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Against Eternity: A Critical Reading of Transhumanism

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ABSTRACT

Amid ongoing global political and ecological crises, transhumanists proselytize visions of a more equitable, healthy future made possible by advanced computation. Beyond the curative potential of technoscience, transhumanism seeks to transcend the biological limits of the human body, including death. My research identifies a racist, colonial, patriarchal impulse in the transhuman pursuit of immortality. I begin by situating transhumanism biopolitically within the discourse of population control and genetic optimization. Tracing early transhuman thinking alongside sterilization and assisted reproduction, I identify a eugenic link between transhumanism and reproductive medicine. I then reveal how contemporary transhumanism functions through a paradigm of potential wherein value is determined by the speculations of venture capitalism. Analyzing the future-oriented rhetoric in both "afterlife" technologies and contraception techniques, I argue that, despite its speculative and dubious potential, the emergence of post-biological "life" suggests a transformation of class struggle in which the ruling class lives forever, and the proletariat is consigned to the finite terms of earthly existence. Building on Black feminism, care theory, and degrowth arguments, I conclude by advancing a countervailing materialism that centers the body's vital-fatal politics inherent in reproduction.

Keywords: transhumanism, immortality, biopolitics, eugenics, reproductive medicine, feminism

SUMMARY FOR LAY AUDIENCE

Amid ongoing global political and ecological crises, transhumanists proselytize visions of a more equitable, healthy future made possible by advanced computation. Beyond the curative potential of technoscience, transhumanism seeks to transcend the biological limits of the human body, including death. My research identifies a racist, colonial, patriarchal impulse in the transhuman pursuit of immortality. I begin by situating transhumanism within the history of eugenics as it manifests in both sterilization and assisted reproduction techniques. I then reveal how contemporary transhumanism largely mirrors the speculations of venture capitalism. Analyzing the future-oriented rhetoric in both "afterlife" technologies and contraception techniques, I argue that, despite its speculative and dubious potential, the emergence of post-biological "life" suggests a transformation of class struggle in which the ruling class lives forever, and the proletariat is consigned to earthly existence. Building on Black feminism, care theory, and degrowth arguments, I conclude by advancing a countervailing materialism that centers the body's finite condition.

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Parts of Chapters 3 and 4 were developed in an article published by *Technophany*, whose editors offered incisive insight on the theme of "feminism and finitude."

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My greatest teacher, my mom, is an unmatched force of reproduction. I am continuously inspired by her strength, wisdom, humor, and love.

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INTRODUCTION

> Belief in a golden age has provided mankind with solace in times of despair and with élan during the expansive periods of history. Dreamers imagine the golden age in the remote past, in a paradise lost, free from toil and from grief. Optimists put their faith in the future and believe that mankind, Prometheus-like, will master the arts of life through power and knowledge. Thus, the golden age means different things to different men, but the very belief in its existence implies the conviction that perfect health and happiness are birthrights of men. Yet, in reality, complete freedom from disease and struggle is almost incompatible with the process of living.
>
> — René Dubos, *The Mirage of Health*

> Philosophical discourse as analysis, as reflection on human finitude and criticism of everything which may exceed the limits of human finitude, whether in the realm of knowledge or the realm of morality, plays the role of parrhêsia [truth-telling] to some extent.
>
> — Michel Foucault, "The Courage of Truth"

I entered the world seemingly unwillingly. Ten days after my due date, my mother labored for twenty-three hours before I was finally pulled from her body through an emergency caesarian section. I had relieved myself prior to leaving the womb, and this was cause for concern because the resulting *meconium* could enter my newly formed lungs. Bowel movements

are common for babies past their due date or under "stressful circumstances" (Jones 2017). Some things never change.

Growing up, I grimaced at the thought of having children of my own. My mother would often tell me that I would change my mind at some point, or when I met the "right" person. Her conviction proved incorrect for so long that she began to come to terms with the fact that her daughter did not desire to be a mother in the way she did. While my mother was incredibly nurturing and (for the most part) patient, she couldn't always protect me. Some events over which I had no control or responsibility caused me to feel a great deal of shame as a child. My father had relatively little interest in me apart from my collateral capacity, which he would often exploit at my mother's expense. I suffered from migraines at an early age, and my body developed in ways that diverged from that of a typical healthy child. My mother and I moved a few times, and perhaps this contributed to my feeling both isolated and overexposed.

As I've grown older, I've realized that my mother not only did her best in the face of personal and systemic adversity, but that she modeled what Alexis Pauline Gumbs, China Martens, and Mai'a Williams (2017) call revolutionary mothering, or the idea that the social practice of mothering imparts social transformation. I was raised by a single pink-collar mother who, despite working full time and often juggling multiple precarious jobs, always made time to remind me that I was essential to her life and to the world. Recalling all that I have learned from my mother, the thought of bringing life into the world now feels profound and radical. Now, I want to pass her knowledge and stories to the next generation. Now, I want to keep my mother alive forever.

In 1959, the year my mother was born, René Dubos published *Mirage of Health: Utopias, Progress, and Biological Change*. Dubos offers an elegant critique of "golden age"

thinking in which both the past and scientific achievement are overly glorified. Dubos remarks that humans have always been lured by myths of civilizations whose inhabitants enjoyed long, healthy lives. In the modern iteration of this golden age nostalgia, according to Dubos, science has asserted itself as the means to return to this illusory past in which humans apparently lived happily for hundreds of years.

Notwithstanding general long-standing human interests in achieving optimal health, the fascination with bodily enhancement has grown alongside an expanding cyberculture and even more so in recent years with computationally powered medical procedures promising to slow the signs of aging or halt the aging process altogether. On the cusp of a new millennium, futurist Ray Kurzweil published a book he described as a guide to the twenty-first century. *The Age of Spiritual Machines* maps the terrain of philosophical questions arising from advanced computation, including the potential for a "post-biological future" (Kurzweil 1999, 14). The argument for such a future has been propagated by transhumanism, equal parts philosophy and technoscientific practice that seek to "overcome many of the limitations of human biology," including death, through cryonics, gene editing, and nanotechnology (Huberman 2022, 55). Yet as the many critics of transhumanism point out, the technoscientific pursuit of a post-biological future has been largely taken up by white men with Silicon Valley-deep pockets (Dawdy and Kneese 2022; Farman 2020; Hall 2016).

While Dubos credited scientific efforts to curb health injustices caused by industrialization, he also identified societal inequalities, not individual decisions, as the primary determinant of health conditions. His criticism of the "modern American" as one who believes that "health is purchasable" is uncannily contemporary in our neoliberal era (Dubos 1959, 24). Dubos's lamentations and prescient analysis are echoed by today's bioethical and medical

communities. The World Health Organization (2008) has found that income, race, gender, and education levels have more influence on health than lifestyle choices. Importantly, in the opening page of *Mirage of Health*, Dubos contends the "complete freedom from disease and struggle is almost incompatible with the process of living." In the age of transhumanism, and it is very much an age to the extent that such ideas are part and parcel of the Information Age, the combined efforts of humans and computers convert knowledge into power, risking "the ethical and emotional values that men prize above life itself" in the process (Dubos 1959, 25). Dubos does not explicitly identify the values to which he refers, but his criticism of the scientific community exposes the contemporaneous romanticization of nature and the desire to master it (Dubos 1959, 29). As Dubos suggests, these two aims are not only incompatible, but also erase the peculiarities of life that cannot, and perhaps should not, be accounted for in terms of human understanding.

My project situates transhumanism within the long project of mastering nature, which has intensified under the neoliberalization of health and medical practice—that is, the personalized, privatized, and self-managed approach to health. Such an approach emphasizes the role of data and information, and in turn, reinforces knowledge grounded in the Cartesian separation of body and mind (Golumbia 2009; Wernimont 2018). Feminist, postcolonial, and critical race scholars have noted how this intellectual tradition has historically upheld sexist and racist ideas about what constitutes the "human" (Federici 2014; Weheliye 2014; Maynard 2018; McKittrick 2021). Transhumanism's emphasis on "hacking" and tracking the body encourage the use of what Foucault identified as "technologies of domination and self." Foucault (1982) argues that human beings use techniques for self-understanding "in order to attain a certain state of happiness, purity, wisdom, perfection, or immortality." Yet as Foucault (1977) also revealed, modern

institutions control their subjects through the production of "docile bodies." Foucault (1976) further described the mechanisms for regulating and improving the body's operations as "biopower," which modern nation states marshal for the purpose of controlling their populations.

Postcolonial engagements with Foucault expose the ways in which contemporary biopolitical regimes render bodies debilitated. Jasbir Puar (2017) illuminates how exercising the "right to maim" during war assists the accumulation of capital. Similarly, Beatrice Adler-Bolton and Artie Vierkant (2022) argue that today's for-profit healthcare systems rely on the maintenance of illness to continually extract value from "surplus" populations. Achille Mbembe's (2019) formulation of necropolitics illustrates the mechanization of racism in the creation of "death worlds," wherein racialized bodies remain suspended between life and death. At the same time, Jackie Orr (2006) reveals the ways modern biopower makes use of "psychopower" by "administering order in the unruly psychic realms of perception, emotion, and memory" (11). Crucially, Orr (2006) argues, psychopower aims to both manage and manufacture panic to ensure a continuous stream of pharmaceutical cures (12). Such arguments demonstrate the dual operations of contemporary biopower that seek to produce resource-rich, but ultimately expendable subjects. For this reason, a critique of the commercialization of health, in which transhumanism fully participates, requires discussion of biopolitics, race, disability studies, and whiteness, topics that are altogether anathema to contemporary transhumanists.

As a white person, the process of studying whiteness requires personal and institutional reckoning. My mother and I benefitted from our supposed racial superiority in that our being poor was largely attributed to unfortunate circumstances. But inasmuch as whiteness imbues white subjects with inherent privilege, it also precludes the possibility for class solidarity. I have witnessed first-hand the harm whiteness inflicts as it intersects with classism. My mother was,

and still is, a beautiful woman. She was blessed with a deep olive skin tone, a naturally lean build, and a glamorous, almost indescribable face. Her thick and coarse hair has always caught the admiration of strangers. Despite possessing such enviable features even in middle age, my mother's self-image was fragile, and she decided to take advantage of the state of subprime lending in the mid-2000s to correct what she felt were physical flaws. At the time my mother went "under the knife," she had already left a toxic relationship, had begun working as a sales rep for a restoration company, and moved us to a better side of town. It seemed like she (and I) had finally made it to comfortable middle-class status in the face of pervasive enmity against single mothers.

Unfortunately, my mother's plastic surgery experiences did not always go as she hoped. One surgeon, who promised to remove the excess skin that hooded her eyes, removed too much tissue. My mother had difficulty fully closing her eyes, and it was recommended she have an additional surgery to correct the initial overcorrection. The second surgeon nearly sewed my mother's eyes shut. On another occasion, a surgeon performing liposuction on my mother's back applied the probe so aggressively that it penetrated through the front side of her body. My mother's urge to modify her body predated surgical intervention. As a teenager, she would use a clothes iron to tame her "frizzy" hair. She once told me that she sucked in her lips for a photoshoot during a brief stint as an amateur model. There wasn't much she could do about her relatively darker skin tone, a trait for which she earned her father's inappropriate term of affection, "Brown Devil." When my mother was seventeen, her parents had told her and her younger siblings to find another place to live because they were getting a divorce and leaving the family home. My mother and one of her younger sisters remained in the house and lived in the dark after the electric company turned off the power. Their father came to visit some months

later and took them out to dinner, and he laughed when they cleaned their plates. Years later, my mother suffered from anorexia and bulimia. As feminist scholars have articulated, controlling one's hunger is paradoxically tied to both the patriarchal presupposition that bodily impulses like appetite need restraining and female protest (Driscoll 1997; Grosz). Simone Weil (1987) writes, "to starve is to renounce the past" (18). I can only understand my mother's "disordered" eating as an effort to re-order and re-master the feeling of hunger.

What I've learned from studying the discourse of whiteness, and inhabiting a white body, is that practices of self-optimization and the social construction of whiteness are mutually reinforcing. Even for those who genetically adhere to the ethnic contours that mark its territory, whiteness affirms the separation between optimal white subjects and trashy ones. Ironically, trashy subjects must become *more* plastic—in the sense that they manipulate their bodies to appear healthier or more attractive—to move up the social ladder. For low-income white people like me and my mother, fitting our bodies into the Western beauty ideal secures (however precariously) our position above the social refuse. Unlike our socioeconomic or professional positions, we can control at least some aspects of our bodies, oftentimes with the help of predatory lending. It's not surprising that my mother spent good money on my teeth, an investment for which I am truly grateful. The myth of whiteness tells us that only those who are capable of re-making themselves to achieve a socially constructed ideal are deserving of the "good life."

My mother devoted much of her life to mastering her body in the hope that it would maximize her social currency, and by extension, her purchase power. And for some time, it worked. But after the housing bubble burst, my mother faced insurmountable debt incurred by prolonged economic precarity compounded by moving to an affluent neighborhood that never

wanted us in the first place and from the procedures that she felt compelled to undergo. She was laid off from her once stable job and declared bankruptcy before remarrying, a decision that rarely delivers on the promise of stability.

Like most people, I have a fraught relationship with my body. On the one hand, I have immense respect for my body's strength and reparative capacity. On the other, I am regularly beset by the pain of cluster headaches, also known as "the worst pain known to medical science" (Radio National 1999). As a woman I am also continually reminded that there's always room for physical improvement, particularly as the years pass; women whose age is readily visible risk social death. Witnessing my mother subject herself to incredibly painful procedures that from my perspective were wholly unnecessary, but to my mother were imperative, I arrive at the discursive terrain of transhumanism and biological enhancement from a position of ambivalence. I often look in the mirror and pull the lower half of my face upwards to temporarily see a version of myself that shows no evidence of the lines caused by body-focused repetitive behavior, which may have something to do with the frequency of my cluster headaches.

I realize that I cannot reconcile my own hypocrisy. I did tell you that I want to keep my mom alive forever.

Metaphysics has generally regarded life and death as unquantifiable phenomena. Transhumanism, a mechanistic ideology informed by cybernetics, understands the brain as a computer and the body as a feedback system. Orr (2006) argues that the cybernetic influence in the biological and social sciences has turned "disturbances or disorders in any technical—or social—system" into system design problems, which can be addressed through "increasingly

automated practices of control" (16). That the brain and body can be quantified, transhumanists contend, suggests they can be designed and optimized to the point of achieving immortality. In her defense of beauty, Elaine Scarry (1999) remarks that beautiful things are not eternal; we might overlook a beautiful object only to realize that it has been extinguished upon our return. Because it is bound to the finite conditions of life, beauty inspires within us an urge to preserve it. In the event that we disregard or incriminate a beautiful person, or painting, or poem and we come to find that its livelihood has suffered, we are in turn affected by this suffering. Admitting an instance in which she herself committed a crime against beauty—in this case, an expression of distaste for palm trees—Scarry recounts the process of repentance. She takes a renewed interest in the particularity of palm trees and their coextensive relationship with other life forms. Scarry (1999) summarizes the fairness in turning our attention to beauty as a means to reconnect us to our world: "Through its beauty, the world continually recommits us to a rigorous standard of perceptual care" (55). Martin Hägglund (2019) similarly argues:

> When we fight for an ideal that extends beyond our own lives—a political vision for the future, a sustainable legacy for generations to come—we are devoted to a form of life that may cease to be or never come to be. This sense of finitude is intrinsic to why it matters that anyone or anything lives on. If we seek to engender, prolong, or enhance the existence of something—to make it live on in a better way—we are animated by the sense that *it may be lost* if we fail to act. Without this risk of loss, our efforts and our fidelity to the project would not be required. (7, original emphasis)

We ascribe meaning to beauty because it is finite, and by virtue of its finitude we are compelled to care for it; the pain of possible loss sharpens our appreciation for that which is prone to death. According to Scarry and Hägglund, a world without death is a world without care.

But according to transhumanist Nick Bostrom (2005), a world without death is a world without pain and suffering. Such a vision has proven an effective technique for proselytization: there are a number of tech start-ups and research centers devoted to the prospect of radically extending human life in the hope of eradicating any predisposition to suffering. In *The Bioethics of Enhancement*, Melinda C. Hall (2016) identifies an aversion to risk in the transhuman pursuit of immortality. However, Hall (2016) argues that "The practice of risk management" in fact "redoubles risk; envisioning a utopia without risk supports risky spaces that literally kill and victimize particular persons" (xxi). In the transhuman vision, vulnerable and errant bodies need to be controlled, or even eliminated, to ensure an optimal future. This vision is the discourse I interrogate at length in this dissertation.

In Chapter One, "Transhumanism and the Biopolitics of Optimization," I locate the development of transhumanism alongside the early twentieth-century genetics movement and reveal how both discourses are grounded in eugenic thinking to the extent that they invest themselves in marking the line between biological difference and normativity. In this way, genetics and transhumanism mutually reinforce the idea that the human gene pool should be manipulated and optimized because our genetic fitness determines our success. I also reveal how contemporary transhumanism, marked by the introduction of Effective Altruism (EA) and longtermism, makes a considerable departure from earlier transhumanism with the pursuit of eternal life while embracing a combination of computation and utilitarian philosophy. In so doing, I argue that today's transhumanism reinforces racist and colonial ideas around who ought to live (potentially forever).

In Chapter Two, "Designer Bodies: Eugenics and Genetic Engineering," I examine the enduring legacy of eugenics, a field intimately tied to genetics, more deeply. Beginning in the

early twentieth century, I illuminate how populations were controlled through reproductive science by 1) preventing the procreation of those determined "unfit" through sterilization and 2) encouraging the reproductive capacities of "desirable" groups. I then examine how contemporary transhumanist-endorsed techniques like embryo genetic testing advance eugenic principles in reproductive science by encouraging parents to base their embryonic selection on the most optimal genetic markers. I also explicate the ways discredited yet persistent race science manifests in the transhumanist emphasis on advanced intelligence and ability.

Chapter Three, "Laboring Bodies: Immortality and Extraction," builds on the previous chapter's focus on genetic optimization to evidence parallels between the discourse of potential, population control, and capital accumulation. Drawing from promotional discourse around radical life extending and "afterlife" technologies, including biohacking and cryonics, as well as long-acting reversible contraception (LARC), I identify potential (a form of capital) as a primary discursive engine in both transhuman immortality and deferred parenthood. Examining profiles of radical life extension proponents, I discuss the possible transformation (and re-entrenchment) of labor relations resulting from post-biological ontology.

