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ECHOES OF EUGENICS: BIOCAPITALISM AND THE EXPLOITATION OF WOMEN IN
PAOLO BACIGALUPI'S *THE WINDUP GIRL*

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ABSTRACT

This article examines Paolo Bacigalupi's novel *The Windup Girl* through the lens of energy humanities, focusing on its depiction of a dystopian world and its gendered spaces. The study looks into a pervasive form of Biocapitalism depicted in the narrative, in which women's bodies are commodified during a global energy crisis. It seeks to decipher how this commodification reflects and reinforces power imbalances in the novel. Through a critical analysis informed by concepts from energy humanities and feminist studies, the study explores how pursuing alternative energy sources transforms female biology into a commodified entity. The narrative's patterns and themes are identified through close textual analysis and theoretical engagement. The analysis reveals how the commodification of the female body reduces women to instruments for corporate profit, emphasising the complex interplay between gender, power dynamics, and the energy crisis depicted in the novel. This study underscores the urgent need to address the societal consequences of unchecked resource exploitation, as depicted in the novel." It encourages reflection on the broader implications of gendered power dynamics and advocates for a future in which women are empowered beyond their biological roles.

Keywords: Biocapitalism, Energy Humanities, Gender Inequality, Commodification, Resource Exploitation, .

Introduction

Dipesh Chakravarthy's claim that "The mansions of modern freedom stand on the ever-expanding base of fossil fuel use" (208) underscores the importance of energy in shaping the fundamental structure of a modern society. Timothy Mitchell emphasises the interconnectedness of energy, society, and the environment, highlighting how energy sources shape social structures and are shaped by environmental realities (11). Energy humanities, a rapidly growing field of study, transcends the technical aspects of energy production and consumption. We can see how existing inequalities are exacerbated by examining how energy resources are distributed and controlled. Within this field, a particular focus lies on the concept of Biocapitalism, where life

itself becomes a commodity to be exploited for profit. This has significant implications for understanding the exploitation of human bodies, particularly those of women, concerning energy production and control.

The term 'biocapitalism,' takes on a unique form in Paolo Bacigalupi's *The Windup Girl*. It refers to the commodification of life, in which biological materials, functions, and systems are transformed into assets of economic value. This paradigm shift in capitalism expands the logic of profit-making into biological existence, including pharmaceuticals, genomics, and biotechnology. This article examines the gender dynamics, societal structure, and cultural norms of Bacigalupi's dystopian world, where biocapitalism is a central theme. Set in a dystopian future devastated by an energy crisis, the novel paints an unwinding picture of a world dealing with the repercussions of unregulated resource depletion. This study will examine the relationship between gender, power, and the 'resource curse' in the novel, showing how the desperate search for alternatives exposes and intensifies existing gender inequalities.

In Bacigalupi's world, corporations are not just players but power brokers, their influence extending far beyond the boardroom. The novel is a cautionary tale about the consequences of unbridled consumption and the depletion of oil reserves. In this resource-constrained environment, controlling dwindling energy sources translates into enormous power. Corporations wield considerable power, manipulating biotechnologies in a desperate attempt to preserve some semblance of social stability. One such technology is the development of windups, human-like bioengineered beings created for specific tasks. However, the emphasis here is not on the technology itself but on the intricate power dynamics that shape its development and application.

The energy crisis disproportionately affects women, transforming them into a new type of resource. The story introduces Windermere Women, a group of genetically engineered females bred primarily for their reproductive abilities. Their bodies are used to generate biofuel, emphasising women's objectification and commodification of their reproductive capabilities. This is consistent with energy humanities' concerns about the abuse of human bodies as a source of energy production. Powerful corporations control these women's bodies, resulting in a stark power imbalance. Women are stripped of agency, and their worth is solely determined by their ability to contribute to the biofuel production cycle.

