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Between Humanity and Technology: Speculative Reflections on Cyborg Migration—Insights from *The Waste Tide* and *Poor Things*

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ABSTRACT

The fast growth of digital technology has resulted in new types of migration, most notably the migration of cyborgs—entities that combine human and machine components. Speculative fiction serves as a reflective lens, illuminating the potential tensions inherent in the evolving relationship between humans and machines. This study investigates the socio-environmental implications of cyborg migration through the narratives of The Waste Tide by Chen Qiufan and Poor Things by Alasdair Gray. In The Waste Tide, a near-future China is depicted where electronic waste scavengers are transformed into cyborgs, mirroring the anxieties around exploitation, environmental degradation, and the fight for cyborg rights amidst technological advancement. This narrative encapsulates the struggle for identity and agency in a world where boundaries between humans and machines blur, revealing the complexities of coexistence. Conversely, Poor Things reimagines Victorian society through cyborg-like beings, addressing societal fears while underscoring the necessity for inclusive policies that acknowledge both human and nonhuman perspectives. By analyzing these texts, this article explores the emerging challenges faced by cyborg refugees, the requisite legal and institutional frameworks to navigate such migrations, and strategies to enhance acceptance and inclusivity in urban environments. Ultimately, this research contributes to the discourse on humane migration approaches in the digital era, emphasizing the intricate interplay between technology, culture, and environmental sustainability.

1. Introduction

Migration, a fundamental human experience, changes societies by challenging existing institutions and generating transnational spaces, exposing disparities and impacting community life[1]. Cyborg migration, a notion that combines people's movements with incorporated technology into the human body, is becoming increasingly important in modern culture. It goes beyond typical migration and includes changes in life stages, adaption to new technology settings, and metamorphosis inside posthuman bodies[2]. The word 'cyborg' originated in the 1960s, according to Barfield and Williams (2017). Cyborgs include exterior bodily enhancements, internal technology, brain modifications, exoskeletons, and mobility aids[3, 4], within cyborg migration the concept extended to embrace different areas, challenging dualistic ideas of urban space and emphasizing the hybridity and indeterminacy of the urban experience[5]. Speculative fiction uses cyborgs to explore complicated topics such as gender, ethnicity, and identity, frequently questioning societal conventions and imagining alternate worlds[6]. Cyborgs in literature frequently address sociocultural themes like as privacy rights, exploitation, and environmental destruction. For example, cyborg privacy rights are being contested in terms of data protection and consent in digital environments[7, 8]. This study aims to explore the socio-environmental implications of cyborg migration and analyze the challenges faced by cyborg refugees through literary narratives. Additionally, the research seeks to propose strategies for developing inclusive policies and fostering more inclusive urban environments to address the needs of cyborg migrants.

In current discourse, cyborg migration poses a fresh dilemma that overlaps with identity, governance, and societal inclusion. While current research has addressed the migration of human and non-human entities, the topic of cyborgs is particularly understudied. Although Biopolitics, Critical Migration Studies, and Sociology of Technology provide solid frameworks for analyzing migration, their applicability to cyborg migration is limited and incomplete. Furthermore, the novels The Waste Tide and Poor Things, which include rich tales about the cyborg state, have yet to be extensively analyzed in this context. This study attempts to fill these gaps by combining these theoretical frameworks to investigate the increasing problems, legal systems, societal fears, and urban sustainability issues associated with cyborg migration.

2. Literature Review

The intersection of posthumanism, cyborg migration, and gender dynamics in Chen Qiufan's The Waste Tide and Alasdair Gray's Poor Things provides a rich context for exploring identity, agency, and social justice in a technologically mediated world. Both novels depict technology as an active participant in shaping characters' identities and societal structures, challenging traditional human-nonhuman boundaries. For instance, the cyborg transformation of Mimi in The Waste Tide serves as a metaphor for the commodification of human experience under capitalism[9], while Bella in Poor Things embodies the cyborg figure, blurring the lines between human and artificial entities. However, current research often focuses on static representations of cyborgs, neglecting the dynamic process of cyborg migration and its implications for agency and identity. Future studies should examine the spatial and temporal dimensions of cyborg migration, especially in the context of environmental and economic justice[10].

Both novels also critique socioeconomic disparities and the exploitation of marginalized communities. The Waste Tide highlights environmental degradation caused by global capitalism, while Poor Things explores Victorian societal norms and the exploitation of women. Gender dynamics are central to both texts, with female protagonists embodying feminist reclamation and ecological activism. However, current research often treats gender and technology as separate entities, failing to fully explore their intertwined relationship. Future studies should investigate how cyborg migration impacts gender identity and agency, particularly in the context of systemic oppression.