The first three chapters endeavor to illustrate the primary aim of transhumanism: to manifest an eternal vision of life that reflects the biology and aspirations of its white, wealthy, and predominantly masculine proponents. The final chapter, "Alchemical Bodies," develops an antidote to the transhuman emphasis on genetic optimization and its corollaries, capital speculation and white supremacy. Inspired by Hall's (2016) call to "subvert the twinned logics of mastery and autonomy in favor of viewing human life as fundamentally vulnerable and interdependent in valuable ways" (xxi), I draw on Black feminism and degrowth Marxism to develop a countervailing, vital-fatal materialism made manifest in the gestating body. Against

the transhuman preoccupation with eternal life, I suggest an uncomfortable biopolitical reordering: a biopolitics for the Anthropocene should not ensure the equal right to survive, but rather the equal predisposition to death.

To be against eternity is not to be against the future. In fact, the assurance of a future of any kind requires the preservation of the world's finite conditions. Corporeality deals in terms of finitude, and as Hägglund argues, finitude is what inspires our commitments to the things that matter to us. In the event of death, the loss of a subject psychically manifests in the bereaved as a rupture in the formerly coherent, contiguous environment. The rupture is especially difficult when the people who brought you into the world die. Coincidentally, my mother lives only a few miles away from one of the preeminent leaders in the cryonics industry. The Cryonics Institute is nestled unassumingly in between other nondescript buildings in an industrial Detroit suburb. I wonder how many supposedly undead bodies and brains lay waiting for reanimation as the city around them decays.

I also wonder how I will cope after my mother dies. Scarry (1999) believes that beauty urges us toward justice because we are compelled to duplicate beautiful things and re-enact beautiful moments. One way we do this is through reproduction insofar as we desire to make a copy of our beloved. Reproduction, therefore, encourages us to engage in acts that preserve what we perceive as beautiful. I think about what my mother's life might have looked like if people had tended to her beauty in an effort to keep her safe. I suppose she attempted to achieve this on her own by duplicating herself, resulting in a daughter who managed to make it past the material and psychic perimeters of her own life. Inspired by Scarry, I think of ways to preserve my mother so that I might survive when our attachment is no longer held within the material world. I wish to create copies of her—which is to say I wish to create copies of myself.

A WORD ON METHODS

As the reader has no doubt already gathered, I'm one to wander. I apologize in advance for the rabbit holes and gaps—the sputtering and short-circuiting is evidence of a neurological disorder, or perhaps reflective of the lack of time dedicated to the rigors of intellectual work (I spend forty hours a week at a thankless, low-paying job). In either case, I'm tired.

My project presents a genealogy of transhumanism. I begin by tracing the transformation of transhuman thought from the early twentieth century to contemporary transhuman discourse. Examining the work of prominent philosophers and thought leaders, I reveal how contemporary transhuman discourse assimilates the disciplines of computer and biological science, moral philosophy, and theology. In examining the key strategists of transhuman discourse, I illuminate their oftentimes contradictory and sometimes incoherent positions. For instance, while major figures in the transhuman movement associate themselves with secular, scientific positions, they share with the Christian doctrine a belief in everlasting life. However, I aim to illustrate a spectrum of transhuman thinking in which varying and at times oppositional positions assimilate within the frame of whiteness and wealth. I also aim to demonstrate the shared lineage of transhuman discourse, neoliberalism, and the cultural embrace of computation. Through a contemporaneous analysis of contemporary contraception techniques, I reveal how some manifestations of transhumanism threaten to reinscribe eugenic principles in reproductive science while fomenting conservative thinking about when life ought to be conferred. In so doing, I identify connections between transhuman discourse and structures of feeling around population control and fertility.

My research takes an interdisciplinary cultural studies approach through a combination of discourse analysis, social theory, popular media analysis, and auto-ethnographic *whispers*.

Because immortality and radical life extension remain speculative, I rely on interviews with transhumanists, venture capital-funded startups invested in longevity research and development, and recent television series that explore "afterlife" technologies in addition to institutional discourse and academic critique to examine the undergirding capitalist and eugenic logics in the pursuit of eternal life. While fictional representations of immortality made possible through advanced technoscience underscore the speculative quality in such pursuits, they expose the fantasies shared by many real-life transhumanists and animate the potential social and political dimensions resulting from the realization of eternal life.

I also examine promotional materials for purchasable programs and technologies focused on biological enhancement, including those intended for genetic selection and cryopreservation. The difficulty in analyzing enhancement technologies in general is that they 1) oftentimes lack the impartiality of regulatory research and oversight, as is the case in the growing "biohacking" industry, 2) are composed of competing methods for achieving such ends (e.g., through genetic selection or pharmaceutical intervention), 3) and have only entered legitimate scientific disciplines in the past decade. For this reason, my project concentrates on the ways transhuman ideology already embeds itself into reproductive science in the name of optimization. My intention is to show that transhumanism is not a fringe ideology, but rather one with increasing cultural and political power.

Building on feminist and postcolonial engagements with biopolitical analysis, my examination of transhumanism asks what power dynamics are embedded in technologies of optimization and under what conditions are we encouraged to live with them. My analysis is informed by major contributions from science and technology (STS) scholars, whose work addresses the collision of humans, nonhumans, and capital in the broad field of technoscience.

Donna Haraway, Michelle Murphy, N. Katherine Hayles, and Rosi Braidotti have provided key entry points into this collision and have offered important alternatives to the stagnant visions of transhuman disembodiment. I am particularly inspired by Braidotti's (2013) "affirmative posthuman theory of death," which emphasizes "the bond of mutual dependence between bodies and technological others, while avoiding the contempt for the flesh and the trans-humanist fantasy of escape from the finite materiality of the enfleshed self" (90). My phenomenological approach is similarly grounded in bodily experience.

I draw from a wide array of humanities scholarship to evidence the body's essential role in meaning-making. A number of feminist scholars, including Elizabeth Grosz (1994), Silvia Federici (2014), and Julia Kristeva (1982), have contributed to this epistemological orientation. I invoke their theoretical formulations in my analysis of the body's vital-fatal politics as it manifests in perhaps the most extreme bodily experience: pregnancy. My work is also guided by re-conceptions of motherhood and mothering envisaged by Black feminist scholars (Story 2014; Gumbs et al. 2017). My intention in critiquing transhumanism through these frameworks to 1) fill the speculative gaps in transhuman immortality, and therefore, to examine the politics it hopes to one day fulfill and 2) marshal Black feminism and ecofeminism as a foil to the techno-capitalist, transhumanist fantasy of disembodiment. Against the fantasy of immortality, my examination of the gestation and motherhood highlights both the force of the maternal bond and the sometimes traumatic, but always vital, relationship between life and destruction.

My writing is deeply influenced by scholars and writers who foreground the intersection of gender and illness. I am particularly inspired by Lana Lin's *Freud's Jaw* (2017), Jackie Orr's *Panic Diaries* (2006), Patrick Anderson's *Autobiography of a Disease* (2017), Paul Preciado's *Testo Junkie* (2013), and Mel Chen's *Animacies* (2012), all of which, to varying degrees, situate

the personal within the political and engage what Orr (2006) calls "performative" writing (26-8). My employment of auto-ethnographic *whispers* is, admittedly, sparse compared to the staid academic writing devoted to critique. Combining the experimental with the traditional is no easy undertaking; however, as I hope will become clear in the chapters that follow, it is a necessary one. In structuring my major critiques and claims with literary and personal scenes, I intend to trouble the cultural imaginary of the transhuman movement. The brevity of these scenes also calls attention to the fact that thinking is conditioned by limits, either those set by the prison-house of language, a headache, or time. With the seemingly endless support of venture capital, transhumanists proffer a future of continuous, unfettered growth. But contrary to what transhumanists would have us believe, limits—rather than mastery—bring us closer to meaning. Describing her experience in translation, Laura Marks (2002) argues, "sometimes it is the *inability* of writing to capture experience that is the most evocative" (ix, original emphasis). Inasmuch as an alternative approach to communication illuminates the importance of "touching, not mastering" (Marks 2002, xiii), it also resists conventional ways of thinking that have historically harmed or neglected marginalized voices. A whisper is intended as a fierce intervention to this end.

A whisper is a canary in an earth-swallowing coal mine.

In my examination of both foundational transhumanist texts and academic critique directed at transhumanism, I locate in the transhuman fantasy of immortality a fear of being coded as fragile, and by extension, feminine. If the pursuit of eternal life is a symptom of a patriarchal cultural imaginary, we need new stories of (and for) the future—stories that challenge

the altogether masculine and colonial desire for immortality. I take inspiration from scholars working in Marxist, ecofeminist, and Black feminist traditions. Ruha Benjamin's (2013, 2022) engagement with STS illuminates the precarity of health for both person and environment in today's neoliberal health and political systems, but her work also animates resistance against such systems. Similarly, Leigh Brownhill, Terisa E. Turner, and Wahu Kaara (2012) suggest a rebuilding of egalitarian social relations (evident in social movements across the world, from Kenya's "people positive" constitution to the many iterations of Occupy Wall Street) that emphasize collective, rather than alienated, labor. I build on Szymon Wróbel's (2020) and Nick Dyer-Witheford's (2022) prospectus of a "biocommunism" to develop a feminist biocommunism—that is, a communism that resists the eugenic, racist, colonial, capitalist paradigm in transhumanism and reproductive science.

My project is intended to be provocative rather than exhaustive. I realize the challenges in examining three case studies (reproductive technologies; contraceptive technologies; and the gestating body) alongside different sets of evidence (early and contemporary transhuman discourse, early and contemporary eugenics), but I am excited by the prospect of grounding my argument within the body's finite empirical folds. I am inspired by Foucault's (1977) genealogical method to the extent that "its task is to expose a body totally imprinted by history and the process of history's destruction of the body" (148). Such a task suggests the possibility for re-writing the body and re-thinking what it can do. As both a staunch advocate for reproductive justice and a person who is ambivalent about my own capacity to carry life, I situate the inscriptions on my body as partial evidence for my findings.

TRANSHUMANISM AND THE BIOPOLITICS OF OPTIMIZATION

> "In this age of technological sophistication, we are challenged to understand practices such as cosmetic surgery and in vitro fertilization, the results of which include changes in the very tissue of the body. What the body is and who has the right to define it are questions being contested like never before."
>
> — Ellen Driscoll

> "Mars ain't the kind of place to raise your kids."
>
> — Elton John

Like all schools of thought, transhumanism has undergone various epistemological transformations and has been subjected to myriad interpretations. Publication dates verify geneticist Julian Huxley as the first person to use "transhumanism" as a term in 1957. Elise Bohan's (2018) historical analysis focuses on more contemporary figures like David Pearce and Nick Bostrom, whose work has stewarded transhumanism from the intellectual margins to the bioethical and cultural mainstream beginning in the late 1990s. Others identify Friedrich Nietzsche as a proto-transhumanist for his hope for the development of an *Übermensch*, or a superior human (Buben 2021; Sorgner 2009). Etymologically, the Latin term *optimum*, first used in 1879, refers to "conditions most favorable" in biology. Out of this term grew the definition for "optimize" in 1941, which describes the effort to make something "as perfect, effective, or functional as possible." Optimization is, therefore, integral to the creation of what Foucault (1975) calls "docile bodies."

In its normative understanding[1], transhumanism has been, and continues to be, propagated as a moral framework for human enhancement and optimization made possible through computationally assisted medical technologies and fringe biohacking strategies. Where the academic discipline of posthumanism is largely concerned with troubling human(ist) dogmas[2], proponents of transhumanism are particularly focused on developing methods for increasing intelligence and empathy, mitigating pain, space colonization, and extending human lifespans, all of which they believe to be morally imperative because such aims are sure to produce the most good for the most people. According to transhumanists, these methods of optimization can be achieved through genetic engineering and by supplementing biological systems with artificial components. Transhumanists are increasingly interested in expanding their vision beyond the enhanced cyborg to include the achievement of eternal life. Convergence technologies (those aimed at fulfilling the dream of "Singularity" through the fusion of biological and computational infrastructure) along with cryonics (the freezing of legally dead people who hope to someday be revived) are part of the transhuman pursuit of moral superiority and immortality.

But in transhuman discourse, ideas about what constitutes life and death, and what distinguishes good from bad, are often conflicting despite the shared interest in biological optimization and enhancement. Given its origins in physics and genetics, transhumanism is a generally secular discipline. Julian Huxley wrote critically of religion, particularly of the western

[1] For a more complete description of the various definitions of transhumanism, see Heft, Pete. "Xenofeminism: A Framework to Hack the Human." *New Proposals: Journal of Marxism and Interdisciplinary Inquiry*, 12(1), Winter 2021, pp. 121-139.

[2] Countless scholars have engaged with posthuman debates, including humanity's claim to anthropocentric dominance and influence on climate change, as well as ontological transformation resulting from human-computer interaction. See Merchant, Carolyn. *The Anthropocene and the Humanities: From Climate Change to a New Age of Sustainability*. Yale University Press, 2020; Morton, Timothy. *Humankind: Solidarity with Nonhuman People.* London, UK: Verso, 2017; and N. Katherine Hayles's germinal work, *How We Became Posthuman*. Chicago: University of Chicago Press, 1999.

monotheistic variety. Prominent transhumanist Max More also argues that "religion acts as an entropic force, standing against our advancement into transhumanity and our future as posthumans" (1990). On the other hand, the Cryonics Institute (n.d.) claims that "cryonics is strongly consistent with Christianity and other religions that value the sanctity of human life." To tighten its links with such religious presuppositions, the Cryonics Institute clarifies the distinction between reanimation and resurrection: cryonics does not attempt resurrection because a person can only be pronounced *legally* dead. Through this reasoning, the Institute maintains that it offers medical "life support" technology. Similarly, the Mormonist Transhuman Association embraces scientific knowledge, including research related to anti-aging, in its pursuit of exaltation.[3] The topic of artificial intelligence has also divided transhumanists: where some fully embrace artificial intelligence as a necessary ally in the pursuit of immortality, others fear the potential for "rogue AI" (O'Gara and Hendrycks 2023). Despite the looming threat of Terminator-style robot takeover, advanced computation is essential to the infrastructure and data analytics required to overcome the limitations of earthly existence.

Contemporary transhumanists are quick to distance their thinking from comparisons to dystopian futures like those imagined by Julian Huxley's brother, Aldous, whose book, *Brave New World* interrogated the transhuman preoccupation with intelligence, pain reduction, and population control made possible through genetic modification and reproductive technology. Transhumanists like David Pearce counter-argue that procreation is always-already a genetic experiment, and that suffering is inherent to life ("Transhumanism and Bioethics" 2021). Thus, genetic screening for ability markers like intelligence is essential to solving the "genetic root" of suffering ("Transhumanism and bioethics" 2021; Savulescu 2001). In its current form,

[3] See "What is the Purpose of Mormon Transhumanism?" The Mormon Transhumanist Association, https://www.transfigurism.org/library/primers/2-purpose-of-mormon-transhumanism.

transhumanism identifies biology as the primary determinant of human experience; the manipulation of an individual's genes can guarantee a person's happiness and well-being, apparently without any change to the social context in which the individual is embedded.

Notwithstanding the various interpretations of transhumanism, transhumanism is largely supported by a discursive emphasis on freedom, the maximization of individual potential, and genetic determinism. The prospect of optimizing the human condition, according to contemporary transhuman thought, requires the emancipation from biological constraints and old ways of thinking. Futurists like Ray Kurzweil (1999) advocate for the advancement of a "post-biological future" because such an advancement will supposedly be accompanied by a reduction in long-standing human problems (14). Writing before the emergence of contemporary transhumanism, but whose ideas undergird its development, J.B.S. Haldane (1923) claimed that scientific progress animates "man's gradual conquest, first of space and time, then of matter as such, then of his own body and those of other living beings" (82). Kurzweil and many other contemporary transhumanists echo this interest in transcending biological limitations and in preventing death altogether. According to Nick Bostrom (2005), a particularly controversial figure in the transhuman movement, death is a tyrant from which we humans ought to be freed.

The preoccupation with technological and scientific advancement predates the philosophical formulation of transhumanism. In the western-liberal tradition, Prometheus animates mythologies of human optimization and technological mastery over Nature. Karl Marx was inspired by the myth of Prometheus as a young philosopher, though he would later focus on the co-dependent relationship between humans and nature, a theme which has recently spawned an outpour of degrowth Marxist philosophy (Saito 2023; Barca 2019; Kallis et al. 2019). Despite this ecological orientation, scholars on the "accelerationist" left continue to find inspiration in the

apparent liberatory link between Marxism and Prometheanism (Williams and Srnicek 2016), which some have further elaborated as a conduit for transhumanism (Steinhoff and Kjøsen 2021). Unsurprisingly, many of these scholars, like many transhumanists, are predominantly white men—a subjectivity that has historically wielded the mastery-over-nature worldview.

In its manifestation as scientific progress, Prometheanism has historically sown the seeds for individualism and its corollary, capitalism. This is particularly apparent in self-tracking technology and in the Quantified Self movement, where the onus is placed on individual responsibility rather than medical expertise in the maintenance of health and wellness (Lupton 2014). Spurred by the increase in wearable technology and use of networked devices in healthcare, self-tracking technology has been criticized for its fetishization of data (Wernimont 2018; Mularoni 2021). Inasmuch as self-tracking establishes the idea that physical and mental experience can and should be quantified, it also emphasizes a neoliberal orientation in technological development. N. Katherine Hayles (1999) writes, "[w]hen bodies are constituted as information, they can be not only sold but fundamentally reconstituted in response to market pressures" (42). Importantly, the myth of Prometheus, and as I will show, Daedalus, also suggests the potentially disappointing, if not tragic, outcome of applying technoscientific solutions to social problems.

Much has been said about the colonial underpinnings of transhumanism. In her book *Science as Salvation*, Mary Midgley (1992) criticizes Haldane and more recent scientists' preoccupation with space colonization and mind-uploading technology. Such grandiose endeavors, she argues, can only be understood "as self-indulgent, uncontrolled power-fantasies" (158-9). Abou Farman (2021) similarly notes that the transhuman pursuit of immortal life reinforces "old, white, American ideals and rhetorics of pioneering, [and] frontierism" (121).

Melinda C. Hall is also attuned to contemporary transhuman figures and debates, particularly regarding population ethics. Hall (2016) writes that "enhancement literature construes the human population as internally threatened by vulnerability and interdependence" (xvi). Crucially, Hall (2016) argues, "proponents of enhancement . . . weave together fantasies of health, ability, and the good life that are troublesome and exclusionary" insofar as such enhancement is almost always construed by white, able-bodied and masculine subjects (4). For this reason, transhumanism is primarily concerned with methods aimed at circumventing fragility while maximizing individual (white, male) power.