With limited resources and constant scarcity, women bear a disproportionate share of the burden of managing dwindling energy reserves and ensuring their families' survival. The story depicts the drudgery of daily life, with women tasked with gathering scraps for fuel and making efficient use of what little energy remains. This shift in responsibilities widens the gender gap, adding to the burden for women who are already struggling to meet their basic needs. The novel depicts a society in which the energy crisis has aggravated existing inequalities, forcing women to take on traditionally male roles while also managing domestic responsibilities. Through the lens of biocapitalism, *The Windup Girl* unveils how the energy crisis fuels a system of exploitation, transforming women into a new kind of resource and exacerbating existing gender inequalities.

The desperate search for alternative energy sources becomes a breeding ground for the commodification of the female body, a reshaping of traditional gender roles, and a consolidation of power in the hands of corporations. This analysis will explore these themes in greater detail, utilising close textual analysis and insights from energy humanities. It will examine how the novel portrays the commodification of the female body, the transformation of gender roles, and the power dynamics at play within a resource-scarce world. Through this analysis, we will gain a deeper understanding of the complex relationship between gender, power, and the energy crisis, with this novel serving as a cautionary tale about the potential consequences of unchecked resource exploitation and the importance of fostering a future where women are empowered and valued beyond their bodies.

Women as Biocapital

The Windup Girl's energy crisis inspires the system of biocapitalism and investigates the exploitation of life forms for profit (Sumi, 46). This system transforms living organisms into commodities that can be regulated, manipulated, and eventually consumed to meet society's energy needs. Women in this dystopian world become the primary targets for such exploitation, emphasising the system's ethical bankruptcy by prioritising resource

extraction over human dignity. *Windermere Women* presents one of the novel's most unwinding depictions of biocapitalism. These engineered females are more than just humans; they are products designed for a specific purpose: to generate biofuel through their reproductive capacity. Bacigalupi paints a harsh picture of their existence. "They were bred for their wombs, their bodies sculpted for maximum efficiency in converting raw materials into fuel" (Bacigalupi 42). This objectification of women reduces them to mere vessels for energy production, stripping them of their autonomy and agency.

The ethical implications of this portrayal are significant. The novel forces us to confront the potential consequences of unchecked resource extraction by equating women with energy sources. While society is concerned about the depletion of fossil fuels and their environmental impact, the novel forces us to consider yet another depletion: the human capacity for reproduction and the ethical issues surrounding its commodification. This aligns with current concerns about women's reproductive rights and bodily autonomy. Similar to the control exerted over *Windermere Women's* bodies, there are ongoing debates about access to reproductive healthcare, including abortion and surrogacy, highlighting the potential for women's bodies to become a battleground in the pursuit of various agendas (Nguyen 16).

The narrative emphasises corporations' role in perpetuating the biocapitalist system. Powerful corporations, such as Mansuda Corporation, control the *Windermere* breeding facilities, wielding massive influence over the lives of women. They control every aspect of their lives, including their diet, exercise routines, and reproductive cycles (Bacigalupi 43). This control over biotechnologies enables corporations to exploit the very essence of human life for profit. Michelle Murphy, in *Biopolitical Bodies: Governance through Healthcare in the Neoliberal Era*, examines similar dynamics in the real world, where corporations patent genetic material and exercise control over biotechnologies, raising ethical concerns about privatising life. Bacigalupi emphasises that the objectification of women goes beyond their reproductive capacity. The story also demonstrates a female foetus's use as a source of "green energy" (Bacigalupi 182). This further dehumanises women, reducing them to a mere energy source at various stages of development. The desperate search for alternative energy sources fuels a disregard for fundamental human rights, highlighting the possibility that biocapitalism will prioritise profit over ethical considerations.