Despite extensive research on posthumanism and cyborg identity, significant gaps remain. Future work should

focus on the dynamic processes of cyborg migration, the intersection of technological agency with socioeconomic inequality, and the complex relationship between gender and technology. Addressing these gaps could contribute to a more comprehensive understanding of posthumanism and its implications for contemporary society[11].

3. Cyborg Migration Framework

The conceptual framework for "cyborg migration" is a sophisticated academic discourse with numerous domains to investigate the intricate dynamics of life, identity, and technology. It critically examines the concepts of biopolitics and biopower, showing how governance and control are exercised over populations and processes, emphasizing body subjection and authoritative management of life and identity. By emphasizing the power dynamics, socioeconomic inequalities, and identity implications that migration brings about, the multidisciplinary field of critical migration studies challenges conventional notions of migration. Scholars such as Nicholas De Genova and Sandro Mezzadra have contributed to the topic by investigating how migration links with themes of race, labor, and global capitalism. Important works include De Genova's[12] and Mezzadra and Brett Neilson's "Border as Method, or the Multiplication of Labour"[13]. Cyborg refugees, who incorporate extensive technological upgrades into their bodies, confront distinct issues in current and future situations. These concerns are diverse, addressing identity, belonging, and societal acceptability.

3.1. Biopolitics and Biopower

Biopolitics and biopower, as articulated by Michel Foucault[14], provide a foundational understanding of how state and non-state actors exercise control over life processes and populations. In the context of cyborg migration, these concepts are pivotal for analyzing the governance mechanisms that regulate the movement and integration of cyborg populations. Biopolitics involves the strategic control and management of biological life, including health, reproduction, and mortality, which are critical factors in the state's approach to cyborg migration. Biopower extends this control to the level of individual bodies, where the authority to define life and identity shapes the experiences of cyborgs

within society. This framework allows us to examine how cyborgs are subjected to processes of normalization and exclusion, and how these processes impact their social integration and rights. Michel Foucault first presented the notion of biopolitics in his Collège de France lectures, namely The Birth of Biopolitics[15] and Society Must Be Defended[16]. The study of biopolitics focuses on how governments use institutional control mechanisms to regulate people's bodies, health, and even life itself. The phrase "biopower," coined by Foucault, refers to the strategies and tactics used in biopolitics, stressing population control and physical servitude. The notion is explored in Foucault's book The History of Sexuality, Volume 1[14]. In line with Michel Foucault's theories of governance and control, states and institutions use biopower, legal frameworks, and technological monitoring to maintain control over cyborg populations. Foucault defined biopower as the ability to dominate social existence from the inside, using life as an instrument for governmental manipulation[17].

3.2. Critical Migration Studies

Critical Migration Studies (CMS), influenced by scholars such as De Genova[12] and Mezzadra & Neilson[13], challenge traditional migration narratives by emphasizing the role of power dynamics and social inequalities in shaping migration patterns and experiences. CMS provides a lens through which to understand the unique challenges faced by cyborg migrants, such as labor exploitation and social integration issues. This framework highlights the intersectionality of migration with other forms of oppression, such as racism, sexism, and ableism, which can exacerbate the vulnerabilities of cyborg migrants. By adopting a critical perspective, CMS enables us to explore how cyborg migration is not merely a movement of individuals but is embedded within broader structures of power and inequality that define who can migrate, under what conditions, and with what consequences. Actor-network theory (ANT), created by Bruno Latour, Michel Callon, and John Law, emphasizes the equal treatment of human and non-human elements inside networks. It contradicts traditional social theories by claiming that all participants, whether people, technology, organizations, or concepts, have agency and impact[18]. This approach is especially beneficial for understanding how networks are built, maintained, and changed over time,

as it emphasizes the dynamic connections between diverse actors and the translation processes that stabilize these networks [19, 20].

3.3. Sociology of Technology

The Sociology of Technology, as discussed by Winner [21] and Latour [22], examines the interplay between technology and society, emphasizing how technological developments are not neutral but are deeply entwined with social structures and values. This perspective is crucial for understanding the role of technology in shaping the experiences of cyborg migrants. It allows us to analyze how technological advancements facilitate or hinder migration, and how they influence societal attitudes and policies towards cyborgs. By considering technology as a social actor, we can explore how cyborgs are represented and perceived in society, and how these representations affect their rights and opportunities. This framework also helps us understand the ethical implications of technological developments, particularly concerning issues of agency, autonomy, and the commodification of cyborg bodies.