But according to its proponents old and new, transhumanism is an appeal to ethical world-building. The foundation of its ethical framing, however, relies on a population ethics originally developed by English economist Thomas Robert Malthus, who argued in 1798 that the rate of reproduction far outpaces the agricultural and natural resources required to feed the global population, and as such, believed that poverty was essential to preserving a natural order:

> The constant effort towards population...increases the number of people before the means of subsistence are increased. The food therefore which before supported seven millions, must now be divided among seven millions and a half or eight millions. The poor consequently must live much worse, and many of them be reduced to severe distress. (30-31)

Malthusianism has faced much scorn from Marxists (Marx and Friedrich Engels themselves were vocal critics)[4], feminists[5], and libertarians.[6] Nevertheless, the discourse of population control has

[4] Booth, Adam. "Marx versus Malthus: overpopulation or senile system?" 10 November 2023, https://www.marxist.com/marx-versus-malthus-overpopulation-or-senile-system.htm#_ftn2
[5] Ojeda, Diana, Jade S. Sasser, and Elizabeth Lunstrum. "Malthus's Specter and the Anthropocene." *Gender, Place & Culture* 27, no. 3 (March 3, 2020): 316—32. doi:10.1080/0966369X.2018.1553858.
[6] Follett, Chelsea. "The Cruel Truth about Population Control." *Cato Institute*, 13 June 2019, https://www.cato.org/commentary/cruel-truth-about-population-control

gained ground in progressive environmentalism, and it continues to be marshalled by transhumanism as well as the adjacent movement Effective Altruism (EA) and its philosophical base, longtermism. Like early transhuman thinking, contemporary transhumanism demonstrates an interest in ameliorating social problems, but the emphasis on population control remains a crucial point of concern.

My critique of the transhuman fantasy of genetic perfection takes the more disturbing visions of optimization seriously and considers their political impact alongside the history of eugenics, or the idea that the human gene pool can be improved through selective breeding. I will show how the transhuman fantasy developed from white men's preoccupation with power over their own and others' bodies, and how this preoccupation in turn affirms the violent colonial belief that white, wealthy subjects are deserving of advancement, where Black, brown, and poor subjects are deserving of subjugation, exploitation, and even death. White supremacy lies behind the veil of optimization.

I am specifically interested in the way the tenets and ethos of transhumanism have been imported into medical practice and theory. Healthcare systems, virtually unextractable from the practice of medicine, are increasingly influenced by technological developments promising more personalized and effective treatments. My inquiry is interested in the ways transhumanism has impacted reproductive medicine, particularly in the widespread use of birth control and in contemporary techniques like embryonic screening for disease, sex selection, and even apparent markers of intelligence. I will explore the way life is designed and sometimes oppressed through such techniques in the following chapters, but it is important to establish the eugenic links between transhumanism and reproductive medicine.

To expose the eugenic principles, as well as the emphasis on population control, embedded in proto- and modern transhumanist thinking, I draw on Michel Foucault's idea of biopower, or the government of life. According to Foucault (1976), the transformation of punishment from sovereign power to biopower in the seventeenth century resulted in a shift from managing life through submission and destruction (the right to end life) to a new regime of power aimed at organization and regulation (the right to make live under specific conditions) (136). In other words, the exercise of power became concerned with "the large-scale phenomena of population" (Foucault 1976, 137). Modern biopolitical regimes seek to discipline and regulate life. In so doing, they marshal entire populations to wage war and, at the same time, ensure the continued survival of individual existence (Foucault 1976, 137). The power to make live, according to Jasbir Puar (2017), is particularly palpable in Gaza "where debilitated bodies are more valuable than dead ones" because they continuously circulate through the circuit of capital (153). Scaled to the level of population, bodies are leveraged and organized for financial and colonial ends.

Foucault (1976) identifies sexuality as "a crucial target" of biopolitics because it lies "at the juncture of the 'body' and the 'population'" (147). Beginning in the eighteenth century, population emerged "as an economic and political problem" to be solved through analysis of

> the birth-rate, the age of marriage, the legitimate and illegitimate births, the precocity and frequency of sexual relations, the ways of making them fertile or sterile, the effects of unmarried life or of the prohibitions, [and] the impact of contraceptive practices . . . . (Foucault 1976, 25-6)

The success of a country, Foucault (1976) remarks, depended on "the manner in which each individual made use of his sex" (26). Efforts to maximize a population's fitness thus aimed at

curbing perversions and diseases that might "afflict future generations" (Foucault 1976, 118); a population's wealth was thought to be largely determined by its health. At the end of the nineteenth century, the pathologization of sex was deployed as "a general protection of society and the race" (Foucault 1976, 122). Foucault also notes that biopower enforced "the high political price of [the bourgeoisie's] body, sensations, and pleasures, its well-being and survival" (123). Today's biopolitical regime, focused on "the affirmation of the self," continues to prioritize the survival of white bourgeois subjects while subjugating poor, Black, and brown ones (Foucault 1976, 123).

The history of sexuality reveals the intertwining developments of the family institution, capitalism, and medicine as instruments of social and political control. Life, in its modern and contemporary formations, is *optimizable*. As Kyla Schuller (2018) argues, "from the beginning, biopower has functioned through technologies of optimization that rely on ideas of corporeal mutability and plasticity as the interface between the individual and the population" (24). Inasmuch as it demonstrates concerted efforts to control population, biopolitics can be described as a means for optimizing life. As a political object, life came to be understood as "man's concrete essence, the realization of his potential, a plenitude of the possible" (Foucault 1976, 145). This emphasis on optimization *qua* the realization of potential has become even more apparent in the twenty-first century alongside the growth of the Quantified Self and biohacking movements as well as computationally driven medical advancements like Elon Musk's Neuralink brain implant. Nikolas Rose (2007) argues, "contemporary medical technologies do not seek merely to cure disease . . . but to control the vital processes of the body and mind" (16). For this reason, Rose refers to biomedical advancements as "technologies of optimization," or techniques aimed at maximizing bourgeois potential.

As Rose underscores, the logic of optimization originates in the idea of genetic superiority by way of reproductive control. Beginning in the 1950s, the practice and discourse of sex pathology expanded to include genetic counseling (Rose 2007, 124). Today, techniques like preimplantation diagnosis aim to optimize population health through genetic selection conducted on the embryo. Crucially, Rose (2007) notes that contemporary reproductive technologies are "not merely medical technologies or technologies of health, they are technologies of life" (17). While Rose identifies shifts in more contemporary geneticists' thinking, genetic politics continue to manifest in technologies like preimplantation genetic screening (PGS), which is often used in infertility treatments like in-vitro fertilization (IVF). In this way, biomedical science legitimizes genetic determinism by foregrounding the importance of screening out disease and simply by encouraging prospective parents to pick the "best" embryo based on computational probability. In the United States, parents using IVF are even allowed to select the sex of their future child, although this practice has been banned in nearly every other country because of the history of female infanticide (Nietfeld 2024).

While its proponents identify the will to cognitive and biological enhancement as an innocuous manifestation of fulfilling individual potential, transhumanism adheres to a biomedical model based on perceived norms with the intention of transcending these norms. I will examine the history of the eugenics movement more deeply in the following chapter, but my intention in this first chapter is to situate transhumanism as an engine of reproductive control, and one that depends on myth and fantasy. At the crux of transhumanism lies both the assumption that some genes are better than others and an anxiety over the body's fragility. The dream of literally steeling oneself helps soothe the not entirely unwarranted fear that the world will end—from war, pandemic, climate change, or a combination of these events that bring the

prospect of the Rapture into the secular-scientific foreground. In this way, cyborgian solutions to a precarious global condition marshal psychopower to both quell and provoke panicky feelings about the future (Orr 2006).

In addition to reinforcing eugenic principles in medical science, transhumanism is helping to steer a cultural interest in future-oriented thinking over and against understandings of life as a finite phenomenon. This figures biopolitically as the right to make live *forever*. I will demonstrate in the third chapter how the politics of futurity emphasizes an economy of potential and speculation, or the eldritch desire for immortality. For now, it is worth noting that the market-driven orientation appears misaligned with earlier transhumanist thinking. To his credit, Julian Huxley lamented the increasing economization of life—in the 1940s no less—and the self-described materialist J.B.S. Haldane emphatically believed that human brains are finite.

I now turn to an examination of proto-transhumanist thinking in the work of Huxley and Haldane and then direct my attention to contemporary transhumanists, Nick Beckstead and Nick Bostrom, who have propelled the recent wave of EA and one of its core tenets, longtermism. Both early and more recent formulations of transhuman discourse and practice are supported by an interest in achieving individual potential and managing population. I aim to 1) illustrate a spectrum of transhuman thinking in which varying and at times oppositional positions assimilate within the frame of whiteness and androcentrism, and 2) demonstrate the way transhuman discourse has transformed alongside the cultural embrace of computation.

The fathers of transhumanism

The evolutionary biologist and eugenicist Julian Huxley, brother of novelist Aldous, is credited with coining the term “transhumanism” in a lecture presented in 1951. The term appears

in subsequent works, including *New Bottles for New Wine* (1957), but as Elise Bohan (2018) notes in her historical analysis of transhumanism, "it cannot be claimed with certainty that Julian Huxley was the first thinker to use the term transhumanism in its modern sense" (353). Nevertheless, Huxley's engagement with transhumanism as a concept is important for two reasons. First, it demonstrates the epistemological link between genetics, eugenics, and transhumanism, and second, it reveals the emphasis on population control in early transhuman thinking. Together, these discursive emphases mobilize essential components of transhuman biopolitics.

Every flavor of transhumanism is inflected with eugenic thinking to varying degrees. In general, transhumanists argue that a good, prosperous future can only be guaranteed by population control. This sentiment is especially apparent in Huxley's discussion of India and its predisposition to famine, which, according to Huxley, is due to overpopulation. The influence of Malthusianism on Huxley's (1957) thinking is clear: "if population goes on increasing by 5 or more millions a year, food-production cannot possibly continue catching up with the mouths to be fed" (210). For this reason, Huxley (1967) argues "Money and energy spent on birth-control, through the provision of free advice and free contraceptives, backed up by intensive propaganda, would be a better investment than a corresponding sum devoted to promoting industrialization" (210). In other words, India's famine problem is best addressed by reproductive control rather than infrastructural improvements. In fact, it seems that Huxley's primary interest is in maintaining the conditions that keep India from industrializing in order to prevent the development of its geopolitical prowess. Such a position demonstrates the importance of myth-making in discussions of race, and the way colonial and paternal presuppositions legitimize

racism through so-called scientific expertise. Writing in the wake of the Crown rule in India, Huxley's feelings toward India are probably as personal as they are theoretical.

Huxley redeems himself in *The Uniqueness of Man* on multiple occasions, though it should be noted that this work preceded *New Bottles for New Wine*. In Huxley's (1943) earlier thinking, he emphatically denounces "[the] theory of Nordic supremacy . . . as a myth like any other myth" (50). Additionally, he argues "[the] alleged inferiority of half-castes between whites and black or browns is another case in point. If the inferiority really exists, it is much more likely to be the product of the unfavourable social atmosphere in which they grow up than to any effect (which would be biologically very unusual) of their mixed heredity" (Huxley 1943, 51). Perhaps equally compensatory is Huxley's (1943) claim that intelligence tests are "devoid of much value" (51), despite the lineage of white supremacy embedded in the quantification of intelligence (Stovall 2021). Huxley's (1943) interest as a eugenicist is the manifestation of traits such as adventurousness and individualism (56). Of course, such qualities are imbued with the same liberal humanism that continues to privilege the white, heteronormative ideal. But in the same text, Huxley expresses disappointment in laissez-faire economics, a laziness which he feels has been applied to human biology; he feels the pendulum has swung too far in the direction of supposedly antihuman Darwinism (Huxley 1943, 17-18). Huxley claims that man has forgotten his biological dominance and capacity for self-mastery because he is beholden to the social restraints imposed by capitalism.

In order to address the incommensurability between industrialization and individual fulfillment, Huxley lays out three possible eugenic programs. The first takes a remedial approach by "accept[ing] the economic and spiritual frustrations" of the capital class-system" (Huxley 1943, 65). In this program, birth-control must be introduced and access to medical treatment

should be curbed so that less gifted children are less likely to survive (Huxley 1943, 66). Huxley (1943) then considers the possibility of a eugenic program within an optimum environment—that is, one in which the balance between work and leisure time allowed "the opportunity to everyone of expressing whatever gifts of body and mind they might possess" across a range of disciplines (67). A eugenic program under such conditions would "aim at a high level of inherent physical fitness, endurance and general intelligence" and would "encourage the breeding of special talent of any and every sort" (Huxley 1943, 67). However, Huxley fears that if such a program were instantiated, the genetic results would likely manifest as neurosis or maladjustment. For this reason, he argues for a third approach that would target both genetic and environmental optimization by raising nutrition standards and providing equal access to health services and education. According to Huxley, such provisions would reveal the true extent to which above-average physical and mental performance depends on genetics. Invoking the biopolitical argument for population control, Huxley (1943) concludes, "raising the standard of life among the poorest classes almost invariably results in a lowering of their fertility" (69-70).

This last turn once again demonstrates the residual influence of Malthus on Huxley's thinking, as well as an understanding of genetics that is inherently classed. It also reveals a limitation in Huxley's imagination; for Huxley, there is no alternative to the current social contract. Although he maintains his position on "levelling up the social environment", he also anticipates that a "social problem group" will inevitably emerge and be targeted "for measures of negative eugenics such as segregation and sterilization" (Huxley 1943, 70). According to Huxley's formulation, the basis of genetics presupposes arbitrary understandings of "good" and "bad" genes, and for this reason, populations are defined differentially according to this logic of

desirability. We will see in the following section how such thinking continues to influence more contemporary transhumanism that frames moral values as measurable scientific variables.

Huxley underscores how overpopulation, no doubt caused by the more fertile lower classes, threatens nature and its positive impact on humanity. He writes,

> Up till now, rapid population-increase has led to hypertrophied cities, so big that they are beginning to defeat their own ends; they are producing discomfort, inefficiency and nervous strain as well as cutting off millions of people form any real contact or sense of unity with nature. . . . Population-increase also threatens the world's open spaces and the beauty of unspoilt nature. (Huxley 1956, 186)

This appeal is certainly shared by some environmentalists today, but the "back-to-the-land" sentimentalism tends to neglect the exclusivity embedded in such idealistic claims. First, it demonstrates a nature/urban dualism that associates pastoral life with purity and urban life with discord and maladaptation. It also neglects the power dynamics embedded in urban sprawl that often maintain social hierarchies. In Huxley's time, we can imagine how an emphasis on low-density population helped to foment racial anxiety. This was especially palpable in the United States in the years following the Civil War, but the attention to population control entered formal disciplines and became a global political project in the 1920s. As Michelle Murphy (2017) remarks in *The Economization of Life*, population experts feared the reproduction of racially inferior subjects (6). It is no wonder, then, that Black and brown populations have largely been consigned to highly polluted and densely populated areas while their white counterparts are more often able to enjoy, or at least occasionally escape to, unspoilt nature (Wiebe 2017).

Seeds of other contemporary, traditionally progressive environmental movements are evident in Huxley's sympathy toward anti-natalism. He acknowledges that "modern war itself is

dysgenic" insofar as such colonial and imperial pursuits tend to reduce the number of physically healthy men (Huxley 1943, 73). This has indirect effects, as "many among the more imaginative and sensitive types are to-day restricting their families, sometimes to zero, because they feel that they cannot bear to bring children into a world exposed to such a constant risk of war and chaos" (Huxley 1943, 73). These "more imaginative and sensitive types" have since grown in number to form initiatives like The Voluntary Human Extinction movement and Zero Population Growth and have been supported by scholarly positions like those of Donna Haraway (2018) who argues for kin-making over procreation. Notwithstanding their calls for sustainable living, these orientations—which are predominantly comprised of white subjects—identify overpopulation as a primary cause of ecological crisis. For this reason, these fatalistic orientations reproduce a Malthusian logic that identifies reproductive control as a primary means by which humanity achieves social and economic equilibrium. It appears, however, that Huxley laments the will to extinction because it disfavors the reproduction of intellectually and morally superior subjects.

Although Huxley demonstrates a progressive attitude, at least for his time, the scientific endorsement of eugenics in the mid-twentieth century propelled cultural imaginaries about how humanity could be shaped. This eugenic thread appears in the work of Huxley's contemporary, fellow Englishman and Darwinian, John Burdon Sanderson (J.B.S.) Haldane, who later became a citizen of India. In an essay provocatively titled "Daedalus; or Science and the Future", Haldane (1923) predicted the "abolition of disease" (23). The text, published in 1923, begins with a reproachment of zealous enthusiasm for otherworldly possibilities rather than material, embodied experience. When speculating the future, Haldane envisions a "cosmoclastic explosion" witnessed by earth's inhabitants who happen to be the attendees of "a large dance" during the event. Amongst the many onlookers, those most scientifically learned tried to theorize the

explosion's cause. According to Haldane, the correct impulse might have been to continue dancing.

Inspired by his experiences in war, Haldane's vision implies epistemological ambivalence about the future of scientific research and its tendency to embrace Prometheanism, sometimes at great planetary and personal cost. He acknowledges that the scenes of chemical warfare and a potential space collision seem to suggest that either "mankind [has] released from the womb of matter a Demogorgon which is already beginning to turn against him" or, worse, that "man [may become] a mere parasite of machinery, an appendage of the reproductive system of huge and complicated engines which will successively usurp his activities, and end by ousting him from the mastery of this planet" (Haldane 1924, 4).

Despite the potentially dangerous outcomes of scientific progress, particularly in its militarized incarnations, Haldane argues that it is unavoidable insofar as capitalism and competitive nationalism are deeply dependent on the advantages of scientific research. Moreover, he claims that developments of transport and communication "are tending to bring mankind more and more together, to render life more and more complex, artificial, and rich in possibilities—to increase indefinitely man's powers for good and evil." Two-thirds of this statement have certainly proven to be true over the last 100 years.

It is important to note that Haldane identified as a Marxist and his thoughts on the future suggest that he felt Marxism and scientific advancement were not only compatible but that their pairing was essential to human progress. Following Marx, Haldane considers the potentially beneficial outcome of handing over "control of certain key industries" to workers, and like Marx, falls prey to techno-solutionism when theorizing the outcome of industrial development:

> As industries become more and more closely interwoven, so that a dislocation of any one will paralyse a dozen others (and that is the position towards which we are rapidly moving), the ideal of the leaders of industry, under no matter what economic system, will be directed less and less to the indefinite increase of production in the intervals between such dislocations, and more and more to stable and regular production, even at the cost of reduction of profits and output while the industry is proceeding normally. (Haldane 1923, 20-21)

For this reason, Haldane does not regret the likelihood that the factory worker will replace the agricultural worker, as "a stable industrial society" will be self-regulating—that is, it will provide the means for an autonomous production system and the working class will subsequently be emancipated from wage labor. Notwithstanding the complications of this interpretation of sociotechnical development, elements of Haldane's thinking acknowledge an interest in transforming the values inscribed in and by the current social system, much like his contemporary, Huxley. In a speech delivered a year before his death he writes, "Once poverty is a state which no one has experienced, but merely an evil smell from the past, like cannibalism, I think there will be much less interest in acquiring material objects, and more and more interest in our own bodies and minds, and those of others in whom we are interested and whom perhaps we love." Incidentally, this speech is embedded in the archive of the now-defunct World Transhumanist Association website.