Labour and Survival

This novel's energy scare is more than just a lack of fuel; it catalyses a significant change in traditional gender roles and workplace expectations. While men deal with the collapse of societal structures and the loss of traditional livelihoods, women bear an overabundance of the burden of managing limited resources and ensuring survival. The story depicts a world where the constant struggle to conserve energy requires stringent resource management. Women are often entrusted with this crucial responsibility. The author refers to them as "the fuel-rationers, calorie-counters, and wasters-of-nothing" (Bacigalupi 104). They are in charge of collecting scraps for fuel, cautiously rationing what little energy remains, and efficiently using all household resources.

Joan C. Chrisman examines this phenomenon through the lens of environmental sociology, emphasising how women are frequently positioned as the household's "environmental managers" (28) responsible for dealing with environmental hazards and resource scarcity. This reinforces traditional gender stereotypes of women as nurturers and carers, escalating gender inequalities. The breakdown of social structures caused by the energy crisis frequently places women as primary carers for children, the elderly, and the sick. With limited medical resources and a greater emphasis on survival, the burden of caring for the most vulnerable falls primarily on them. This reinforces traditional gender stereotypes of women as nurturers and caretakers, further entrenching gender inequalities.

The energy crisis provides the possibility of new types of female labour in the energy sector. "Women find themselves working in coal mines, operating windmills, and even taking part in the contentious "green energy" harvesting process" (Bacigalupi 182-183). While these opportunities may be viewed as a step towards gender equality in the workplace, the narrative paints a complex picture. Many of these jobs are dangerous and exploitative, with few or no opportunities for advancement. Women are frequently perceived as a cheaper and

more readily available source of labour than men, potentially leading to further marginalisation in the workplace. This is consistent with Marxist feminist critiques of capitalism, which emphasise how women are frequently relegated to low-wage, undervalued labour (Benton 9).

The energy crisis disproportionately impacts women's access to education and resources. With limited energy resources, schools are frequently forced to close or operate on reduced hours. Girls are more likely to be pulled out of school to help with household chores or income-generating activities (Bacigalupi 105). This lack of opportunity for education perpetuates the cycle of poverty and limits their prospects. Furthermore, corporations frequently control resources and biotechnologies, marginalising women who lack the power or influence to obtain them. The energy crisis in the novel reshapes traditional gender roles, requiring women to bear a disproportionate share of the burden of caregiving, resource management, and, in many cases, low-wage labour in the energy sector. While these changes provide new opportunities for women to enter the workforce, they tend to be accompanied by exploitation and a lack of potential for advancement. Similarly, limited access to education and resources as a result of the energy crisis compounds the gender gap, making women more vulnerable in this dystopian world.

Resistance and Redefining Agency

While *The Windup Girl* depicts a bleak world ravaged by resource scarcity and systemic exploitation, it also tells a powerful story about female resistance. The narrative depicts women as much more than passive victims. Characters such as Emiko, a wind-up girl created for biofuel production, exemplify the unwavering spirit of resistance. Emiko actively fights for control over her body, looking for ways to avoid the forced extraction of biofuel and defying her predetermined destiny (Bacigalupi 242). Her defiance represents the human will to resist, even in the face of overwhelming odds. This resistance extends beyond isolated incidents. Women engage in subtle but powerful acts of rebellion throughout their daily lives. By cautiously handling resources, getting involved in bartering networks, and exchanging knowledge about alternative energy sources, they challenge the power dynamics imposed by corporations that control energy flow (Bacigalupi 112-113). These seemingly insignificant but collective acts have a ripple effect, chipping away at the established order and demonstrating the transformative power of collective action, even in a fragmented and resource-constrained world.