By integrating the following three theoretical perspectives, the conceptual framework provides a multifaceted approach to analyzing cyborg migration. It enables us to understand the complex interactions between state power, social inequalities, and technological advancements, and how these factors shape the experiences and rights of cyborg migrants. This interdisciplinary approach is essential for developing a comprehensive understanding of cyborg migration and for informing policies that promote justice and equity for all migrants, including cyborgs.

4. Cyborg Migration in Two Novels

The conceptual framework offers a thorough prism through which to examine cyborg migration. With The Waste Tide and Poor Things, the writer uses this framework to explore the complexities of identity, authority, and social cohesiveness in the context of existential and technological changes. The books give insights into the real-world ramifications of cybernetic migration and the treatment of marginalized communities, serving as case studies to demonstrate how these theoretical themes emerge in fictional storylines.

4.1. Evolving Challenges Faced by Cyborg Refugees

The idea of migration in Poor Things is more symbolic, focusing on the protagonist's transition between many states of life. At first, Bella Caledonia is not a cyborg. As a product of a skillfully manipulated medical resurrection, Goodwin Baxter's rebuilt suffocated Bella by transplantation of her unborn baby's brain [23]. Papatya [24] refers to Bella Baxter as a "monster" created by a male doctor, both literally and figuratively, as seen in the following two scenes:

As a child, I took it for granted that only women who worked with their hands would not find the natural Duncan Wedderburn a disgusting creature, and the result of this was that working women became the only class of female who attracted me. As an adolescent I thought this proved me a kind of monster …Guilt and rage brought me panting to my feet—mainly rage against Bella, for what had she done with all my money? Without thinking I strode forward down a lane like a corridor, grinding my teeth at the memory of my sufferings in the grip of that gorgeous monster [25].

Critical Migration Studies emphasizes the fluidity and complexity of migration; hence, this existential movement may be understood as a boundary-crossing challenge to social norms and identity stability. Bella's situation reflects the fluidity and complexity of migration as emphasized in Critical Migration Studies. Godwin Baxter refrains from sending her to school, fearing that she may be seen as exotic, which underscores the societal norms that often define and constrain identity. His plan to take her on a meticulously arranged world tour—tracing a closed circle from Glasgow to Odessa, Alexandria, Gibraltar, Paris, and back to Glasgow—highlights the existential movement that challenges conventional boundaries. During their travels, Bella passionately asserts her status as a world-class lady, which reveals her struggle for identity amid shifting social landscapes. When she shares with her boyfriend, Mr. McCandless, that Miss Baxter represents a woman of the British Empire, she grapples with the complexities of her own identity against the backdrop of imperial narratives. As her guardian guides her through the neighborhood post-injury, she is accompanied by someone who embodies both beauty and grit, allowing her to learn from experiences that defy her prior perceptions. Observing the laughter directed at the impoverished—individuals

clad in worn boots, patched coats, and tattered pants—Bella confronts the harsh realities of societal disparities, further complicating her understanding of identity and belonging within the global context [25]. It will allow him to free her from the attachment that has fast grown romantic and unclean, the practice of becoming a doctor [25].

In *The Waste Tide*, Chen Qiufan critiques global capitalism and the exploitation of migrant workers within the high-tech recycling industry. The metaphor of the "waste people" serves to illuminate the stark global injustices that underpin the e-waste sector, revealing how marginalized individuals are often rendered invisible in a system that prioritizes profit over human dignity. These waste people, migrant workers from less economically developed regions of China, are reduced to insignificant instruments valued primarily for their ability to recover precious elements from discarded electronic devices. This commodification strips them of their humanity, positioning them as mere resources in a profit-driven system. Despite these oppressive circumstances, the waste people demonstrate remarkable resilience and resistance. They organize and rebel against their oppressors, challenging the hierarchies of power that seek to exploit and marginalize them. This resistance signifies their agency and determination to assert their humanity and dignity in the face of extreme adversity. Their cultural identity is complex; while they bring their regional varieties of Chinese, primarily dialects of Mandarin, they communicate with one another and with the local inhabitants of Silicon Isle in Modern Standard Mandarin, the lingua franca of contemporary China [26]. This linguistic transition highlights the duality of their existence, as they must adapt to a dominant culture that often overlooks their unique backgrounds.