In his "Daedalus" text, Haldane turns to Greek mythology to underscore the epistemological and metaphysical preoccupation with progress and transformation. In his words, "the chemical or physical inventor is always a Prometheus. There is no great invention, from fire to flying, which has not been hailed as an insult to some god" (Haldane 1923, 44). However,

Haldane (1923) considers Daedalus as a more appropriate figure to allegorize biological invention because his story "demonstrate[s] that the scientific worker is not concerned with gods" (48). As Haldane (1923) recounts, Daedalus's "monstrous and unnatural action"—killing his nephew—went unpunished (49). Haldane's invocation of Daedalus underscores a presupposed secularity in scientific practice while acknowledging the dogma inherent in any school of thought. To his credit, Haldane (1923) takes an anti-naturalist position when he describes biological intervention as an "establishment of a new relationship" between humans and other living things, rather than a modification of human "nature" (42). This is distinct from orientations that neglect the social engines of scientific progress; technophiles and technophobes respectively identify science as either inherently "good" or "bad" for humanity. At the same time, Haldane's techno-solutionist tendencies reveal a dissonance in his materialism. On one hand, Haldane acknowledges how certain ideological presuppositions broadly influence cultural understandings, and thus tend to shape meaning, and by extension, technology. On the other, we see the way Haldane ascribes more meaning to technological development and its apparent capacity to stabilize production, and by extension human culture and relations.

In the same work, Haldane adopts the identity of an undergraduate student from a not-so-distant future to consider what he argues are likely scientific advancements. The "myth", as Haldane refers to this exercise, proffers the common practice of ectogenesis, or the growth of an embryo outside of an organic body. Perhaps even more interesting, this myth echoes Huxley in its calls for the dismantling of current sexual relations. Together, the outsourcing of biological reproductive labor to artificial components and a dissolution of the relationship between procreation and sexual love aligns with some flavors of feminism like that of Shulamith Firestone (1970) and, more recently, cyberfeminism (Laboria Cuboniks 2015). This is especially

apparent in a passage on the impact of old age on women. Haldane (1923) is empathetic toward the experience of menopause and suggests that the synthesis of certain chemical substances produced by the ovary may one day "be able to prolong a woman's youth, and allow her to age as gradually as the average man" (74). Such appeals for biological manipulation certainly align with anti-naturalist positions, but as many critics of transhumanism argue, biological manipulation is a slippery slope to optimization and eugenics. I return to this problem toward the end of this chapter to illuminate how the will to biological manipulation and self-mastery reinforces the liberal humanist preoccupation with freedom, and how such a preoccupation in turn poses ethical problems. For now, it is worth noting that Haldane (1923) regarded science as "man's gradual conquest, first of space and time, then of matter as such, then of his own body and those of other living things" and that such conquest is inherently progressive (82).

Further troubling, Haldane, or rather his imaginary essayist, places primary reproductive responsibility on feminine bodies:

> It is perhaps fortunate that the process of becoming an ectogenetic mother of the next generation involves an operation which is somewhat unpleasant, though now no longer disfiguring or dangerous, and never physiologically injurious, and is therefore an honour but by no means a pleasure. Had this not been the case, it is perfectly possible that popular opposition would have proved too strong for the selectionist movement. (Haldane 1923, 67)

Haldane confirms the potential for ectogenesis as a means by which mankind may achieve freedom. But the separation of reproduction from sexual love affirms biopolitical assumptions that identify sexuality as excessive, and thus inherently problematic; sexual desire is something to be sectioned off and confined so as not to encourage "the greater fertility of the less desirable

members of the population" (Haldane 1923, 67). Although this sentiment is espoused by what we are to believe is "a rather stupid undergraduate", Haldane's preoccupation with optimized reproduction appears throughout his writing. Returning once more to his speech, "Biological Possibilities for the Human Species in the Next Ten Thousand Years", he writes "[o]wing to the large number of harmful recessive genes carried by most people, eugenics, largely directed to preventing their coming together, would be an important branch of applied science." Later on in the same speech, Haldane suggests heterosexual couples use contraceptives or be sterilized if their potential progeny is likely to suffer from heritable disease.

To return to his prediction of the abolition of disease, it is worth quoting another passage that suggests an opposition to immortality:

> I suspect that man's desire for a future life is largely due to two causes, a feeling that most lives are incomplete, and a desire to meet friends from whom we have parted prematurely. A gentle decline into the grave at the end of a completed life's work will largely do away with the first, and our contemporaries will rarely leave us sorrowing for long. (Haldane 1924, 74-5)

These remarks once again foreground an allegiance to materialism. Death, according to Haldane, is not a phenomenon to be avoided; rather, it should be considered an essential, universal experience. The issue with death lies in our relationship to time—that we never have enough, or that it is wasted. To combat such feelings, life should be organized in such a way to guarantee that relationships do not end prematurely. The administration of such organization, at least in Haldane's vision, requires some form of eugenics.

Despite their critical engagements with science, both Huxley and Haldane ascribe meaning to progress as an end in itself, and science as the primary practice by which progress is

achieved. In this way, both thinkers imbue in science a moral, biopolitical discourse that argues for biological optimization and maintains western-liberal emphasis on individual freedom and Platonic gender and beauty ideals. The genetic and environmental ideal for Huxley and Haldane leans toward the European variety, is industrial but not too urban, and is cultivated from the fruits of technological development. I will now examine how these presuppositions are carried forward and intensified in more contemporary transhuman discourse.

Transhumanism today

The recent waves of Effective Altruism (EA) and longtermism have revealed the extent to which transhumanism has influenced philosophical circles and cultural attitudes. Since the dawn of the new millennium, popular interest in technoscience and biohacking has grown; the twentieth century was certainly captivated by science fiction, but fantasies of disembodiment and machinic subjectivity began to enter the cultural mainstream alongside the marketization of products like the smartphone and "wearable" devices. No doubt, the quotidian use of such consumer prostheses, which are most often powered by proprietary software and funded by venture capital, has helped to reinforce the Cartesian separation of the body from the mind. Yet, as N. Katherine Hayles, Donna Haraway, Helen Hester and many other philosophers of science and technology have illuminated, human "nature" has always been accompanied by artificial components, and to assume the idea of bodily sanctity would risk biological conservatism. But the transhuman pursuit of Singularity—the liberation of consciousness from the body—along with genetic perfection and radical life extension marks a turning point in what we have come to describe as human nature.

Several prominent research centers, many of which are based in Oxford, UK, are devoted to research on the safer use of artificial intelligence, radical life extension, and genetic engineering, and the reduction of existential risk, that is, a threat that could potentially result in human extinction. The Centre for Effective Altruism, whose board members include William MacAskill and Nick Beckstead, has published and presented extensively on such topics. MacAskill's New York Times bestselling book, *What We Owe the Future*, makes the case for longtermism, the idea that the decisions we make today should maximize the benefits for people living in the far future. In other words, our moral framework should be primarily engaged with speculative life rather than life in the present. MacAskill's ideas have been well received by prominent tech celebrities like Elon Musk and Peter Thiel.

This is all to say that longtermism is not a niche branch of philosophy, but rather an increasingly consequential worldview. Before taking a closer look at two longtermists, whose origins lie in transhumanism, some clarity around these terms is needed. While longtermism is a chief principle of EA, it is not necessarily part of transhuman ideology. However, as I have endeavored to illustrate, there are several points of contact and contention across these value systems. For instance, both EA and transhumanism devote resources to research on "superintelligent" AI, but where EA primarily identifies such a specter as a potential existential risk, some transhumanists welcome the prospect of self-conscious computers. A figure like billionaire investor Peter Thiel, however, has ties to both EA and transhumanism through generous funding and public support; Thiel is particularly interested in age reversal and life extension research.

The linchpin in Effective Altruism/longtermism and transhumanism with which I am primarily concerned, however, is the shared emphasis on population "ethics", which I argue, is

more appropriately referred to as population control. Both projects are influenced by utilitarian thinking that prioritizes some lives over others. Critics have illuminated the underlying anti-blackness in the EA movement (Sebastian 2023), and some figures in the movement like Nick Beckstead and Nick Bostrom, whose work I examine below, have made overtly eugenic claims. Like Melinda C. Hall, I believe an examination of the more provocative, and sometimes absurd, transhumanist thinking is in fact necessary to understand the stakes involved in arguments for biological optimization and enhancement. My interest in expanding Hall's and others' analyses of Bostrom is to both provide an update of his claims alongside the increasing influence of EA and longtermism ideology and to reinforce the eugenic principles undergirding utilitarian population ethics. As we will see, the moral preoccupation with speculative life in the far distant future—a future that may involve the reanimation of formally dead persons, radically extended life spans, or digital immortality—is bereft of any concern for immediate and manifold crises affecting life today.

Among the prominent figures in the EA movement is Nick Beckstead, whose resume boasts numerous positions in organizations and initiatives devoted to its cause, including Effective Ventures Foundation (EVF), Open Philanthropy, and the Future of Humanity Institute, where he worked alongside fellow longtermist and transhumanist Nick Bostrom. Beckstead has contributed to EA discourse on a variety of topics, including existential risk, space colonization, and life extension. For the purpose of maintaining methodological consistency, that is, attending to the origins of a school of thought (in this case, EA/longtermism), I begin with an examination of Beckstead's dissertation, completed in 2013. To start, the dissertation's title, *On the Overwhelming Importance of Shaping the Far Future*, suggests that shaping the far future is an

urgent matter. In fact, it's overwhelmingly important that we redirect our attention to a horizon that remains, for all intents and purposes, out of view.

Beckstead (2013), admittedly helpfully, clarifies the project's main thesis in the opening pages: "From a global perspective, what matters most (in expectation) is that we do what is best (in expectation) for the general trajectory along which our descendants develop over the coming millions, billions, and trillions of years" (ii). Again, what matters most, according to this philosophical intervention, is that we focus our moral aptitude on beings whose existence in historical time is so far beyond the current epoch that we are presently closer to the beginning of human civilization. Our vision of humanity—which, according to Beckstead, is not limited to homo sapiens, but "any valuable successors we might have"—must see trillions of years into the future (Beckstead 2013, 2). Beckstead's argument is constructed around concepts of existential risk (XR), defined as any threat to humanity's continued survival, and "speeding up development". He does not elaborate the specifics of this notion; it seems to take the place of "technological progress" in various scenarios. For example, "speeding up development may reduce the probability of a critical resource shortage" if an asteroid were to hit earth (Beckstead 2013, 71). But by the same token, speeding up development would increase existential risk if it were to result in nuclear war (Beckstead 2013, 71). Beckstead admits that he does not have great confidence in his thesis, rather, what propels his interest in developing his argument is the possibility that some people might not take his claims as seriously as they should. As we will see, Beckstead's motivation is not grounded empirically—it is an exercise in speculation.

Beckstead illuminates how the discourses of health and medicine are shaped by the economy. In typical utilitarian fashion, he argues that curing a child's blindness would exponentially benefit future generations because fewer resources would be required in the child's

lifetime and both the child and the child's parents would have more time to be productive—that is, they would spend more time laboring (Beckstead 2013, 4). As Hall's (2017) biopolitical examination of transhumanism reminds us, the impulse to remove "undesirable" characteristics from a population evidences "prejudice and stigma against certain modes of embodiment and do not signal something inherent one might call 'disability'" (32). Disability studies scholars have illuminated how normativity is circumscribed by productivity (Garland Thomson 2017), but this is not an idea with which Beckstead nor any longtermist or transhuman philosopher has engaged. To be sure, both worldviews are staunch in their quest for superhuman ability.

Beckstead's fragile methodological scaffolding is particularly frustrating; his argument is based primarily, if not solely, on conjecture and weak comparisons. Beckstead claims that "we know" certain actions produce "relatively limited ripple effects on the far future," but follows this claim with anecdotal evidence about his feelings toward reducing animal suffering in factory farms, a worthwhile endeavor but a non sequitur nonetheless. According to Beckstead, "we know" that the moral decisions made today are relatively inconsequential because it is plausible to conclude that "saving lives in poor countries may have significantly smaller ripple effects than saving and improving lives in rich countries." The basis of this claim, again according to Beckstead, lies in the fact that richer countries are more economically productive—conveniently, Beckstead does not mention that rich countries rely on the exploitation of poor countries to generate wealth. Nevertheless, Beckstead (2013) concludes, "saving a life in a rich country is substantially more important than saving a life in a poor country, other things being equal" (11). This part of Beckstead's argument has unsurprisingly faced scathing criticism, particularly from longtermist critics like Emile Torres (2022). The recent flak has compelled Beckstead himself to update his dissertation in 2022 with the following amendment:

> The paragraphs to the right have gotten some attention from people who believe the text implies that some lives are intrinsically more important than others. So I'm making an edit today to clarify that (a) This passage was exploring a particular narrow philosophical consideration, in an academic spirit of considering ideas from unusual angles; (b) I do not believe that lives in rich countries are intrinsically more valuable than lives in poor countries; (c) all things considered, I believe that it is generally best for public health donations to prioritize worse-off countries (and I've personally focused significant amounts of my career on promoting such donations, e.g. as a founding board member of https://www.givingwhatwecan.org/). If you quote this part of my dissertation, I would appreciate it if you would also include this footnote to avoid unnecessary misunderstandings. (Beckstead 2013, 11)

In spite of this somewhat self-congratulatory and clearly panicked afterthought, Beckstead's dissertation quickly turns to population ethics and decision theory as frameworks for addressing the question of shaping the far future. Interestingly, and rather alarmingly, he argues that "we do not need to 'solve' population ethics in order to address the question" (Beckstead 2013, 17).

It seems that Beckstead (2013) believes morality may be abstracted from political thinking insofar as he believes it is possible to construct an objective moral framework (19). Yet, Beckstead's ethical framework is substantiated by positivist paradigms (curve fitting, for example) and economics, both of which are always-already inscribed by power dynamics. Additionally, Beckstead reveals how the longtermist preoccupation with minimizing existential risk parallels certain religions' fetishization of a supposed afterlife. Drawing on moral philosopher Derek Parfit, Beckstead (2013) reinforces the value of *potential* life over and against life in its current form because "the far future could be overwhelmingly good" (6). For what it's

worth, Parfit's book *Reasons and Persons* (1984) challenges utilitarian presuppositions, but it cannot help reproducing arbitrary moral lines in the sand. This is particularly the case in his discussion of population. However, Parfit (1984) identifies population growth as potentially morally responsible for the reason that it often aids in economic development and "larger families tend to be somewhat happier, or that many people prefer having more children" (382). However, there are occasions in which population growth may negatively impact existing people: if procreation were to result in a decrease in happiness or quality of life per person. Sadly, yet unsurprisingly, Parfit (1984) does not provide examples of any such infraction other than the somewhat eugenic claim that a life marked by crippling illness is perhaps not worth living (130).

Beckstead is an eager cosigner, but such enthusiasm for longtermism marks a shift from earlier transhuman thinking. Whereas Huxley and Haldane advocated for eugenic programs in the name of improving population health, thinkers like Parfit abstract the issue of population from health altogether. There is no discussion of lived bodily experience in the longtermist view, nor is there any empirical elaboration of what constitutes a "happy" or "wretched" life. Rather, what matters quantitatively is the existence of *persons*—and the more persons, generally, the better. This position aligns with one possible orientation in the runaway "trolley problem" thought experiment. In the speculative scenario, the trolley operator (or a quick-thinking bystander) may reroute the trolley's course to sacrifice one person, and in the process, save a larger number of people.[7] But despite its overwhelming attention to the problem of population, Parfit's book makes no mention of eugenics other than a few offhand remarks about sterilization, which he identifies as a possible solution to an incommensurability between overpopulation and

[7] A truly utilitarian position would maintain that the decision to sacrifice one individual in order to save more people is indeed the right decision even if the individual is, say, one's mother.

quality of life. It would seem, then, that Beckstead should be very much invested in solving population ethics in his expansion of Parfit's moral philosophy.

On the whole, Beckstead's approach to moral philosophy insists that we think of morality as a numbers game; it is, as Kieran Setiya (2022) describes it, "moral math." In the shift from early transhuman thinking to more recent developments surrounding enhanced life we begin to see a discursive shift from an interest in social progress to an interest in maximizing potential value. I will examine how this shift correlates historically with the development of venture capital in the third chapter, but it is important to note the biopolitical impact of this way of thinking. Transhuman-longtermists like Beckstead have been pivotal in shaping cultural imaginaries of the future; billions of dollars and political resources have been spent on EA because of his research. Building on Parfit's moral speculation, Beckstead has helped to steer philosophical and cultural interest in a new trolley problem: we now find ourselves on a runaway trolley advancing toward a fork in the road; on one side there is one person tied to the tracks, and on the other there *may* be many more people miles down the road in the same position. To act ethically, as longtermists see it, we ought to gamble on the possibility of saving more people even though they are out of view and may not even exist in the first place. One could devote many pages to critiquing Beckstead's dissertation, but I hope my brief examination has demonstrated the degree of methodological and moral negligence in longtermism, *ceteris paribus*.

Future of Humanity Institute (FHI) founder, Nick Bostrom, is perhaps one of the most influential thought leaders today. Bostrom has appeared twice on Foreign Policy's Top 100 Global Thinkers list, and according to his website, is the world's most-cited professional philosopher under the age of 50. He has published four books and dozens of articles, many of

which are peer-reviewed, around the topics of existential risk, human enhancement, and AI ethics. While some of his ideas are certainly unconventional and at times offensive[8], his writing can also be measured and even eloquent. This is perhaps a testament to Bostrom's philosophical prowess; he is able to render otherwise unreasonable ideas reasonable, so much so that several prominent thinkers across the transhuman-longtermism axis frequently collaborate with Bostrom's polemics.

Bostrom self-identifies as a transhumanist and is credited as the father of longtermism. Like his transhumanist forefathers Huxley and Haldane, Nick Bostrom resides in the UK where he holds an Oxford professorship. Incidentally, MacAskill and several prominent EA researchers are also Oxford affiliates. But as was the case with midcentury transhumanist population ethics, the impact from across the pond can be felt in the United States, particularly in Silicon Valley where much research on AI takes place. Under Bostrom's direction, the FHI boasts connections to other EA initiatives and enterprises, including San Francisco-based OpenAI, whose developments include the now widely used machine learning programs ChatGPT and DALL-E.

