovereign human consciousness and action.

Moreover, the engineered feral cats known as cheshires complete this argument by providing a significant metonymy for this distributed agency. Designed as a "high-tech homage to Lewis Carroll" (Bacigalupi, 2009, p. 108), these camouflaging predators have overrun the Southeast Asian ecosystem. They further drive native bird species to extinction through their manufactured evolutionary advantages. They were engineered for human domestic amusement, but they subsequently escaped into a world they were too well-designed to inhabit without dominating. Unlike water, the megodonts, or the plagues, cheshires' relevance is not in that it lacks rational agency, but Emiko reflects on their ecological dominance with a melancholy that mirrors her own existential condition. She meditates, "They are too much improved for this world, I think. A natural bird has so little chance, now. . . . Generippers learned too much from cheshires" (pp. 107–108). She recognizes that like cheshires, she is also a product of those same corporate laboratories, that she is "too much improved" for the world she inhabits, and like the cheshires, she is designed as a "genetic dead end" (p. 108) unable to reproduce without corporate intervention.

The cheshire functions as her evolutionary mirror, as a being whose engineered capabilities have made it ecologically dominant yet is functionally sterile. If the same engineered vulnerability that strips the cheshire of moral standing also describes Emiko, then the humanistic criteria cannot coherently grant her standing either. However, the vital difference between the two is that Emiko possesses an awareness of this condition, and this reflective capacity distinguishes her from the animals around her. In the epilogue, she and a feral cheshire become companions within the abandoned, flooded ruins. They are "siblings. Sympathetic creatures, manufactured by the same flawed gods" (Bacigalupi, 2009, p. 327). This comparison challenges the remaining human-centered belief that Emiko is morally superior to the genetically engineered animals, while also showing that her self-awareness helps her survive and makes her different.

Wolfe (2010) frames the ethical stakes of this ontological shift by emphasizing that posthumanism requires abandoning "the schema of the human as the measure of all things" (p. xv). This does not mean replacement of the human with a different biological center, but his claim lies in the recognition of the schema of centralized measurement itself as inadequate to describe a world characterized by radical entanglement. In such an environment, the human exists as a single node within a vast network of agencies rather than the network's sovereign legislator. Water, the megodonts, the plagues, and the cheshires enact it from four different angles — agency without intention, interiority without moral standing, consequence without consciousness, and vulnerability without exceptionalism — so that by the time the argument returns to Emiko, the criterion of sovereign rational agency has been dismantled. This is an ontological description of how material causality operates, which the text exemplifies through the literal drowning of Bangkok. The fall of the city is not attributed

to a single human decision. It collapses because human political conspiracies intersect with ecological feedback loops whose physical momentum no single actor can reverse. Emiko's agency emerges within this identical networked environment. She is an assemblage of engineered genes, somatic affects, economic exploitation, and tactical adaptability. Just as the concrete levees cannot permanently contain the rising ocean, anthropocentric ethics cannot permanently contain the proliferation of more-than-human agency. When the city floods and the human political hierarchy dissolves, Emiko adapts to the material transformation. And she secures a skiff, navigates the submerged streets, hunts cheshires for survival, and confronts those who threaten her "with as much mercy as she knows how" (Bacigalupi, 2009, p. 337).

3.4. Toward Posthuman Ethics: Consequence and Implication

The preceding analysis reaches two theoretical conclusions. First, the traditional criteria used to secure exclusive moral agency, such as rational autonomy and recognized linguistic speech, are historically contingent mechanisms of political enclosure rather than natural reflections of ontological worth. Emiko satisfies neither criterion as classically formulated by Kant or Arendt, rather she weighs her chances, experiences intense physical suffering, makes ethical choices, and transforms her material world in ways that cannot be accounted for within the humanist framework that classifies her as property. Anderson's examination of Emiko, claiming that "She's just a goddamn windup. All they do is obey" (Bacigalupi, 2009, p. 257), is not an accurate description of her ontology. It's rather an index of humanism's conceptual failure. Second, the ecological systems within the text show that material causality cannot be restricted to sovereign human actors alone, but more-than-human entities like viruses, animals, oceans, and corporate technologies all participate in producing the historical outcomes that moral frameworks are assigned to evaluate.

When agential capacity is viewed as relational and distributed rather than sovereign and individual, the ethical consequences become highly specific. Moral responsibility should therefore become systemic rather than individual. It can no longer be reduced to the intentions of individual rational actors and instead grapple with the diffuse causality of complex material assemblages. The global calorie corporations are morally accountable because they engineered an extractive socio-biological system whose destructive feedback loops they could no longer contain after setting it in motion. Furthermore, biological species cannot fully ground ethical privilege because the capacity to suffer, adapt, and respond to the conditions of material existence is not uniquely human. Membership in *Homo sapiens* alone is not a sufficient justification for exclusive moral consideration. Instead, autonomy should be understood as a situated practice rather than a transcendental capacity, with agency emerging through material conditions shaped by the constraints and possibilities of embodied, ecological, and technological existence.