In this context, cyborgs serve as a powerful metaphor for the dehumanization and commercialization of these migrant workers. Their integration into a technologically driven society raises critical questions about their rights, status, and sense of belonging. As cyborgs, they are depicted as both human and machine, reflecting how their labour is commodified and their identities manipulated. This representation underscores the urgent need to address the ethical implications of technological advancement and the systemic exploitation faced by those relegated to the margins of society.

4.2. Legal and Administrative Systems for Managing Cyborg Migration

In the discourse surrounding cyborg bodies, particularly in the context of modern governance, the themes of authority and biopolitics emerge as critical focal points. Cyborgs, as hybrid beings, challenge traditional categorizations and regulatory frameworks established by legal and administrative bodies. These frameworks often fail to adequately recognize or misrecognize the complexities of cyborg existence, leading to a form of governance that is both reductive and exploitative [27]. The management of cyborg bodies, therefore, reveals the limitations and failures of contemporary authority, as they strive to classify and control beings that defy easy categorization.

In *Poor Things*, Bella's transformation and reanimation serve as a poignant embodiment of biopolitical discourse, where her very existence threatens established biopolitical institutions. This transformation calls into question the power dynamics that govern identity and existence, reflecting Michel Foucault's concerns about the regulation of bodies and the ethics surrounding life management. The act of reanimating Bella not only disrupts the natural order but also challenges the moral and political frameworks that seek to define what constitutes a living being. In this regard, the narrative critiques the socioeconomic and political control exerted over marginalized populations, drawing parallels to the treatment of rural inhabitants in nineteenth-century Britain. The excerpt articulates this critique by illustrating how these populations were seen as mere economic instruments, their worth reduced to their utility for the ruling elites: "In Wales, Ireland and Scotland perhaps. In England we still have a class of farmers, farm servants, estate workers et cetera, but the landowners and city dwellers regard them as useful animals, like horses and dogs. Our parliament has defined freedom as our ability to buy as cheaply as possible and sell as dear as possible anywhere, with the help of our army and navy. This enables us to cut up countries with famines as readily as a carpenter cuts wood with a saw" [25]. This passage highlights a biopolitical governance framework that prioritizes economic liberty, defined solely in terms of profitability, thereby enforcing a worldview where the interests of the wealthy overshadow the rights and dignity of the vulnerable.

In the context of *Poor Things*, the technological environment is imbued with iconography, peritext, and paratext that engage in a political dialogue with "Victorian values"[28]. This dialogue underscores the juxtaposition between the redefined notions of freedom and the realities faced by those who exist on the margins of society. The transformation of Bella extends beyond personal identity; it becomes a commentary on the implications of authority that seeks to regulate life itself. The biopolitical impulse to categorize and manage beings based on their economic viability ultimately reflects broader societal failings in recognizing the intrinsic value of all individuals. Thus, the narrative of *Poor Things* serves as a critical lens through which to examine the ways in which modern authorities mismanage and misunderstand cyborg bodies. By foregrounding the intersections of authority, biopolitics, and identity, the text invites readers to reconsider the ethical implications of governance in a world increasingly populated by hybrid beings. In doing so, it urges a re-evaluation of what it means to be human in an age of technological advancement and systemic inequity.

Continuing the analysis of authority in *The Waste Tide*, we see the theme of exploitation and mismanagement of cyborg-like entities further elucidated through the depiction of migrant labourers on Silicon Isle. The narrative echoes Michel Foucault's concept of biopower, revealing how marginalized groups are systematically dehumanized and regulated within a capitalist framework. Chen constructs Silicon Isle as a site where the forces of globalization intersect with remnants of traditional Chinese trading empires, creating a complex landscape that blends fantasy and reality[29]. This setting becomes a microcosm for examining how bodies – both human and cyborg-like – are subjected to the dictates of authority. The triumvirate of the Luo, Chen, and Lin clans illustrates the consolidation of power and the resultant exploitation of the waste migrant population. The excerpt notes, "A real-life example of the Matthew effect, the triumvirate of Luo, Chen, and Lin clans had in effect been reduced to reign by the Luo clan alone. It was even powerful enough to influence government policy… TerraGreen Recycling would contribute the technology and some funds, and the Silico Isle government would allocate the land, broker an accord among the local clans, integrate the existing waste processing industrial resources, and supply the large amounts of cheap labor necessary later"[26] This

passage highlights the intertwining of corporate power and governmental authority, showcasing how economic interests supersede the rights and well-being of marginalized communities.