In addition to his focus on existential risk, Bostrom is particularly interested in the prospect of superintelligent digital minds, a topic he has been writing about for more than twenty years. Like Beckstead, Bostrom's argument understands morality as something inherently calculable and quantifiable through simple economics. He claims that the production of digital minds could be more valuable than ensuring the reproduction of the human species because digital minds can be programed with higher moral status and require fewer resources than their human counterparts (Shulman and Bostrom 2021). Once again, we see an incommensurability in

[8] In an email written in the mid-90s, Bostrom remarked, "Blacks are more stupid than whites." The email, along with Bostrom's intellectualized apology from 2023, can be found on his website: https://nickbostrom.com/oldemail.pdf.

the transhuman/longtermist preoccupation with existential risk and "posthumanity"; where the former concern lies in preventing risk to humanity's long-term survival, the latter advocates for humanity's replacement with cognitively advanced nonhuman "minds."

In a chapter titled "Sharing the World with Digital Minds" (2021), Bostrom and co-author Carl Shulman elaborate the utility of "super-beneficiaries", or beings that are "superhumanly efficient at deriving well-being from resources" (307). To begin, engineering such beings is relatively quick and cheap compared to human reproduction, and their cognitive capacity far outpaces that of humans. Moreover, digital minds can be designed to be easily satisfied, and precisely because they are not bound to biological constraints and sensations, their lives would be free of pain. These new conditions would thus maximize well-being. For this reason, the authors argue that "from a simple utilitarian perspective, assuming perfect compliance, the upshot [in producing digital minds] is then straightforward: *we ought to transfer all our resources and let humanity perish if we are no longer instrumentally useful"* (Shulman and Bostrom 2021, 318, emphasis added). Shulman and Bostrom admit there are many ethical views that would object to this claim, but it is a claim they maintain, nevertheless. To privilege humanity, they argue, would run the risk of reproducing xenophobic and racist principles embedded in already existing structures.

Certainly, even those of us who haven't been Oxford-educated can likely identify the negligence in such reasoning; their argument essentially rationalizes genocidal conditions for populations that "are no longer instrumentally useful." Scholars working from disability justice and critical race frameworks have pointed out that such anti-humanist thinking reinscribes fundamentally humanist principles. For example, Alexander G. Weheliye (2019) notes that anti-humanist positions "rarely [consider] cultural and political formations outside the world of Man"

(9). Rosi Braidotti (2013) and Kate Soper (2023) have also illuminated the hypocrisy embedded in the anti-human turn. Soper (2023) has noted how resistance to accepting human exceptionality neglects the relationship between human consumption to ecological crisis (26-7).

Despite Shulman and Bostrom's (2021) apparent interest in distancing themselves from racist discourse, they reproduce disparaging welfare stereotypes when they write:

> If human beings were able, by pouring garden debris into a biochemical reactor, to have a baby every few minutes, it seems likely that human societies would change current legal practices and impose restrictions on the rate at which people were allowed to reproduce. Failure to do so would in short order bankrupt any social welfare system, assuming there are at least some people who would otherwise create enormous numbers of children in this way, despite lacking the means to support them. (322)

The classism embedded in this statement cannot be denied, but what is particularly interesting is the way it departs from early transhuman thinking insofar as Huxley and Haldane were equally invested in the improvement of social infrastructure and biological enhancement. At the same time, Bostrom and his like-minded contemporaries also reinforce some early transhuman ideas about what constitutes a healthy population and how to achieve it (the consensus being through some kind of eugenic program). I would argue, however, that Bostrom's position is potentially more damaging than Huxley's and Haldane's eugenic ideation, as both were attuned to the social determinants of health as well as the social construction of race.

The eugenic thread in contemporary transhumanism can be traced to Bostrom's earlier writing on cognitive enhancement by way of reproductive technology. In "Cognitive Enhancement: Methods, Ethics, and Regulatory Challenges", Bostrom and Anders Sandberg identify the co-development of advances in computation and medicine. The authors cover a great

deal of ground, from general welfare improvements to drugs and genetic modifications, but embedded in the argument for enhancement is a question of "procreative choice and eugenics" (Bostrom and Sandberg 2014, 324). Bostrom and Sandberg argue that reproductive techniques like in vitro fertilization faced bioconservative criticism when first introduced, but it is now a common medical practice. They consider the ethical questions surrounding "designer babies" and the further commodification of life alongside disability justice concerns. Yet, their sympathies appear to lie with enhancement advocates on the grounds that they would reinforce parental choice and likely "increase the offspring's capacity for autonomous agency" (Bostrom and Sandberg 2014, 325).

In another article titled "Embryo Selection for Cognitive Enhancement", Shulman and Bostrom (2014) emphasize cognitive ability in genetic testing, which they believe ought to be "a routine part of medical care" (2). Contrary to Huxley, Shulman and Bostrom put stock in IQ testing because economic studies have shown that higher intelligence corresponds to higher wages. The references they cite reinforce normative, and therefore, limited, understandings of the "good life" based on productivity and growth. As Melinda Hall's critique demonstrates, such virtues preclude other ways of inhabiting the world. Moreover, the focus on cognition promulgates a binary logic that privileges the mind over the body. Feminist scholars have illuminated how this follows a long philosophical tradition that sees the body as passive and feminine—something to be manipulated and conquered (Federici 2014; Grosz 1994). But perhaps more worrying is Bostrom's potential influence in public policy, particularly in healthcare. With his influence in bioethical discourse, the impact of Bostrom's transhuman philosophy and fiscal influence remains to be seen.

As I examined in the previous section, Huxley's and Haldane's visions of transhumanism were motivated by Malthusian population ethics. Biopolitically, the economization of life has historically legitimized a distribution of resources that privileges some lives over others. Michelle Murphy (2017) underscores how the emphasis on economic growth led to a model of thinking that "some must not be born so that future others might prosper" (46). This position is certainly echoed by contemporary transhumanists, but the scale is much greater. According to Bostrom and Shulman (2021), "Human biological nature imposes many practical limits on what can be done to promote somebody's welfare. We can only live so long, feel so much joy, have so many children, and benefit so much from additional support and resources" (306). The issue is not simply that some lives are more economically valuable, but that the value of humanity is limited by its biological preconditions. In their neo-Malthusian positioning, Bostrom and Shulman argue that the best approach to population would be one in which there are no more human births, at least in their current incarnation. Thanks to super-beneficiaries, growth is no longer contingent on agricultural output or other resources upon which humans rely for continued survival.

Whereas early transhumanism focused solely on genetics, contemporary transhumanism incorporates computer science in the pursuit of cognitive enhancement. In several articles, Bostrom identifies computing and information technology as the primary means through which humans, or rather posthumans, may achieve enhanced intelligence. In "The Future of Human Evolution", Bostrom (2004) writes,

> For uploads, avoiding reproductive mutation may simply be a matter of performing multiple verifications that the copy is identical to the original before it is run. Even for biological creatures unaided by nanotechnology, sufficiently advanced gene technology

> should make it possible to scan all embryos for unwanted mutations, and ordinary genetic recombination could be avoided with the use of reproductive cloning. (11)

We see the growing impact of the computational theory of mind in the discursive shift from Haldane and Huxley's liberal eugenics programs to Bostrom's hope for digital and computer-assisted reproduction. Certainly, philosophical debate has been engaged in the mind-body problem for centuries, but, according to David Golumbia, Noam Chomsky is primarily responsible for advancing Cartesian rationalism in the second half of the twentieth century. Without moving too far away from the focus at hand, it is worth noting that Chomsky's linguistic work entered the cultural mainstream in the wake of the cybernetics boom, and helped to foment the idea that the brain operates very much like the computer (Golumbia 2009, 32). But as Golumbia (2009) argues that "the idea that the person is somehow in essence a digital thing . . . fits well with capitalist rationalism and literalist evangelical Christianity" (10).

Moreover, as Kate Soper (2023) explains, the promulgation of this idea has encouraged lay people outside of specialized disciplines like neuroscience and cultural theory to accept "that we are our brains: that minds and brains are one and the same" (21). Keith Ansell-Pearson addresses this issue when considering the dream of singularity, or the transfer of consciousness from the biological body to computational stratum. In a critique of such transhuman fantasies, Ansell-Pearson (1997) writes,

> Downloading the brain into a computer, in order to attain the transhuman condition (read: to become 'immortal'), would involve 'losing the body' and all that goes with it: 'the world, flesh', and, most revealing of all, 'the devil'. The gains would be 'freedom from physical constraints, faster thinking speed, a bigger memory'. Why is the attainment of the 'faster' and the 'bigger' to be regarded as a gain? (33)

Bostrom's philosophy is primarily motivated by an ethos of productivity wherein speed, cost-effectiveness, and pain prevention are the most desirable attributes in moral consciousness. But such a position neglects the useful properties of pain and finitude. For example, it has been well documented that people who do not have pain receptors typically live shorter lives because they tend to expose themselves to much greater biological risk. And as materialist philosophies contend, the body's finite conditions in fact provide necessary ethical grounding. Vivian Sobchack (2004) argues, "there is nothing like a little pain to bring us back to our senses, nothing like a real (not imagined or written) mark or wound to counter the romanticism and fantasies of technosexual transcendence" (167). Martin Hägglund (2019) similarly contends that finitude instills a sense of responsibility; the reason why we care for people, relationships, and causes is precisely because they are predisposed to decay. In other words, the fact that their future is not promised compels us to act ethically. Of course, the vulnerability of the body is something that transhumanists identify as a major impediment to quality of life. In their view, pleasure can only be maximized if suffering is avoided; that is, when humanity is freed from its biological constraints.

Similar to Huxley and Haldane, Bostrom's call for reproductive fitness is framed as a strategy for ensuring the production of "eudaemonic types." The motivation for "developing a direct preference for reproductive success (contrasted to preferences for sex, child rearing, etc.)" is undergirded by both evolutionary psychology and personal enmity against those who are lauded for the reproductive fitness (contrasted to the oftentimes pedantic types who value cognitive brilliance over physical strength) (Bostrom 2004, 6). Sobchack (2004) describes the postmodern philosopher's preoccupation with immortality and the analogous desire to "'jack off' by 'jacking in'" (175). Growing interest in the supposed "metaverse" fueled by "tech bros"

reveals the wider cultural impact of what has been described as the "revenge of the nerds" (McDonald 2013). Inasmuch as Bostrom and his followers would have us think that their investment in reproductive strategies are based in objective moral reasoning, they are equally motivated by the prospect of usurping the jock's place in the social hierarchy.

Curiously, what seems to be missing from Bostrom's recent research on biological enhancement is the prospect of immortality, an idea that he allegorized in 2005 in an essay called "The Fable of the Dragon Tyrant." In Bostrom's vision, death is a tyrant from which we ought to be freed and *can* be freed through technological means. His more traditional philosophical writing gestures in the direction of immortality in discussions around existential risk, but such instances are opaque in their intention. For example, Bostrom (2013) identifies aging as "crushing" trans-generational risk, but he makes no suggestions to prolong the inevitable (17). Nor does his argument for super-beneficiaries address the implications of eternal computational existence other than it would likely increase pleasure and decrease pain. And yet, preventing death imbues Bostrom's work. For Bostrom, the development of health-span extension strategies is essential to enhancement discourse and practice. After all, posthumanity is the realization of eternally productive "life."

The interest in achieving immortality continues to gain mainstream support following the popularization of longtermism, particularly in the tech sector. Billionaire investors like Peter Thiel have contributed to the cause, and Google co-founders Larry Page and Sergey Brin now lead a research and development company dedicated to "tackling aging" (Khazan 2017). In a report published in 2017 by Open Philanthropy, Beckstead reveals that the National Institute of Health spends $2.7 billion yearly on aging-related research and several companies collectively

invest around $1 billion in aging research.[9] These numbers are likely to increase as tech CEOs inch ever closer to biological death although there is currently no coherent idea of what eternal life will require or preclude—the focus is limited to inventing the technology that will make immortality possible.

Recalling Abou Farman's description of immortality projects as those motivated by whiteness and frontierism, it is no wonder that most transhuman advocates tend to be white men with ties to elite institutions. There are a few exceptions, the most prominent today being Rebecca Roache and Elise Bohan (it should be noted, however, both are white women based in the UK and have worked closely with Bostrom). While neither Roache nor Bohan have published as extensively as their male colleagues, their position in the transhuman movement has helped to legitimize the moral value of biological optimization. Both have focused on the problematics of naturalism and the way it supports bio-conservative thinking. This positioning holds sway in progressive theoretical currents, including more radical feminist formulations. Bohan, for example, invokes Firestone in her calls for women "to be freed from the shackles of pregnancy" (Ribeiro 2022). Similarly, xenofeminists argue that "there is nothing . . . that cannot be studied scientifically and manipulated technologically" (Laboria Cuboniks 2015). In their view, alienation from the body is potentially emancipatory insofar as it dismantles the normative constructions of gender. But both transhumanism and xenofeminism appear to in fact reproduce biological conservatism by prioritizing biological enhancement over social and political enhancement. And like transhumanism, xenofeminism reinforces Cartesian tendencies when it declares that "xenofeminism is a rationalism" (Laboria Cuboniks 2015).

[9] See "The Mechanisms of Aging." *Open Philanthropy*, 13 September 2017, https://www.openphilanthropy.org/research/mechanisms-of-aging/#6-who-else-is-working-on-it

To be sure, there is much to be gained from frameworks that seek to de-romanticize nature. Trans health and discussions around reproductive justice have both benefitted from anti-naturalist discourse. DIY medicine, a practice staunchly advocated by xenofeminists, has helped to provide alternatives to privatized healthcare. In this way, the call for biological manipulation and enhancement has yoked desire for freedom from state and corporate bureaucracy and increased access to services that are otherwise unaffordable. Notwithstanding these admirable aims, self-experimentation optimization practices reaffirm a techno-solutionism that fails to imagine an alternative social contract while propelling the image of the white, if not male, genius. Consider Elizabeth Holmes of Theranos and Aaron Traywick of Ascendance Biomedical. Both CEOs marketed a vision of science unmoored from traditional systems and protocols. And yet, they both reveal the potentially tragic consequences of using the master's tools to dismantle the master's house. I will return to the topic of radical feminism vis a vis finitude in the final chapter with the intention of moving beyond the neoliberal techno-solutionist paradigm.

Population: zero humanity?

This chapter has endeavored to situate transhumanism within the patriarchal legacy of technoscience. As a vehicle for whiteness, colonialism, and capital, transhumanism has historically manifested as eugenics, the pursuit for eternal life, or more simply as an emphasis on personal and individual choice at the expense of population health. The eugenic ideation embedded in transhuman discourse is marshalled biopolitically, namely through an emphasis on reproductive screening. This is the case in both early and contemporary transhumanism, although the latter is hesitant to explicitly name eugenics as an essential component to its moral framework. However, contemporary transhumanism and its preoccupation with immortality have

fomented more extreme ideas around population ethics. In both Beckstead's and Bostrom's view, the problem of population boils down to utilitarianism. If most of a population is guaranteed to be happy (in the far future) at the expense of some others' happiness (those living now), then such suffering is warranted. Such reasoning crumbles under a conventional Malthusian understanding population control. If we must place stock in the possibility that digital lives in the far future will greatly outnumber today's world population, why should we safeguard these digital "specks of potentiality" if the problem is quantity control? The answer, according to contemporary transhumanism, is that digital lives are more cost-effective and resource-efficient than their human counterparts, and as such, their reproductive rate will no longer matter. In fact, the more digital lives that come into existence, the more productive posthumanity will be.

Contemporary transhuman biopolitics brings into focus the issue of time as something to be manipulated and extended. As the longtermist inflection in contemporary transhumanism reveals, proponents of such thinking believe that those who ought to live in the first place ought to live forever. The following two chapters will explore more deeply how the emphasis on optimization and futurity shapes the politicization of reproductive technologies, and how these technologies in turn legitimize the transhuman pursuit of immortality.

My mother's mother woke up one day and found her Sicilian complexion disappearing. In a few years, she would turn white as a ghost. The same thing happened to my mother. I'm afraid of losing my skin.

DESIGNER BODIES: EUGENICS AND GENETIC ENGINEERING

"To protect the rights of the unborn, who would better not be born at all, than to be born defective or diseased."

— G. Frank Lydston, *Diseases of Society*

"Nature thrives in mongrels. *Mix well* is life's motto."

— Diane Ackerman, *A Natural History of the Senses*

Beginning in the early twentieth century, a period of intense social and economic transformation, American physicians and biologists began to operationalize Gregor Mendel's laws of inheritance with the intention of improving population health. The application of genetic research reflected the medical establishment's increasing interest in the prevention of heritable disease, an interest that seamlessly integrated with mounting xenophobia during a wave of immigration to the United States in the wake of the Civil War. Those working in genetics believed that a person could not only inherit physical traits, but also "good temperament" or maladaptive behavior. Prominent politicians, physicians, and scientists endeavored to curb the reproduction of what were regarded as undesirable genetic predispositions. Controlling the reproduction of persons who were deemed licentious, "feebleminded", or prone to crime or poverty was thus essential to the cultivation of a high-quality population. Genes became—and in many ways, continue to be—the primary unit of meaning in institutional science and medicine. As I demonstrated in the last chapter, widespread institutional support for genetics developed alongside a growing interest in genetic enhancement. This chapter shows how the emphasis on

genetic enhancement came to be embedded in the discourse and practice of reproductive medicine.

The emphasis on control and risk avoidance in population health can be traced to Englishman Sir Francis Galton, who first coined the term *eugenics* to define "well-bred" genetic stock in 1883.[10] As it happens, Galton and Charles Darwin were half-cousins, and Galton was no doubt inspired by his relative's work in evolutionary biology. Galton was particularly interested in exploring the relationship between genetics and human ability, so much so that he developed methods of historiometry, a combination of economics and psychological examination, to study the heritability of genius. Like the early transhumanists, Galton's understanding of what constitutes "desirable" traits, as well as the conditions required to produce optimal physical and intellectual ability, was based on his English chauvinism and his country's history of "illustrious names" (2012, 19). At times, Galton's reasoning was conflicting; in some instances, he argued that race determines intellectual capability (1883, 24-25), and in others he acknowledged that social conditions impact an individual's success to a great degree. The following passage reflects such contention in Galton's (2012) thinking, and exposes the tendency in eugenic thinking to affirm a normativity constructed by Western social practices:

> The best form of civilization in respect to the improvement of the race, would be one in which society was not costly; where incomes were chiefly derived from professional sources, and not much through inheritance; where every lad had a chance of showing his abilities, and, if highly gifted, was enabled to achieve a first-class education and entrance into professional life, by the liberal help of the exhibitions and scholarships which he had gained in his early youth; where marriage was held in as high honor as in ancient Jewish

[10] In his book, *Inquiries into Human Faculty and Its Development*, originally published in 1883, Galton draws on the Greek word *eugenes* to describe practices of good breeding.

> times; where the pride of race was encouraged (of course I do not refer to the nonsensical sentiment of the present day, that goes under that name); where the weak could find a welcome and a refuge in celibate monasteries or sisterhoods, and lastly, where the better sort of emigrants and refugees from other lands were invited and welcomed, and their descendants naturalized. (705-706).