The energy crisis serves as an invitation for redefining traditional concepts of femininity. While some women are burdened with additional caregiving and resource management responsibilities, others take on roles previously reserved for men. This shift, while fraught with danger and exploitation, also provides opportunities for women to challenge gender stereotypes and redefine their place in society. Women become not only carers but also providers and protectors, demonstrating a complex and resilient form of femininity. The author emphasises the value of community and collaboration in the face of oppression. Women do not exist in isolation; they form support networks, sharing resources, information, and emotional strength. These communities become safe havens for women, empowering them to face the challenges of the energy crisis together. This is consistent with Bell Hooks' advocacy for female solidarity and collective action to achieve social change. This is exemplified by Emiko's bond with Anderson, a human male ostracised for his research into alternative energy sources. They work together despite societal boundaries, demonstrating the power of cross-identity coalitions to achieve a common goal of dismantling oppressive systems.

The role of technology in the story is complex and multifaceted. On the one hand, it reinforces gender inequality. The creation of Windermere Women, an outstanding reminder of women being objectified and commodified for biofuel production, demonstrates how technology can be used to strengthen patriarchal control over women's bodies (Bacigalupi 42). Corporations control energy extraction and distribution via sophisticated technologies, marginalising those without access. However, technology is portrayed as a tool for empowerment. Anderson's work on cold fusion provides hope for a more sustainable future not based on exploiting women or the environment (Bacigalupi 278). This novel points out that women are more than passive recipients of technology; they can learn to understand and manipulate it to their advantage. Emiko's attempt to change her internal mechanisms and avoid her predetermined fate demonstrates a fundamental awareness of the technology used for self-preservation.

This novel offers an intricate representation of women's experiences in the face of resource scarcity and subjugation. While they face challenges to their bodies, agency, and very existence, the novel also recognises their resilience, resourcefulness, and ability to resist. Women emerge as agents of change through acts of defiance, necessity-driven redefining of gender roles, and the development of strong communities. The story illustrates the importance of female solidarity and collaborative resistance, giving hope for a future in which technology can create a more just and sustainable world in which women are empowered rather than subordinated.

Conclusion

The novel's essence lies not in its dystopian world-building but in its unwavering examination of how the energy crisis intersects with gender, power, and the commodification of women's bodies. The novel is a stark reminder that the consequences of resource depletion are not evenly distributed; they disproportionately affect women, challenging their agency, reshaping their roles in society, and eventually reducing them to a mere biocapital. The energy crisis in the novel is an impetus for amplifying existing gender inequalities. Women are relegated to the domestic sphere, where they face the near-impossible task of managing dwindling resources and ensuring their families' survival. This obligation of caregiving and resource management affirms traditional gender roles while widening the gap between the public and private domains. Further, the text depicts how women are excluded from the decision-making process regarding energy allocation and consumption. Their bodies are objectified as biofuel sources, as exemplified by the Windermere Women, demonstrating the ultimate loss of agency and control over their reproductive potential.

The control over energy in the novel translates into substantial social and political power. The narrative reveals the patriarchal foundation of this power structure, in which access and control over resources translates into access and control over women's bodies and lives. The novel prompts us to ponder the potential gendered consequences of our current energy crisis. Women in developing countries are disproportionately affected by climate change and resource scarcity, with many facing insufficient food and water supplies, limited access to clean energy, and a greater susceptibility to natural disasters. The text highlights the importance of acknowledging the gendered aspects of the energy crisis. Women face overbearing burdens but can also be powerful agents of change. The novel underscores the strength of female solidarity and collective action. The author explores the possibility of challenging the status quo of women by forming networks, sharing knowledge, and advocating for alternative energy solutions.

Gender equality and the fight for energy justice are inextricably linked. Alternatives to our current energy challenges must prioritise women's needs and perspectives. Investing in education and skills training for women in renewable energy sectors, encouraging their participation in decision-making processes, and ensuring access to resources and technologies are all critical steps towards a future in which energy security is a shared right rather than a privilege for the few. This novel encourages us to imagine a future in which energy production and distribution are not used for exploitation but as drivers of progress and equality. By recognising the gendered dimensions of the energy crisis and empowering women to play an active role in finding answers, we can create a world where the fight for survival does not come at the expense of human dignity and the burden of scarcity is distributed more equitably.

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