In this context, the Luo clan emerges as a dominant force, monopolizing the political landscape and manipulating the Silico Isle government to serve its interests. The arrangement between TerraGreen Recycling and the local government underscores the exploitative nature of biopower, where technological resources are leveraged to extract labor from the waste migrant population. These laborers, often viewed as mere commodities, are reduced to their economic utility, reflecting a broader critique of how authority mismanages and exploits cyborg-like bodies within a capitalist system. Furthermore, the concept of the Matthew effect – where "the rich get richer and the poor get poorer" – resonates powerfully within this framework. The Luo clan's ascendance to power illustrates how established authorities can concentrate resources and influence, perpetuating a cycle of marginalization for those at the bottom of the socioeconomic hierarchy. The waste migrant people, caught in this web of exploitation, embody the dehumanization inherent in such systems. Their identities are subsumed by the demands of a capitalist economy, where they are seen not as individuals with agency, but as necessary labor resources integral to the functioning of the recycling industry.

The interplay between the clan's dominance and TerraGreen Recycling exemplifies a governance model that prioritizes elite interests, threatening the stability and legitimacy of biopolitical institutions meant to regulate and protect the welfare of all citizens. As the narrative unfolds, it becomes clear that these institutions are increasingly co-opted to serve the interests of a privileged few, further entrenching societal divides. The environmental deterioration depicted in the novel serves as a poignant backdrop for the biopolitical administration of cyborgs, who are relegated to the status of disposable labor within a capitalist framework. This portrayal reflects the broader consequences of unchecked industrial expansion and globalization. In this context, cyborgs are not merely hybrid beings; they symbolize the exploitation of labor that exists at the intersection of environmental degradation and economic ambition. Chen's exploration of the Waste Tide Project reveals an intricate relationship between cyborgs and the dual challenges of combating glob-

alization and addressing the environmental crises stemming from rapid industrialization. The narrative underscores how these cyborg entities are utilized to navigate the complexities of modernity while harkening back to the cultural legacies of premodern Chinese civilization. This juxtaposition raises critical questions about identity, agency, and the ethical implications of using technology to address problems wrought by its own proliferation.

The excerpt further elucidates the tensions inherent in globalization and its effects on both American and Chinese labor markets: "While the American working class decried the cheap Chinese laborers robbing them of jobs, they were also thankful that the inexpensive Chinese products helped them maintain their dignified standard of living. Meanwhile, in China, the dollars were converted into yuan and filled the pockets of the nouveaux riches, the factory owners, channel distributors, technicians, and low-level bureaucrats who disdained the Chinese imitations and dedicated themselves to the pursuit of replicating the lifestyle of Manhattan's Lower East Side or the San Francisco Bay Area, including their rapid upgrade cycles"[26]. This passage encapsulates the paradoxical dynamics of globalization, where economic benefits are unevenly distributed, and the labour force is caught in a cycle of exploitation. As the American working class grapples with the implications of global labour competition, they simultaneously rely on the very systems that perpetuate inequality. In China, the wealth generated from this labour contributes to a new class of elites who aspire to replicate Western lifestyles, further entrenching social stratification. The discontent of the American working class and the aspirations of the Chinese nouveaux riches illustrate the intricate web of dependencies and conflicts that arise within a globalized economy.

Through these narratives, *The Waste Tide* critiques the biopolitical management of cyborgs and laborers, revealing how authority exploits and perpetuates a cycle of marginalization. The environmental and social ramifications of this governance model call into question the legitimacy of institutions that prioritize elite interests over collective welfare. As the novel unfolds, it urges readers to confront the ethical dilemmas posed by globalization and the urgent need for a more equitable and sustainable approach to governance that recognizes the value of all individuals, regardless of their position within the power structure.

4.3. Societal Anxieties and Strategies for Acceptance and Inclusivity

The novels *The Waste Tide*[26] by Chen Qiufan and *Poor Things* [25] by Alasdair Gray present distinct perspectives on societal fears regarding cyborgs through the lens of Actor-Network Theory (ANT). This theoretical framework emphasizes the interconnectedness of human and non-human agents in shaping social dynamics, suggesting that both technology and the entities that utilize it have profound effects on society.