To start, in this passage Galton refers to the improvement of the human race as a whole. This is curious insofar as Galton clearly held that some races were superior to others and went as far to say that "the average intellectual standard of the negro race is some two grades below our own" (2012, 663). Although the biological definition of the term race has come to distinguish between species—such discrimination also invites contention from other fields of study—racial categorization continues to maintain ethnic and cultural divisions, along with their differential values, in "human" taxonomy (note that for Galton there does exist a "better sort" of emigrant). Further, Galton appears to support the development of a social fabric not wholly tethered to noble relations or a market economy. Recalling from the previous chapter, the same sentiments are shared by proto-transhumanists Huxley and Haldane. Like these figures, Galton's position is preoccupied with genetic advancement and the heritability of genius.

Equally germane to the focus of this chapter is Galton's hope that the weak may "find a welcome and a refuge in celibate monasteries and sisterhoods." Galton's vision of an improved human race includes both positive and negative eugenic components—that is, it encourages the cultivation of some genetic traits while discouraging others. It would also seem that Galton's utopia is one in which "the weak" willingly subscribe to celibacy and are not forcibly

sterilized—in other words, the practice of social hygiene biopolitically manifests through self-discipline.[11]

Following its initial impact in the United Kingdom, the eugenics movement gained prominence in the United States. Sterilization and assisted reproduction, namely artificial insemination, became the primary methods by which eugenics entered the medical mainstream. Under the auspices of population health, compulsory sterilization became a common practice. At the Virginia State Colony for the Epileptics and Feeble Minded, Dr. Albert Priddy performed sterilizations on patients who were thought to be mentally or morally "unfit." One patient, Carrie Buck, whose case will be discussed in further detail below, was sterilized on such grounds, although she had no criminal past and was by all accounts of average intelligence.

The history of eugenics reveals the extent to which an emphasis on genetic rationalism continues to imbue popular views around reproduction. Most people would not willingly admit their eugenic leanings, but more and more prospective parents rely on prenatal and preimplantation testing in the hopes that their future offspring will be born without defects. In the case of prenatal testing, a couple may elect to terminate a pregnancy should the results indicate a fetal anomaly. Used in assisted reproduction, preimplantation genetic diagnosis (PGD) reveals any anomaly before the embryo is implanted in the uterus, allowing parents to select only the best embryo before initiating pregnancy. But despite a considerable decrease in global fertility[12], people from a variety of socioeconomic and educational backgrounds fan ecological fears of overpopulation. In fact, a focus on overpopulation has spilled into left-leaning political thought that has come to associate procreation with pro-life, climate change-denying conservativism

[11] Somewhat relatedly, some forms of anti-natalism have insisted that "humanity [go] extinct voluntarily and non-violently" (Zandbergen 2021, 6). I will expand on this point at the end of the chapter.
[12] Roser, Max. "Fertility Rate." Published online at OurWorldInData.org, 2014. Retrieved from: 'https://ourworldindata.org/fertility-rate' [Online Resource]

(Zandbergen 2021; Trembath and Ramachandran 2023). Anti-natalism, the ethical position that argues procreation is inherently immoral, has been growing in recent years. There are many varieties and subgroups of anti-natalism, but initiatives like Project Drawdown and Stop Having Kids focus on the environmental benefits of voluntary childlessness. As Alex Trembath and Vijaya Ramachandran (2023) argue, such fearmongering has undoubtedly been encouraged by an enduring eugenic Malthusianism that associates high birthrate with poverty, poor education, and non-whiteness. It is also worth noting that the American Eugenics Society, renamed the Society for Biodemography and Social Biology, was only disbanded in 2019. We cannot say that eugenics is a "fringe" ideology, even today.

This chapter builds on the first chapter's aim to situate transhumanism as a biopolitical paradigm predicated on genetic optimization. It traces the emphasis on genetic engineering in reproductive technologies, beginning with sterilization and artificial insemination by donor (AID), to more advanced genetic selection techniques that rely on computational prediction. I show how such technologies reinforce eugenic principles in reproductive science in the name of genetic optimization. The reproductive experts explored in this chapter did not identify themselves as transhumanists, although many were researching overlapping topics like genetics, economics, and social hygiene during the same time as Huxley and Haldane. Yet their ideas are central to contemporary transhuman thought, particularly in the work of Nick Bostrom and Julian Savulescu, whose work on genetic selection will be examined later in the chapter. As contemporary transhumanists propagate fantasies of immortal life, state-funded medicine maintains a biopolitical order in which some lives are more valuable than others. For this reason, a critique of transhumanism must include an examination of the institutions and practices that propagate such valuation.

I begin with an examination of the early twentieth century sterilization techniques, revealing how supposedly undesirable populations were controlled primarily by inhibiting women's procreative capacity. I then show how eugenic principles operate in assisted reproduction by encouraging the procreation of supposedly optimal genetic stock. I demonstrate how this two-fold eugenic approach is applied and reinforced in contemporary fertility technologies and genetic screening like PGD, techniques that transhumanists enthusiastically endorse. Drawing on analysis of the film *Gattaca*, I evidence how the culture of optimization is often misguided, genocidal, and evolutionarily counterproductive. My intention is to illustrate the way transhumanism reinforces the legacy of eugenic science and the pathologization of sex and reproduction through a discourse of genetic optimization.

The eugenic trinity: sterilization, artificial insemination, and overpopulation

Legal historian Paul Lombardo's (2008) examination of the *Buck v. Bell* case reveals that Carrie Buck's lawyer, Irving Whitehead, was not only a staunch advocate of sterilization, but also a founding member of the Virginia Colony's board of directors (15). Priddy's successor, Dr. John H. Bell, whose name would replace the legal proceedings following Priddy's death, described sterilization as "a spoke in the 'wheel of social progress'" (Lombardo 2008, 398). When the case reached the Supreme Court in 1927, Chief Justice Oliver Wendell Holmes Jr. declared, "It is better for all the world if instead of waiting to execute degenerate offspring for crime, or to let them starve for their imbecility, society can prevent those who are manifestly unfit from continuing their kind" (Lombardo 2008, 12). This opinion, now legally inscribed, served as a precedent for Nazi defense lawyers in the Nuremberg trials. Despite these moral tragedies, *Buck v. Bell* has never been officially overturned.

It is important to note the gendered dimensions of eugenic science, particularly in the practice of sterilization. Though men convicted of sex crimes were subject to forced sterilization and institutional confinement to foreclose their procreative potential[13], women were (and continue to be) disproportionately blamed for their apparent sexual immorality; this is clear in the victim-blaming rhetoric in sexual assault cases. As recently as 2020, migrant women were unknowingly sterilized at a detention center in Georgia (Merchant 2020), and between 2006 and 2010, at least 148 incarcerated women in the California prison system received tubal ligations (Jindia 2020). Eugenic activist Harry Laughlin likened "socially unfit" women to "mongrel" female dogs; both bear "a more *direct* responsibility of reproduction" and should, consequently, be sterilized (Laughlin 1933, 484). This sentiment was certainly echoed by Priddy, who sterilized women of all ages, and across a range of socioeconomic backgrounds. Many women had not committed any crime, nor did they necessarily exhibit cognitive impairment; they were simply, according to Priddy, too keen to talk to boys or had a family history of "immorality" (Lombardo 2008, 129-130). As Virginia historian Lynn Rainville remarks, the sentiments held by powerful men at the Colony followed in the long history of regulating women's bodies and behaviors (Schmidt and Lu 2018). Carrie Buck's story is particularly tragic. Her mother, Emma, had been accused of abusing drugs and promiscuity and was committed to the Colony. Carrie was placed in the care of a foster family, John and Alice Dobbs. At the age of sixteen, Carrie was raped by Alice Dobbs's nephew and became pregnant. She was sent to the Colony, where she was reunited with her mother. Priddy based his case for eugenics on the familial connection between Emma and Carrie and subsequently sterilized Carrie to prevent the reproduction of immoral offspring (Lombardo 2008; Vedantem 2019).

[13] Laughlin, Harry H. "Eugenical Sterilization in the United States." A Report of the Psychopathic Laboratory of the Municipal Court of Chicago, 1933.

Despite Priddy's genetically deterministic and misogynistic orientation, other researchers knew the birth rate was decreasing in the early twentieth century and were more attuned to the potentially "deteriorating" effects of declining fertility (Robinson 1914, 6). The editorial introduction to the 1914 *Medical Review of Reviews* calls for improvement in prenatal care and infant welfare. The idea that "every child has the right to be born well; and every mother has the right to be well after her child is born" expresses a more equitable attitude toward women and maternal well-being, though the motivation for such a call is unclear (Robinson 1914, 6). Interestingly, the overall critique is directed at medical hubris: "the medical profession is hardly in a position to condemn the midwives of this country until it can demonstrate that it has given adequate obstetrical knowledge, training, and practice to its own members" (Robinson 1914, 7). Midwifery had all but vanished from the frame of pregnancy care following the successful overtaking of obstetrics by modern medicine and "medical men" (Ehrenreich and English 2010). The editors' contention around the subject reveals competing ideas about how medicine should be practiced and a certain skepticism toward so-called advancement.

Included in the *Review*, however, is also "A Symposium on the Sterilization of the Unfit." Physicians, sociologists, and public representatives were invited to express their views on the legality of sterilization for the sake of protecting the greater population from congenital disease and crime. Of the 16 participants, 12 approved sterilization of criminals and/or mentally deficient, 3 argued against eugenics, and 1 did not feel equipped to speak on the topic. Overall, the participants' contributions were illuminating, if not entirely nuanced. One Dr. James Peter Warbasse claimed that sterilizing the unfit "is an inalienable right" (Robinson 1914, 14). Arpad G. Gerster, a Hungarian surgeon, lamented, "I fear we are taking the brainless multitude into our confidence. . . . 'Hands off' is my advice" (Robinson 1914, 15). While Gerster's dissidence

appears to imply a libertarian position, another skeptic Louis F. Post, an advocate of progressive immigration policies, argued that sterilizing persons who inherited a propensity for criminality was a slippery slope, even if science could prove a genetic predisposition for crime—which he emphatically doubted (Robinson 1914, 17). Nevertheless, the sheer number of sterilization proponents in the early twentieth century demonstrates an increasingly formidable biopolitical regime predicated on reproductive control. Undergirding this mode of regulating life is an economic imperative to cut overhead costs imposed by persons requiring more healthcare and state resources: "Lives left unsaved might lead to future economic prosperity" (Murphy 2017, 21). Recalling the previous chapter's analysis of utilitarian philosophy, the valuation of life in terms of cost-effectiveness is intrinsic to longtermism and transhumanism.

Eugenic thinking prevails in the readily accepted idea that behavior is "hard wired." While facing much criticism, evolutionary psychology has helped legitimize genetic determinism. For instance, prominent contemporary evolutionary psychologists have argued not only that beautiful people have more daughters, but that beauty can be measured in childhood (Kanazawa 2011). Researchers in the field also engage with the topic of criminality and have suggested that sex difference is a key factor. They argue that because biological markers for masculinity are generally associated with higher aggression and because men are in constant reproductive competition with one another, they are more likely to engage in risky behavior. This, such thinkers claim, is especially the case for men of "low-status" (read: unlikely to be chosen as a mate). Endocrinology has revealed that biological sex differences do play out in social and intrapersonal relations[14] to the extent that sex hormones influence the way to attend to

[14] The impact of sex differences on social relations can be found throughout the animal kingdom, and they do not always map onto human constructions of gender. For example, male seahorses carry their developing young and give birth after the eggs hatch.

ourselves and others (Chen 2018; Goldman 2017), but some evolutionary psychologists would also encourage us to believe that rape is an adaptive trait because rapists (who, in Edward Hagen's model, happen to be men) often face few consequences (Hagen 2004). In fact, as Hagen argues, in the case of both high- and low-status men, there is always something to gain from rape: for the former, a good time; for the latter, the potential to ensure his legacy. Unlike men, women are not only shamed for exhibiting sexuality, but they are also blamed, social excluded, or otherwise further victimized after being sexually assaulted. As Carrie Buck's story illustrates, victims of sexual violence (many of whom are women[15]) are doubly punished.

Moreover, the punitive emphasis in institutionally sanctioned sterilization lies not in reform, but in the hope that deactivating the offender's procreative potential will prevent the reproduction of offspring predisposed to criminality. Victims deserve justice, but sterilization, or as it is sometimes referred, "chemical castration," does not necessarily inhibit abusive behavior or sexual impulses. Crucially, such methods reaffirm a genetic determinism that neglects the way patriarchal structures permit and reinforce such behavior. As criminologist Dirk Baier argues, "Chemical castration has not made society safer; still, it is propagated by conservative or right-wing parties as a solution for sex offenders" (Imran 2021). Such a remark illustrates the general appeal of eugenic science and the way different sides of the political aisle marshal it for the purpose of social engineering. However, as Baier remarks, sterilization as a form of punishment for criminal sexual conduct is only effective because "it contributes to a higher sense of security, even though there is no evidence for this" (Imran 2021). We should also remember that the power dynamics between sex offenders and their victims are such that reporting of such behavior often results in little comeuppance, or worse, victim blaming. This has been the case in high-

[15] See RAINN. "Victims of Sexual Violence: Statistics." Accessed 15 May 2024, https://www.rainn.org/statistics/victims-sexual-violence

profile incidents before and after the #MeToo movement, including a Google worker's sexual harassment complaint against one of its executives, who left the company with a multi-million-dollar severance package.

To associate particular behaviors with certain genetic markers without any regard for socialization practices or cultural influence is to engage in deterministic, if not altogether eugenic, thinking. Like the fallacies embedded in longtermism, evolutionary psychology mistakes the genetic map for the social territory. Where longtermism positions moral questions as quantifiable phenomena, genetic determinism abstracts biology from the interaction of race, gender, and class relations in social behavior. The combination of eugenic science and utilitarian population ethics, I argue, is what makes the transhuman pursuit of genetic optimization (the ultimate destination being immortality) particularly dangerous.

In addition to limiting the procreative power of "delinquent" or "feebleminded" persons, the eugenics crusade was equally interested in expanding the reproductive capacities for couples who fit experts' descriptions of moral and intellectual superiority. Under the auspices of "marriage hygiene", Alfred Koerner and Frances Seymour (real life husband and wife medical team) promoted artificial insemination as a legitimate medical practice. They also sought to address population problems caused by war and other large-scale crises like epidemics by alleviating sterility of "the best genetic stock" (Koerner 1948, 486). Seymour and Koerner specialized in fertility issues; they were not trained as geneticists *per se*. However, their practical and theoretical approach to reproductive medicine was unequivocally inspired by genetics and its correlative eugenic values. The men Seymour selected as sperm donors were in optimal health (based on physical examination) and held professional positions (Seymour 1936). Believing that behavior was heritable, Seymour then matched donors to rearing fathers based on their supposed

temperamental similarities (Seymour 1936). The same presuppositions around who makes a good donor endure today. The first listing of the search term “sperm bank” in Google belongs to the domain for Fairfax Cryobank, whose main page directs to a menu of donor features limited to race and hair and eye color. Unsurprisingly, Fairfax Cryobank presents the image of the ideal donor as a white man with blue eyes.

Although medical pioneers began experimenting with artificial insemination in the early nineteenth century, male infertility did not enter the field of reproductive study until the early twentieth century (Daniels 2004). While women were disproportionately facing punishment for alleged licentiousness or feeble-mindedness, medical science was homing in on men’s procreative capacities with the intention of intensifying them. This institutional support normalized practices that sought to control women’s reproductive power and, at the same time, endeavored to preserve cultural attitudes around masculinity. It is also important to note, particularly in the American context, that the early twentieth century was grappling with immigration policies and shifting perceptions of social dominance. Inasmuch as bourgeois ideals stoked xenophobia across the nation, they also helped to expand an understanding of masculinity beyond physical strength. The twentieth century man was not a virile corn-fed pioneer, but a calculating opportunist. Thanks to the advancement of scientific theory by contributors such as Galton, intelligence became the new social hierarchy in which powerful men competed. And to their knowledge, intelligence was an innate behavioral trait.

By definition, artificial insemination refers to the technological mediation of conception (Swanson 2012a). Homologous insemination (where the sperm comes from the husband in the partnership hoping to conceive) appears to subscribe to the “pledge of marriage”, but masturbation complicated this notion. In 1944, a correspondent in the British Medical Journal

argued, “It is a commonplace of moral theology that deliberate ejaculation of semen in any situation other than the vagina—i.e., in normal consummated sexual intercourse—is an unjustifiable infringement of natural law” (Newsholme and Stevenson 1944, 642).

Much to the chagrin of the Catholic Church, masturbation, or “self-induced” ejaculation, entered the lab as a legitimate form of specimen collection; fertility was no longer at “the will of the Gods” (Koerner 1948, 484). Artificial insemination by donor (AID) faced even more scorn for legal and ontological reasons. Of course, it was vehemently rejected by the Church as adultery, and was therefore a punishable offense (this remains the case today in many parts of the world, even in some American states). Kara Swanson (2012b) illuminates the disturbing beginnings of AID, which was performed not only clandestinely but also without patients’ knowledge. According to a donor-turned doctor, in 1884 the wife of a childless couple was chloroformed during the procedure and was never informed that she was artificially insemination (Swanson 2012b, 604). But from a secular scientific-sociological position, as Koerner expounds, it complicated conventional ideas around paternity: would fathers feel the same sense of responsibility towards offspring who did not share their DNA? Were children conceived through AID entitled to inheritance from their biological father? AID also called into question the extent to which the administering physician should be responsible for genetic or behavioral “defects” (Koerner 1948). Although practitioners went to great lengths to select “superior” sperm and to match donors to the temperaments and physical appearance of prospective parents, AID could not completely avoid every risk (one being accidental incest).

Despite these muddy ethical waters, AID continued to gain ground alongside an emerging technique, *in vitro* fertilization (IVF), as a therapeutic intervention for couples facing fertility challenges. In a paper titled “Medicolegal Considerations in Artificial Insemination”,

Alfred Koerner laments the increasing rate of infertility. In another paper from only two years before, Koerner (1945) notes, "it is truly remarkable that conception occurs as often as it does." Such remarks reveal an anxiety shared by white men who believed that educated elites reproduced at a slower rate than supposedly inferior (i.e., poor, non-European) populations. It should be noted that this is a prevailing sentiment in contemporary eugenic thinking espoused by political reactionaries, garden-variety anti-immigration proponents, and neo-Malthusians (Kissling et al. 2018). To quell fears of this fertility imbalance, so-called experts Priddy and countless others working along the life sciences-political axis promoted eugenics in the hope that medical advancement would stem the reproduction of Black, immigrant, supposedly criminally-inclined, and "low-IQ" populations—all of which were, and remain, predisposed to poverty. As Lombardo's analysis of the *Buck v. Bell* illustrates, powerful people (all of whom were educated white men) devoted much time and many resources to legally inscribe eugenics into institutional practice.