Braidotti's (2013) posthuman philosophy explains what such a conceptual reconfiguration of moral consideration requires. This perspective moves beyond the universalized and exclusionary figure of "Man" toward what can be described as an "affirmative understanding of relational subjectivity," one that grounds ethical life in the shared material vulnerability of all living beings. *The Windup Girl* states this philosophical position through the evolving relationship between Emiko and Anderson Lake. Their alliance begins as a clear instance of corporate exploitation but gradually develops into a far more complex and ethically significant bond. When Anderson is left dying from the cibiscosis plague—a catastrophe unleashed by the very corporate system he helped sustain, he is abandoned by his profit-driven business associate—"Your people are not loyal" (Bacigalupi, 2009, p. 326). In this situation, it is an engineered being, Emiko, who chooses to remain beside him. "I am New People," she explains to Hock Seng, who is fleeing the biological contagion in terror. "Your sicknesses do not frighten me" (p. 327). She is not staying because of her programmed domestic servitude; this choice has been made out of her deliberate decision. She chooses to remain beside a dying man who can no longer offer her financial protection or legal freedom. She uses a damp cloth to squeeze water into his mouth; he "sucked at it like a baby before he finally expired, whispering apologies to ghosts that only he could see" (p. 336). This sequence shows an explicit act of care, which the novel insists, is an emergent material relation available to more-than-human entities.

The narrative closes with Gibbons' material promise of a genetic future for Emiko's kind: "I can do that for you. And much, much more" (Bacigalupi, 2009, p. 339). This promise does not offer a conventional narrative resolution nor it erases the trauma Emiko has endured. It cannot resurrect Anderson or rebuild the drowned metropolis. Instead, it opens a posthuman horizon, where the future of the planet is not exclusively human. It

gives a glimpse of the future where the entities who will inherit the radically altered environment may be New People, and that this evolutionary transition is a material possibility rather than a catastrophic failure of nature. The promise is not made to a human subject, but to an engineered entity sitting beside a fire in a submerged city. Yet, it is executed in the same moral standing as any ethical commitment made between persons, whose fulfillment depends entirely on relational trust.

4. Conclusion

The Windup Girl destabilizes anthropocentric moral philosophy by exposing the structural fragility of the criteria that made that category possible in the first place. Existing scholarship on *The Windup Girl* has approached its treatment of genetic modification and ecological catastrophe largely through separate critical lenses. Selisker explains how the novel makes molecular-scale genetic modification visually intelligible but falls short of treating Emiko's stutter-stop motion as a mechanism of political exclusion, and does not discuss the novel's other-than-human actants at all; Idema and Jensen read the novel's rising seas, monsoons, and mutating plagues as figures of climate crisis and infrastructural collapse from an environmental and biopolitical frame rather than a philosophical one; Hageman's concept of queer refusal and Straetz's focus on labor and embodiment each identify the novel's anti-humanist logic without following that logic into the Kantian and Arendtian criteria it dismantles. These separate observations can resolve into a single argument that the existing scholarship has approached but not yet articulated as such: that rational autonomy and linguistic sovereignty are historically contingent mechanisms of political enclosure rather than natural thresholds of moral worth. Emiko does not achieve humanity; rather, her historical existence reveals that "the human" was never as stable, sovereign, or morally unique as the Western tradition required it to be. And the cheshires, megodonts, calorie plagues, and floodwaters make the same case at a different scale.

The enactment of the philosophical intervention through the characterization of Emiko, other more-than-human entities like cheshire, megodont, calorie plague, and the rising sea level rather than the mere assertion of the intervention makes it so precise. The sentence that breaks off immediately before Emiko executes Raleigh—"The falcon lies dead. / And then she thinks that some things are worse than dying. Some things can never be borne. / Her fist is very fast. Raleigh-san's throat is soft" (Bacigalupi, 2009, p. 244)—represents the text's crucial formal strategy that agency is not explained through humanist psychological interiority, but is instead performed in the typographical space between degradation and physical action. The final image of Emiko in a flooded Bangkok, where she navigates abandoned avenues by skiff, catches fish with her bare hands, cares for a dying investor who cannot protect her, and sits by a fire to negotiate the genetic future of her species, constitutes the novel's central argument. The argument is not that windups are human, but that what the philosophical tradition has called humanity—the capacity to suffer, to choose, to act, and to care for another in conditions of radical precarity—was never its exclusive possession.

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