In *Poor Things*, the theme of reanimation and resurrection encapsulated through the character of Bella, who undergoes significant transformation due to Godwin Baxter's experimental technologies, raises ethical concerns about the implications of scientific advancements. The quote from the novel, "THAT is why our arts and sciences cannot improve the world, despite what liberal philanthropists say. Our vast new scientific skills are first used by the damnably greedy selfish impatient parts of our nature and nation, the careful kindly social part always comes second"[25], underscores the critique of how technology is often employed for self-serving purposes rather than altruistic ends. This echoes ANT's principle that technological advancements are intertwined with human motivations and societal values.

Firstly, the act of using her newborn daughter's brain to resurrect Bella raises profound questions about identity and autonomy. This mirrors the themes in Mary Shelley's Frankenstein, where the creation of life leads to a crisis of ethical responsibility. In the context of ANT, this act can be viewed as a network formation where the roles of the scientist, the technology of reanimation, and Bella as a cyborg entity interact to redefine notions of identity and life. The societal fear regarding this manipulation of life reflects broader anxieties about the loss of agency and the moral implications of such technological capabilities. In addition, Godwin Baxter embodies the archetype of the "mad scientist," whose radical experiments push the boundaries of medical ethics. His use of human remains and the merging of bodies and minds highlight the potential for technology to disrupt social order. Through ANT, Baxter's character illustrates how scientific practices form networks that can either empower or disempower individuals, emphasizing society's apprehension toward the unpredictable consequences of unregulated experimentation.

Furthermore, Bella's interactions with the medical establishment, particularly her performances for Charcot's lectures, reveal the gendered dimensions of medical diagnoses in the 19th century. This aspect of her journey illustrates how social attitudes towards women intersect with technological practices, shaping the experience of medical treatment. Here, ANT allows us to see the interplay between societal norms, medical practices, and individual identities, showcasing how fears surrounding cyborgs are rooted in historical patterns of control and surveillance over marginalized bodies. Moreover, Bella's unique medical circumstances significantly impact her socialization and education, reflecting the complexities of identity formation in the context of technological intervention. Through ANT, we can analyze how educational systems and societal expectations interact with technological advancements to shape individual trajectories. The fear of cyborgs in this context stems from the potential for technology to disrupt traditional roles and expectations, leading to uncertainty about social cohesion and order.

In contrast, *The Waste Tide* addresses the exploitation of cyborg-like entities within a capitalist framework, where the labor of waste migrants is commodified. The novel critiques how technology is deployed in waste recycling industries, emphasizing the socio-political ramifications of such networks. The laborers in this narrative become cyborgs not only through their interactions with technology but also through the economic systems that govern their lives, reflecting society's fears of losing agency to mechanized processes. The novel examines how advancements in technology both empower and oppress marginalized populations, revealing the complexities of cyborg existence in a rapidly changing world.

To begin with the cyborgs in *The Waste Tide* symbolize a critical intersection of technology and labor exploitation. The characters are often depicted as waste workers who rely on mechanized exoskeletons, or mecha, for their labor-intensive tasks. This mechanization highlights a duality in technological progress—while it offers enhanced physical capabilities, it also serves as a tool for systemic oppression. The mecha, designed to augment human labour, perpetuates a cycle of exploitation where the workers become further entrenched in a capitalist system that prioritizes efficiency over dignity. The reliance on these technologies raises significant ethical questions about agency and autonomy, as labourers are reduced to mere cogs within a technologically-driven economy. In addition, the militarization of technology is another central theme in the novel. The portrayal of mecha not only emphasizes their functional aspects in labour but also their role in enforcing authority and control. The use of mechanized suits for both work and battle reflects a societal shift where technology becomes a means of oppression, exacerbating existing social and environmental issues. This militarization fosters a culture of surveillance and dominance, aligning with ANT's ideas about how non-human agents (in this case, technology) shape social dynamics and reinforce power structures.

Furthermore, the novel's introduction of virus battery technology opens up a dialogue about bioengineering ethics. The ability to manipulate DNA to create electrodes made of different metals presents transformative possibilities, but it simultaneously raises fundamental concerns about the implications of such advancements. As expressed in the text: "transformational at every level: designers could precisely adjust the DNA injected into the virus to produce electrodes made of different metals"[26]. This manipulation of biological material to create technological enhancements reflects the complex relationship between humanity and technology, where the line between enhancement and exploitation becomes increasingly blurred. The ethical ramifications of such technology prompt reflections on identity, agency, and the potential for dehumanization. Moreover, the use of prosthetics in the novel serves as a powerful metaphor for both empowerment and oppression. While prosthetics can restore lost functionality, they also embody the injustices faced by those who are marginalized. The advanced prosthetic devices not only replace lost limbs but also amplify human potential, raising questions about who gets access to such enhancements and at what cost. This duality reflects the ongoing struggle against dehumanization, as individuals are often seen as less than human within a system that commodifies their labour and bodies.