Historian Thomas Leonard (2016) describes such figures as "illiberal reformers." As Leonard argues, these reformers (whose ideas were fomented by the bourgeoning academic field of economics) were progressive insofar as they held anti-individualistic values. They also believed that the supposed objectivity inherent to science provided a more effective means of governing society rather than through political, and therefore, partial, ideology. And because eugenics was scientific, proponents of genetic engineering through assisted reproduction and sterilization placed themselves on the side of objectivity and progress. According to prominent geneticist Hermann Joseph Muller (1973), human progress depended on "the prevention of overpopulation" and the "social obligation to bring into the world children as favorably equipped by nature as possible, rather than children who closely mirror their parents' peculiarities" (5).

Muller (1973) was also an enthusiastic supporter of artificial insemination because it offered eugenic selection (xiv). His hope that such selection would "make man's nature nobler, more capable, more harmonious, more sympathetic, happier, and more beautiful" foresees developments in both evolutionary psychology and transhumanism (Muller 1973, 7).

I would argue, however, that such expert opinions—evident in the likes of Priddy, Muller, and other educated professionals—are firmly rooted in *liberal* humanism. From its outset, eugenic thinking has collided with market interests. As I noted in the first chapter, the genocidal project of eugenics is inextricable from what Michelle Murphy calls "the economization of life." The idea of sperm *banking* is also a testament to the corporatization of life materials in a reproductive political economy insofar as biological ephemera can be exchanged for a price. Inasmuch as sterilization sought to prevent the procreative capacities of "undesirable" persons, the production of "better babies" intended to offset the costs of social services and institutionalization for the poor, disabled, and delinquent. Additionally, the image of the (healthy, wealthy, and white) nuclear family was, and continues to be, imbued with a social status that associated good genes with professional success (Daniels and Golden 2004). These sentiments are echoed in the words of Bentley Glass, one of Muller's students. In his introduction to Muller's posthumously published book, *Man's Future Birthright*, Glass (1973) writes:

> In the case of women over the age of 35 or 40 years, when the probability of the chromosome accident that produces mongolism (Down's syndrome) increases greatly over the probability in younger mothers, production of the embryo in a laboratory and a chromosomal diagnosis prior to implantation could do away with the majority of mongol

> defectives in your population, who now cost society, it is estimated, as much as $1.7 billion annually for care. (xvii).

Despite any so-called "progressive" intentions, population control through risk-management—and contempt for the "defective"—reveals the extent to which science is guided by liberal ideology. I would thus be remiss to neglect the ways in which the discourse of selection extends personal choice to some, while restricting choice for others (namely, that of Black, brown, poor, and differently abled people). In this way, eugenics forms a bipartisan alliance of "progressive" and conservative investment in controlling reproduction to optimize the gene pool—that is, to privilege whiteness.

It should be noted that eugenics faced criticism from dissenting expert opinions. Muller would eventually "repudiate this perverted king of 'Eugenics,'" and like his transhumanist contemporary, J.B.S. Haldane (1935) questioned the efficacy of a free market system (11). Similarly, physicians were at first skeptical of sterilization as a form of punishment and towards the eugenic program in general, but the increasing interest in population health helped move medicine's attention from treating already existing conditions to preventing them from happening altogether (Smith 2016; Allen 1970). This had major implications in medical and legal practice. In 1912, two lawyers attempted to appeal the charges (which included vasectomy) against a serial child molester, Peter Feilen. The appeal argued that the prevention of procreation was cruel and unusual (it is worth noting that vasectomy was oftentimes performed without anesthesia). Even more interesting, the lawyers claimed that "it would be better from the standpoint of eugenics to sterilize the financiers than to sterilize the burglars, some of whom would make magnificent administrators" (Laughlin 1933, 151). This point appears directed at the

engineers of modern biopolitics, who have ensured the governing of populations through economic valuation, specifically through a market logic.

Like early transhumanists, geneticists like Muller believed that a positive eugenic program applied to social transformation would dismantle a social system based on aristocratic lineage. However, a preoccupation with genetic advancement presupposes capitalist hierarchical organization nonetheless. The editor of the sterilization symposium, Victor Robinson, seems to suggest misgivings about ascribing meaning in a way that is both arbitrary and susceptible to classism. He begins the discussion with a word of warning: "Today the stock-breeder is sung by many tongues that heap scorn upon the improved subtleties of philosophers" (Robinson 1914, 13). It's worth noting the semantic similarity between "stock-breeder" and stockbroker. As Feilen's lawyers show, proponents of punitive sterilization seem primarily concerned with maintaining social, economic, and genetic hierarchies. The argument for eugenics is also an argument for hedging one's bets in the genetic market.

The valuation of life through economic models has become even more apparent in contemporary fertility treatments. Writing on the history of the sperm bank industry, Cynthia R. Daniels and Janet Golden underline how "certain human traits can be 'purchased' through the careful selection of sperm" (2004). More pointedly, both Daniels and Golden argue that sperm banking has one foot in "old" eugenics insofar as it is entangled in the politics of desirability, and one foot in new "backdoor" eugenics, or the eugenics that manifest from differential access to healthcare. As sperm banking today reinforces suppositions around superior genetics, it also bars economically disadvantaged would-be parents (or perhaps more appropriately, would-be consumers) from entry.

Daniels's examination reveals the striking misnomer in AID: in fact, sperm is not donated, but enters the market as a commodity. She argues, "As long as this industry profits from the "donations" of men, it will continue the belittlement of men" (2011). Inasmuch as sperm "donation" can be described as "piecework", so can the social relations that follow from such a transaction. Stripped of any personal attachment or responsibility, men are further removed from their roles as parents; fatherhood is no more than a gig. From this analysis of the reproductive political economy, we might extract a new dilemma: what came first—the market or the sperm?

Today, consumers interested in AID participate in the mystification of genetic merchandise. As Daniels and Golden note (2004), donors are alienated from the products of their labor, illustrating Marx's concept of commodity fetishism, wherein the object for sale (in this case, sperm) becomes imbued with a mystical quality masking the processes required to put said object on the sales floor, as it were. While some prospective buyers look for sperm with musical or athletic potential, others are more interested in physical attributes. It should be said that sperm donors today are rigorously vetted; the barrier of entry is more cutthroat than that of Harvard (Daniels and Golden 2004). For this reason, consumers in search of the "perfect" sperm donor reinforce the legacy of eugenics in medical science while maintaining their place of privilege to the extent that they are able to have children beyond the limitations of their "biological clocks."

Since its development, reproductive medicine has associated itself with ruling class interests. This is notably demonstrated, albeit sardonically, in the film *Idiocracy*, which opens with the juxtaposition of an archetypical white, wealthy, childless couple and a caricaturized depiction of a poor, uneducated family living in chaos and continuously reproducing. The "professional" couple's decision to wait to expand their family hinges on market stability; they bemoan the current volatility and determine that it would be irresponsible to have a child until

the time is supposedly "right." I will explore the topic of deferred parenthood more deeply in the following chapter, but it is important to foreground the capitalist logic embedded in reproductive technologies, particularly when they are framed as medical treatments.

Some aspects of contemporary reproductive techniques appear to subscribe to the model of reproductive justice envisioned by Loretta J. Ross and Rickie Solinger (2017), particularly regarding the right to have a child. Reproductive justice expands the argument for reproductive choice, which as Dorothy Roberts (1997) illuminates, has historically privileged a white woman's right to abortion. Notwithstanding its investment in procreation, assisted reproduction is a private industry and, as such, is oftentimes economically exclusionary. Moreover, the business of making children does not involve itself in ensuring that all children develop in safe and healthy environments. Rather, both the sperm industry and advanced fertility treatments allow already privileged populations to gamble on the likelihood of reproductive success precisely because they can afford to pay the premium. Even in its early days, AID was prohibitive, not only because it faced ethical and moral criticism, but because patients did not always see a return on their investment. In a *New York Times* article from 1976, a self-proclaimed "test-tube baby" writing under the pseudonym Lillian Atallah expounds her personal relationship to AID, and to the doctor (as it happens, Frances Seymour) who made her life possible:

> Conception with A.I.D. is not usually a speedy process. The average time for a "take" [is] about six months, according to one estimate. Each insemination session can cost between $75 and $100, depending on the physician: there are two or three sessions each month.

Atallah and her sister, also conceived through AID, were likely the products of a great deal of resources and persistence. Researchers in genetics, reproductive medicine, and evolutionary

psychology (all undergirded by eugenic principles) dwell on the apparent arbitrariness of procreation. And notwithstanding the uncertainty associated with assisted reproduction technologies, "public narratives reinforce the 'potentiality' of such biotechnologies" (Carson et al. 2021). Fertility specialists like Seymour and Koerner navigated their anxieties around the apparently diminishing desirable population by adding scientific assurance to the "miracle" of reproduction. Similarly, evolutionary psychologists have concerned themselves with the apparently troubling fact that men in general can only expect to produce a child if he has sex 33 times with different women, or regular sex with one partner (Kanazawa 2011). A pickle, indeed.

As I have argued, the history of transhumanism and genetics coheres around the preoccupation with reproductive control and the prospect of maximizing human potential. I have also demonstrated how the will to genetic perfection and mastery maintains and intensifies the conditions for commodification. While sperm and ova predate the development of the market as such, their extraction as discrete units of human biology mark a shift in understanding the body as something that can be restructured, re-incorporated, and exchanged for a price (Daniels and Golden 2004; Roosth 2023). The pursuit of biological manipulation and genetic perfection is essential to this shift, and to the shared history of transhumanism and eugenics.

When considering the ways eugenic principles have informed the development of assisted reproduction, it becomes clear that such techniques in fact reproduce injustice insofar as they unevenly extend right to have a child to those who can afford and have access to these technologies. Alongside the continuing practice of forced sterilization among marginalized groups (e.g., disabled, incarcerated, and Indigenous women), such practices legitimize eugenic thinking in an era of so-called social "progress." Much in the same way transhumanists today aim to overcome death, geneticists of the past and present aim to overcome biological

predispositions to defects and disease. The shared interest in transcending biological limits and Nature itself reveals the extent to which fantasies of perfection imbue medical practice. I now turn to more advanced reproductive techniques that propel the eugenic agenda even further by enabling the selection of particular traits prior to embryo implantation.

Embryonic screening and the transhuman dream of perfection

The film *Gattaca* tells the story of a man who should not have been born. Vincent's parents, who could not afford embryonic screening for special traits (like athleticism or musical ability), left his biological destiny to chance. Conceived "naturally" rather than through advanced genetic selection, Vincent is an "in-valid." His genetic profile indicates that he is likely to develop several diseases and die an early death. He dreams of spaceflight, but his inferior genetic profile limits his career path even though genetic discrimination is supposedly illegal. In-valids are primarily consigned to menial work and low-status positions (Stacey 2005).

The film depicts the state's full operationalization of biometrics. In Gattaca, identity is reducible to biological markers; bodily fluids are proxies for citizenship. To maintain the veneer of "validity", Vincent purchases blood, urine, and other tissues from Jerome, a former Olympic swimmer. As Jackie Stacey's (2005) analysis illuminates, Vincent subverts Gattaca's genetically deterministic society through displays of artifice (1856). But as the film reveals, genetic selection and validity does not guarantee success. Although Jerome is genetically "valid", an accident has left him wheelchair bound. And despite Vincent's comparatively weak genetic profile, he outperforms his valid brother at a crucial moment. Not everyone fulfills their predicted aptitude, a quotient based entirely on genetic information.

Nevertheless, as Stacey (2005) argues, *Gattaca* presents a fantasy of "masculine desire for omnipotence" embedded in "a eugenic aesthetic associated with dangerous delusions of totalitarianism and fascism" (1861). Such fantasies of enhancement abound in our cultural imaginary and have been propagated by philosophies that place a great deal of faith in the measurability and innateness of intelligence. Transhuman bioethicist Julian Savulescu is one of the most vocal advocates of what is commonly described as "designer babies." He oversees the Biomedical Ethics Research Group in Australia and the *Journal of Medical Ethics*, which, according to Google Scholar Metrics, is currently the second most cited bioethics journal worldwide. Like his peers Bostrom and Schulman, Savulescu has authored numerous publications advocating for biological enhancement and its morally justifiable applications. In fact, he argues that prospective parents have a moral obligation to select embryos (with the aid of IVF and genetic testing) that are most likely to have the "best life." To appreciate the extremity of Savulescu's ideology, it is worth quoting the abstract for his article, "Procreative Beneficence: Why We Should Select the Best Children" at length:

> Eugenic selection of embryos is now possible by employing in vitro fertilization (IVF) and preimplantation genetic diagnosis (PGD). While PGD is currently being employed for the purposes of detecting chromosomal abnormalities or inherited genetic abnormalities, it could in principle be used to test any genetic trait such as hair colour or eye colour. Genetic research is rapidly progressing into the genetic basis of complex traits like intelligence and a gene has been identified for criminal behaviour in one family. . . . we should allow selection for non-disease genes even if this maintains or increases social inequality. I will focus on genes for intelligence and sex selection (Savulescu 2001, 413)

Granted, this article was released before the globally concerted effort to move in a more politically correct, culturally sensitive direction; nevertheless, it was published in *Bioethics* (the sixth-most cited bioethics journal). Savulescu has also expressed these views in sum and substance more recently in an edited volume titled *Bioprediction, Biomarkers, and Bad Behavior: Scientific, Legal, and Ethical Challenges.*

Moreover, the transhumanist preoccupation with enhancement and intelligence has grown so much that it has entered mainstream political thought. Savulescu and Bostrom continue to espouse their ideas, which have, in turn, been lauded by tech billionaires like Elon Musk and Peter Thiel and far-right "public intellectuals" like Jordan Peterson. Although Peterson does not necessarily align himself with the transhuman cause, his philosophical orientation is imbued with genetic determinism. With his signature theatrical delivery, Peterson presents the choice to use genetic selection technology as a moral responsibility: *"You're going to have a child." You want the child to have an IQ of 65 or 145, decide!"*[16] But the possibility of being presented with a choice between "two viable embryos, one in the top and one in the bottom quintile of polygenic scores, is less than 3%" (Turley et al. 2021).

The rationalism embedded in otherwise scientific debate is characteristic of the transhumanist mode of argumentation, which relies on moral relativism. In a co-authored book chapter, Bostrom and Savulescu (2008) ask, "How is taking modafinil [commonly referred to as a cognitive enhancer or "smart drug"] fundamentally different from imbibing a good cup of tea? How is either morally different from getting a full night's sleep?" (2) To start, if the argument is intended to scale to the effects of something like genetic selection, it assumes that taking a drug is ontologically equal to enhancing biology before the biological being in question is born.

[16] Audio from Adler, Simon. "G: Unnatural Selection." *Radiolab*, 25 July 2019, https://radiolab.org/podcast/g-unnatural-selection/transcript

Whether or not one agrees that prospective parents should use genetic selection to determine which embryos get to develop, we must—as "rational" thinkers—identify the weakness in this argument. Further, as transhumanists often do, Bostrom and Savulescu also fail to address the difference in access between achieving a good night's rest and, for example, using IVF treatment to achieve the smartest embryo. Assisted reproduction has been historically limited to those deemed as worthy of reproduction (i.e., usually those who are white and wealthy). To my point, some people have access to better sleep; a person juggling low-paying jobs surely does not sleep as well as someone with fewer worries. Bostrom and Savulescu do not expound the social and economic dimensions of sleep, but even after this brief consideration, we can hardly say that rest or drugs in their current form present the same moral questions as costly elective medical services—that is, until consumers are required to pay for every hour they sleep.

Transhumanists' limited description of what is "desirable" or "good" in behavioral or genetic development can only be understood in terms of relation, which is to say there is no standard, despite their effort to frame their argument for genetic selection in terms of objectivity. Relative to those with no such biomarkers, prenatal cells that somehow indicate a predisposition to developing asthma or violent tendencies are less desirable, and certainly, most people would agree that the omission of asthma and violent tendencies from the gene pool would be a worthwhile endeavor. Some of Savulescu's bioprediction peers are interested in the prevention of antisocial behavior; in fact, an entire chapter in his edited book is dedicated to the cause. I imagine that researchers would be equally interested in screening out biomarkers for megalomania, but that would likely mean the exclusion of traits inherent in power-hungry politicians (not an insignificant number of people in the general population), and possibly even genius types that transhumanists like Savulescu so admire. As we can see, such apparently

genetic preferences are intrinsically arbitrary and sometimes problematic. I personally find men with a full head of hair more desirable than the bald likes of Bostrom, but that doesn't necessarily mean I believe we should screen for embryos likely to develop pattern hair loss.

The transhuman pursuit of genetic perfection has entered the realm of scientific practice with the intention of achieving a Gattaca-like degree of genetic optimization. The artificial insemination and IVF technologies of yesteryear are now supplemented by advanced computational systems like those used by LifeView.[17] For a leader in the preimplantation genetic testing industry, however, LifeView's website is relatively underwhelming. The few stock images are nearly all black and white until you toggle over them, at which point they then animate lazily. Most of the site's content features explanations of the various tests and information about advanced IVF technology research. According to the website, studies show that LifeView's combination of tests have proven more successful than conventional genetic testing in patient fertility rates. However, the testimonials page is no longer active. There are only quotes from two patients on the site, and neither are particularly forthcoming: "We are grateful to Genomic Prediction for giving us as much information as possible to make the best decision we can." The decision being, presumably, which embryo was worthy of development.

LifeView expands on traditional in vitro fertilization (IVF) techniques, in which a person's eggs are collected, fertilized by sperm (in some cases, donated) in a lab, and then transferred to a uterus, all under the direction of a fertility specialist. If prospective parents choose to screen the embryos that result from IVF, only those fertilized eggs that pass inspection will be transferred. LifeView's embryonic tests, including PGT-A, PGT-A+, PGT-M, PGT-P, PGT-SR, and M2, are all designed to predict the presence of a potential complication, including

[17] https://www.lifeview.com/index.html

whether parents are likely to experience miscarriage or if their would-be child has a chromosomal abnormality, or if it is predisposed to developing diseases like cancer and diabetes. As LifeView makes very clear, the risk of complications increases markedly in women over the age of 35. But, as LifeView also announces, it is "powered by Genomic Prediction" even though it supports a fertility journey that prioritizes "choice over chance" (Tellier et al. 2021). When it comes to genes, as *Gattaca* makes abundantly clear, predicted outcomes do not always materialize as expected.