Also, the augmented helmet, described as "an augmented-sensing device shaped like a six-tentacled octopus"[26], symbolizes our growing reliance on digital enhancements to navigate reality. This device alters how individuals perceive the world and interact with their environment, reinforcing the idea that technology mediates human experience. As characters engage with these augmented realities, we

see a shift in their identities and social interactions, prompting questions about the implications of such enhancements for personal agency and social relationships. The excerpt, "Mimi-mecha stood still—it was a strange feeling. She knew very well that her real body lay dead under the earth, but she shook off the water gathered in the depressions in the shoulder of her armor and listened to the buzzing of the electroactive artificial muscle fiber bundles contracting"[26], encapsulates the profound disconnection between the cyborg's physical existence and its former humanity. This moment highlights the existential crisis faced by cyborgs, who grapple with their identities in a world that devalues their human experiences. The buzzing of the artificial muscle fibers serves as a reminder of the technological forces that shape their lives, reinforcing the themes of alienation and the complex interplay between humans and machines.

In conclusion, *The Waste Tide* offers a critical examination of the intersection of technology, labour exploitation, and societal transformation. Through the lens of the Sociology of Technology, the novel reveals how technological advancements can both empower and oppress diverse populations, highlighting the ethical dilemmas inherent in our reliance on mechanization and bioengineering. As the narrative unfolds, it invites readers to reflect on the implications of these technologies for human identity, agency, and the environment, ultimately prompting a deeper understanding of the transformative power of technology in shaping our social realities.

Both novels highlight the complexities of identity, agency, and the ethical boundaries of technological development. Through ANT, the distinct social dynamics surrounding cyborgs emerge, revealing how human and non-human actors shape societal fears and expectations. The fear of cyborgs is not merely a response to technological advancements; it is deeply intertwined with historical, cultural, and economic contexts that shape our understanding of identity and agency in an increasingly technological world. Things provide nuanced explorations of societal fears towards cyborgs, illustrating how technological advancements can disrupt traditional notions of identity and agency. Through the lens of Actor-Network Theory, we gain insight into the intricate networks of human and non-human actors that shape these dynamics, ultimately prompting critical reflections on the ethical implications of our rapidly evolving technological landscape.

4.4. Sustainability of Urban Spaces in Accommodating Cyborg Populations

According to Manehasa & Çoniku[30], urban spaces are essential to the sustainability and regeneration of cities. Their research emphasizes urban areas must be transformed into public areas that foster social interaction, pedestrian accessibility, and environmental quality. The sustainability of urban spaces in accommodating cyborg populations necessitates a co-construction of social and technical elements, as evidenced by digitally driven activism in South Africa and Sierra Leone, which rethinks the concept of agency and emphasizes the importance of co-producing knowledge to address urban inequalities[31]. The integration of live microorganisms with human-computer interaction, as studied as "Living Bits," symbolizes a new age of organic computation, blurring the borders between biological and digital systems[32]. The Waste Tide and Poor Things tackle the sustainability of urban spaces in supporting cyborg populations, offering an intriguing lens to look at the relationship between technology, identity, and the future of urban environments.

Poor Things depicts a unique urban setting where the city serves as a location of reformation and rebirth for cyborg-like beings. The novel demonstrates the possibility of violence and relocation if cities fail to adjust to these new people. As previously stated, Bella's global travels provide her with a sense of self-realization and empowerment, which is critical to the development of her character formation. The Waste Tide's futuristic vision, which highlights concerns about the sustainability and flexibility of urban environments as they accept more diverse identities, contrasts sharply with the Victorian setting of the novel.

> "If the answer is not already in your mind," said Baxter gloomily, "nothing I can say is any good."
> "Please give me a clue."
> "Your work will need hard study as well as practice, but your best friends can help with both."
> "I will be a doctor."[25].

Drawing on urban space theory, many sites within the urban landscape may be understood as symbolic stages in

Bella's life evolution, each symbolizing significant periods of her personal and societal metamorphosis. Through Dr. Godwin Baxter's experimental methods, Bella is "reborn" in Glasgow, signifying the beginning of her new identity and existence. Bella experiences a literal and symbolic rebirth as she embarks on her adventure unencumbered by the limitations of her past existence. Bella's time spent as a whore in Paris exposes her to the brutal realities of exploitation, power, and gender. She is forced to face the difficulties of desire, autonomy, and survival in a patriarchal society at this stage of her trip as it exposes her to the darker aspects of human nature and society. Bella goes through a phase of rapid learning and adjustment during which she starts to comprehend the transactional nature of relationships and how her identity and body are commodities. Bella relocates to Alexandria after her stay in Paris, where she runs a clinic. By opening a clinic, Bella reverses the patterns of exploitation she had previously encountered and reclaims her body and identity in addition to positioning herself as a healer and carer. This is when she fully develops into a confident, self-reliant person who can go about her life on her own and make a great difference in the lives of others.

In *The Waste Tide*, the fictitious city of Silicon Isle acts as a focal point for the e-waste business, representing the exploitation of human and environmental resources. The novel explores how technology waste reshapes urban landscapes, resulting in environmental degradation and socioeconomic injustice. The cyborgs in this setting are the product of abandoned technology, raising concerns about the long-term viability of such metropolitan areas predicated on global capitalist exploitation. It also illustrates the change from a traditional place to a digital space and its consequences for sustainability in urban contexts, with Silicon Isle being degraded from a high bitrate, digitally advanced zone to a low bitrate status. Silicon Isle is a mix of actual and virtual spaces since its identity and operations are closely linked to its digital infrastructure.

The supervisory officials finally decided that Silicon Isle had to pay a price for its lax data security. From the high bitrate designation of a coastal, developed region, Silicon Isle was stripped of two levels of access and trapped in the kind of low bitrate usually found only in backward regions in China's interior. There would be no more augmented reality, no more enterprise-level cloud services, and certainly no more benefits from the special government policies designed only for Special Data Zones[26].

The region's digital advantages are essentially taken away by the loss of augmented reality, cloud services, and unique government laws, which causes a regression to a more isolated, conventional state. The instability of metropolitan areas that depend more and more on digital networks and technology infrastructure is highlighted by this transition. The reliability and accessibility of digital tools and services are as important to the sustainability of such urban spaces as physical resources and planning. The flood of cyborg people, as described in both novels, tests existing metropolitan infrastructure. Traditional urban design fails to ponder the particular demands of entities somewhere between humans and machines.

5. Conclusions

The analysis of *The Waste Tide* and *Poor Things* provides a critical look at cyborg migration, emphasizing how marginalized populations are commercialized and dehumanized in a technologically advanced world. The issues raised by Critical Migration Studies are reflected in both books, which show how global power relations and technological development affect marginalized groups such as cyborg-like entities. The conflicts depicted in these tales, which emphasize the priority of elite interests and the resultant marginalization of individuals outside established power systems, are consistent with Michel Foucault's conceptions of biopower and biopolitics. Furthermore, these works demonstrate how human and non-human actors impact social dynamics via the viewpoint of Actor-Network Theory (ANT), with urban landscapes acting as prospective and actual locations, rebirth, and sites of conflict. The contrasting Victorian and futuristic settings of the novels raise critical concerns regarding the sustainability and adaptability of urban environments, emphasizing the tension between tradition and innovation in accommodating diverse identities.

The insights gained from this analysis advocate for a future in which varied identities are recognized and integrated into the social fabric, contributing to the broader discourse on humane immigration policies in the digital era. To foster acceptance and inclusion, it is essential to promote empathy and understanding through inclusive policies and

community-based initiatives. Research indicates that positive perceptions from host communities and inclusive governmental strategies can facilitate the integration of refugees; similar approaches may be applicable to cyborg refugees[33].

This paper underscores the importance of developing legislative, executive, and social frameworks that not only effectively manage cyborg migration but also promote inclusion and acceptance. Given the intricate interplay of biological, technical, and social factors, understanding and regulating cyborg migration requires an interdisciplinary approach. Future research should address the multifaceted challenges that arise, such as technological integration, ethical implications, legal frameworks, societal acceptance, economic impacts, health and safety concerns, security vulnerabilities, workforce preparedness, and public perception. By drawing on expertise from various fields—including engineering, ethics, law, sociology, economics, health, cybersecurity, education, and communication—we can cultivate a more comprehensive understanding of cyborg migration and its implications for society.

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