The rhetoric of data analytics in general has fomented an association between prediction and assurance. Beginning in 1980, China imposed its one-child policy following the advice of missile scientist Song Jian, who predicted that China would be economically disadvantaged by overpopulation (Qi 2024). China is now grappling with manifold social and economic problems decades after the mathematically modeled population policy went into effect. A misguided reliance on data is also evident in predictive policing technology. Ruha Benjamin (2019) has called attention to the racial biases embedded in these systems, which hyper-police neighborhoods inhabited predominantly by people of color. Such systems, which are designed primarily by white technologists, would be better described as "assumptive" rather than "predictive." As continual mistakes by facial recognition technology profoundly demonstrate, prediction is not a guarantee. This became clear in 2019, when predictive policing software wrongfully identified Michael Oliver, a Black man, as a thief (O'Neill 2020). Despite the public's increasing understanding of racism in policing, made all the more apparent following the murder of George Floyd in 2020, the state's security apparatus continues to invest in research and development in predictive technology for both domestic law enforcement and international

counter-terrorism strategies. Jeff Bezos's Ring[18] system and Peter Thiel's Palantir[19] have been particularly useful to these ends. Perhaps unsurprisingly, Bezos and Thiel are both tech billionaires who have donated part of their vast wealth to transhuman causes, including anti-aging research.

Equally concerning as billionaire transhumanists' involvement in the military-industrial complex is the egregious negligence on the part of scientists who pride themselves on factual, objective evidence. George Mohler of Purdue University "suggested that borrowing models from seismology might be useful" in predicting crime, although there is no causal relationship between earthquakes and criminal behavior (Hvistendahl 2016). The same fallacious tendency is evident in longtermism's "moral math." While the motivation in genomic prediction may not be carceral, the LifeView patient testimonials echo a general acceptance toward scientific systems that claim to guarantee success. In the case of advanced IVF techniques, success means a healthy, or even optimal, pregnancy. Such blind reassurance encourages the propagation of the transhuman fantasy of genetic perfection without considering the myriad and unpredictable factors at play in the reproductive process.

Steven Hsu, a theoretical physicist working in computational genomics, is the mind behind the data analytics, aptly named Genomic Prediction, that power LifeView's tests. Hsu was primarily interested in developing genetic tests that would ensure IVF patients had enough information to decide which embryos were best—that is, most likely to have the highest IQ and least likely to develop disease. After continued controversy around the eugenic underpinnings of

[18] Kelley, Jason and Matthew Guariglia. "Amazon Ring Must End its Dangerous Partnerships with Police." *The Electronic Frontier Foundation*, 10 June 2020, https://www.eff.org/deeplinks/2020/06/amazon-ring-must-end-its-dangerous-partnerships-police

[19] Hvistendahl, Mara. "How the LAPD and Palantir Use Data to Justify Racist Policing." *The Intercept*, 30 January 2021, https://theintercept.com/2021/01/30/lapd-palantir-data-driven-policing/

Genomic Prediction, Hsu—who also claimed the "biological validity" of racial categorization—was forced to resign from his post at Michigan State, where LifeView's operations are based. Hsu admits that he was inspired to research the heritability of genius because he spent much of his childhood watching *Star Trek*.[20] Once again, transhuman fantasies like space colonization ensconce the pursuit of genetic optimization, which is fundamentally grounded in race science.

It is worth noting that the data models used by Steve Hsu's Genomic Prediction are based entirely on the DNA from white Europeans.[21] The tests would not work on anyone whose ethnic and ancestral heritage deviates from this "standard", and perhaps this is one of the reasons why LifeView does not disclose patient demographic information. Notwithstanding these empirical deficiencies, the reliance on information, statistics, and testing in fertility treatments has grown since the beginning of assisted reproduction. The work of Seymour and Koerner attests to the will to quantify a phenomenon even though Koerner (1946) himself admitted that attempts to restore fertility were, at the time, often unsuccessful (138). And despite the claim to assure results, models of success are based entirely on probability manufactured by the fallacy of enumeration and objectivity. As Michael Oliver's case demonstrates, data indeed lies.

Moreover, transhumanists do not consider the benefits of supposed defects or errancy. Their nightmare would be a world in which procreation was left to its own devices and that people with Down syndrome, for instance, were permitted to exist. But as Darwin himself argued, and as research on biodiversity underscores, a healthy gene pool actually depends on genetic differences: the more variance in a gene pool, the higher its chances of survival. This

[20] Genoeconomist Dan Benjamin discusses LifeView's questionable methodologies in a co-authored report, "Problems with Using Polygenic Scores to Select Embryos." *New England Journal of Medicine*, 1 July 2021, and in a *Radiolab* episode. See Adler, Simon. "G: Unnatural Selection." *Radiolab*, 25 July 2019, https://radiolab.org/podcast/g-unnatural-selection/transcript

[21] Ibid.

pursuit of genetic perfection (which for all intents and purposes can be described as social Darwinism or eugenics) is a gross misunderstanding and misuse of Darwin's theory of evolution. The importance of genetic heterogeneity exposes the tenuousness in the economization and optimization of life. As Darwin himself would argue, a standardized life is not suited for evolution. Perhaps we owe thanks to those with a genetic predisposition for baldness, and to those with extra chromosomes. Evidence of Down syndrome dates back to antiquity. Would the gene pool be what it was today if not for such variance?

In the realm of fantasy, we are led to believe that life is an ever-improving experiment and that chance and risk are modifiable variables in its design. But as real-life science demonstrates, neither chance nor risk can be fully removed from the procreative equation. Techniques that seek to subvert perceived threats with the intention of optimizing, or transcending, natural selection in fact reproduce risk. Such techniques are oftentimes only available to wealthy people, and thus risk reinforcing reproductive oppression (Davis 2019). In IVF treatment, couples are sometimes given the choice to implant more than one embryo at a time, but this increases chances of complications during pregnancy. Even with the advancements in assisted reproduction, competing with one's biological clock does not always guarantee fertility success. More disturbing, Mara Hvistendahl's (2011) examination of sex selective abortion has skewed global population imbalance, resulting in increased violence against women. An environment of interconnected risk results from the overbearing interference with nature's course.

My argument does not intend to sympathize or align with puritanical or extremist views; I am certainly not suggesting a return to Church-approved sexual relations nor the continuation of an incoherent politics that desire both an unregulated market and fascistic control over

individuals' bodies. Rather, my intention is to illustrate how the eugenic principles in transhumanism continue to pathologize sex and reproduction, often at the expense of marginalized groups. It is not coincidental that transhumanists are often tight-lipped around the abortion debate. On one hand, the investment in longtermism and the "far future" suggests that potential life is more valuable than immediate life. In this way, the longtermist inflection in transhumanism aligns with the pro-life argument to the extent that both ideologies value life in speculative terms, thus reaffirming conservative evangelical politics. But as I have demonstrated, normative assumptions and exclusionary practices endure in assisted reproductive technologies, including genetic screening. In the transhuman fantasy, "undesirable" births may be prevented from the outset by limiting the procreative capacity of poor, non-white, and differently abled persons. As part and parcel of eugenic ideology, transhumanism cannot be trusted to ensure equal reproductive rights.

A common philosophical ancestor, Derek Parfit, further cements the shared lineage between transhuman ideology and eugenics. Recalling from the previous chapter, longtermism is predicated on Parfit's consequentialism (that the morality of certain actions or choices should be determined by their possible outcomes). Savulescu cites Parfit directly in his argument for Procreative Beneficence to argue for genetic selection for intelligence. Notwithstanding the fact that intelligence testing is grounded in white supremacy, "illiberal reformers" have marshaled the discourse of intelligence to preemptively remove persons they have deemed "feeble-minded" (Leonard 2016). To add insult to these moral injuries and injustices, such decisions were based not on rigorous examination, but rather on misogynistic, racist, and classist assumptions. The same assumptions, despite attempts at rationalization, are embedded in technocratic hubris. Our

culture of genetic optimization, therefore, must come to terms with transhumanism's eugenic, genocidal, and totalitarian underpinnings.

The techno-solutionism embedded in the language of data science is a distraction from social answers that are entirely social problems. Indeed, the reason many people today are having children later in life has very little to do with choice. The time it takes to ensure financial stability is much longer compared to previous generations, and individualistic societies like the United States have conditioned their citizens to act responsibly (in other words, to not rely on state resources). The structure of feeling around fertility today continues the long tradition of controlling who gets to procreate and on what timeline. Such neoliberal values would have us believe that data metrics are more reliable than radical social transformation in ensuring a healthy, safe future.

The eugenic principles in transhumanism advance a techno-solutionist orientation to human evolution: genetic engineering appears as the preeminent method for human betterment. Against the pursuit of biological manipulation and optimization, I echo Daniels's (2004) call for greater medical attention to what causes infertility in the first place, and an expansion of reproductive justice. I will turn to these questions and developments in the following chapters.

A dangerous fantasy

As I have endeavored to illustrate, the field of genetics has historically concerned itself with dreams of optimized bodies and minds. Discursively, genes were (and very much remain) the building blocks of life. But as I have also endeavored to illustrate, genetic optimization is a discourse—and one essential to transhumanism. Before the resurgence of Mendelian inheritance, life was not moldable through genetic selection. It is this discourse of customization and

optimization that renders transhumanism both legitimate and desirable. Most of us long for the perfect pair of jeans, and this desire is certainly transferable to other areas of life.

The predatory, eugenic mechanisms embedded in the Western biomedical paradigm continue to play out in more disturbing transhuman endeavors. According to conspiracy theorist-journalist Whitney Webb, convicted sex trafficker Jeffrey Epstein established a company allegedly funded by corporate elites including Bill Gates and Larry Page to train African youths in gene editing technology.[13] Whitney further alleges that Epstein targeted children on the autism spectrum and those from low-income families, offering free education for access to vulnerable scientific subjects. This story was disclosed by questionable sources that no doubt lament political noumena like the "establishment" and the "deep state." Although social Darwinism has historically corresponded with conservative politics, the perceived encroachment on individual power sounds reactionary alarms (Allen 1970, 348). Recalling the "hands off" argument made by Arpad G. Gerster, a participant in the symposium on state-sanctioned sterilization in 1914, it is interesting—but not altogether surprising—that today's far-right news media is challenging transhumanism and the exploitative practices with which it is associated.

Notwithstanding the tensions and conspiracies surrounding transhumanism, I have endeavored to demonstrate how elements of the transhuman fantasy have already made their way into Western medical practice. Under the contingent and often illusory auspices of "personal choice", consumers are encouraged to think of reproduction as the maximization of genetic potential and something that should only occur if fulfillment of that potential is possible. But inasmuch as an emphasis on personal choice permitted the transmission of eugenic ideals, so did institutions of science and medicine. In other words, medical expertise has helped to convince people that they should only reproduce if both their genetic aptitude and market value can be

maximized in the process. Transhumanism foments this "back door" eugenic thinking by way of genetic screening insofar as it creates barriers of access in the fertility industry while preventing the births of supposedly less-than better babies.

In the eugenic transhuman paradigm, some persons are better off not being born. G. Frank Lydston, quoted in the epigraph of this chapter, emphatically affirms this conditional pro-life position. There is a striking resemblance between longtermist-transhumanism's hedonistic orientation (pain avoidance) and David Benatar's (2006) argument for anti-natalism:

> ...as long as procreation continues, some of those people who are brought into being will lead lives that are not worth living (read 'worth continuing'). The only way to improve their position is not to bring such people into existence, and the only way to guarantee that such people are not brought into existence is not to bring anybody into existence." (180)

There are echoes of the anti-social turn in queer theory in this bleak vision of procreation and existence (Edelman 2004). To be sure, there is much to critique about the concept of reproduction *qua* futurity, particularly if it signals the continuation or extension of harm or conflict. At the same time, ethical orientations like anti-natalism do not consider alternative understandings around reproduction—or conception, for that matter. In this way, they are conditioned by the limitations imposed by large-scale efforts to value life solely in economic terms.

In an article from 1970, historian Garland E. Allen writes, "In accumulating great wealth, or in exploiting human beings, it was argued that men were only obeying a natural, cosmic law" (347). Dr. Priddy operated under these assumptions. He felt that, as a man of science, his word counted for more than that of the people he sterilized. In the same article, however, Allen also

suggests that the eugenics movement began to lose steam beginning in the 1930s. In his defense, Allen could not have foreseen the extent to which technology, as a never-ending frontier, would imbue an already racist, classist, and misogynistic social imaginary. In addition to the prevailing colonial urge made even more possible by technocratic hubris, many states still uphold legal infrastructure allowing sterilization of persons "unfit" to reproduce ("Forced Sterilization" 2022).

Like Allen, more contemporary critics like Smith (2016) express hope that the medical profession will not slide back into old eugenic practices because "the United States is an individualistic society" and there is an "increasing representation of women" in medicine (167). To be sure, increased representation is not necessarily neutral or benevolent. Medicine has historically advantaged both the male genius and the male subject, and it is not uncommon for female physicians to replicate certain behaviors and beliefs that subscribe to these historical conceits.

It is important to underscore the ease with which even concerned parties brush aside the possibility that eugenics may return. As I have endeavored to illustrate, eugenic practices have never left their seat at the medical table; rather, they have been marshalled more insidiously and under the auspices of personalized, preventative health. The evidence of eugenic principles in contemporary medicine poses threats even to those who can afford the kind of algorithmic assurance offered by companies like LifeView. Statistically speaking, many of us are congenitally defective. 1 in every 33 babies, nearly 9 million people, are born with birth defects every year.[22] Many more of us will develop illness later in life due to injury or exposure, and this

[22] "Data & Statistics on Birth Defects." Centers for Disease Control and Prevention, https://www.cdc.gov/ncbddd/birthdefects/data.html. Note: population and birth defect data included in this report are based on studies from 2005. The rate of congenital disease could be even higher today.

is not something that genetic screening can prevent. As it happens, Dr. Priddy died of Hodgkin's disease, which is typically caused by the widespread Epstein-Barr herpes virus.

In addition to our individual biology, all of us are subject to myriad social and environmental harms that impact health and wellbeing: climate change, poor work-life balance, sedentary lifestyles, air pollution, processed foods, and increasing economic precarity. The high cost of living, coupled with political regression—evident in the continued effort to criminalize abortion—has cast the eugenic biopolitical program into high relief. Wealthy countries can no longer claim the title of "progress" when the shares of life are held by corporate elites. I have argued that the theft of procreative capacities prevails in today's biopolitical paradigm to the extent that only those worthy of reproduction are given institutional license and support to reproduce. I will now examine how the eugenic program manifests in contraception techniques.

I wonder if I should have kept it.

No wonder Medicaid footed the whole bill.

LABORING BODIES: IMMORTALITY AND EXTRACTION

Extending his conquest over nature beyond all bounds through his will and his science, man will constantly experience such a great joy that it will replace for him his former anticipation of the pleasures that await him in heaven. Everyone will know that he is mortal, that there is no resurrection for him, and he will accept his death with calm and dignity like a god. He will understand, out of sheer pride, that there is no point in protesting that life lasts only a fleeting moment and he will love his brother man without expecting any reward for it. Love will satisfy only a moment in life but the very awareness of its momentary nature will concentrate its flames, which before were diffused and made pale by the anticipation of eternal life beyond the grave…

— The Devil speaking to Ivan Karamazov in Dostoevsky's *The Brothers Karamazov*

I remain committed to the faith of my teenage years: to authentic human freedom as a precondition for the highest good. I stand against confiscatory taxes, totalitarian collectives, and the ideology of the inevitability of the death of every individual.

— Peter Thiel, "The Education of a Libertarian"

Humanity has always been lured by the prospect of immortality. Stories of the elixir of life and the Fountain of Youth are found throughout the ancient world. The oldest known work of fiction, the Epic of Gilgamesh, tells the story of a man whose fear of death compels him to seek a substance that may reverse the course of ageing. Writing in the fifth century B.C., Greek historian Herodotus recounted tales of magical waters. This fascination continued alongside major colonial expansion in the 16th century when European explorers searched for restorative springs in the Caribbean.

The legacy of the will to immortality endures in the doctrine of the Fall, a scene depicted first in the Book of Genesis: Adam and Eve, living with God in the Garden of Eden, are tempted by a serpent to eat fruit from the forbidden tree of life. The punishment for their disobedience is a life of labor, pain, and mortality. In Christian religions, Eden is described as a paradise separated from the reality now imposed on sinful humans. Adam and Eve's original sin has condemned us to living life as we know it, though we are promised a much better life after death. Of course, one must believe in the word of God in order to reach such divine heights.

From the beginning of our comparatively short history on earth, we have been guided and galvanized by the fear of our supposedly irrevocable end. Countless works of literature animate this fear: Oscar Wilde's *The Picture of Dorian Gray*, Mary Shelley's *Frankenstein* and "The Mortal Immortal", Natalie Babbitt's *Tuck Everlasting*, Octavia Butler's *Wild Seed*, and William Gibson's *Neuromancer*. The list goes on. And yet, each of these forays into the theme of immortality are overwhelmingly cautionary. To live a life without end, or to be resurrected and forced to live once more, is to be either alienated or eternally bored. This presumption imbues moral philosophy and social theory. Nietzsche suggests one must be particularly foolish to desire "the heaviest burden" of eternal existence, but there are also notes of admiration in his criticism.

Considering such a prospect propositioned by an unknown demon, Nietzsche asks "how would you have to become so favourably inclined to yourself and to life, so as to long for nothing more ardently than for this last eternal sanctioning and sealing?" (The Gay Science, Book IV, Aphorism #341). In this view, a desire for eternal life is fueled by both naïve egocentrism and love for life as what it is, and not what it ought to be.

Jacques Lacan echoes Nietzsche's sentiment in a discussion of a former patient's "Pascalian" dream (or nightmare, rather) of "an infinity of lives descending from her in an endless line":

> Death belongs to the realm of faith. You're right to believe that you will die. It sustains you. If you didn't believe it, could you bear the life you have? If we couldn't rely on the total certainty that it will end, how could you bear all this? (Lacan 2017).

Like Nietzsche, Lacan likens living to bearing, and both thinkers intimate that it is life's finale that makes it all worth the trouble. Dostoevsky's devil poetically signals a similar eschatological orientation in the epigraph of this chapter when he suggests that love burns more intensely precisely because of its terminal condition. According to these views, the prospect of immortality invites the possibility for eternal discomfort and meaninglessness. Eastern religious traditions similarly associate unenlightened existence with suffering; in Hindu and Buddhist philosophy, *saṃsāra* denotes the mundane, endless cycle of birth and rebirth. Liberation from *saṃsāra* follows the destruction of desire. One's passage into Nirvana is contingent on relinquishing one's self.

One notable exception to the association between immortality and suffering is Virginia Woolf's *Orlando: A Biography,* but extended life is not without its challenges. Waking up one morning to a mysterious change of sex, and subsequently living for three more centuries (and

perhaps more), the eponymous hero embodies all meanings of the trans- prefix: beyond gender, beyond human, beyond time. The story of Orlando, however, is not motivated by the will to immortality, but by the author's desire to idealize her love for Vita Sackville-West, a sometimes-philandering romantic companion. *Orlando* is an homage to what might have been, in the past, present, and future. As such, Woolf's position is diametrically opposed to that of Peter Thiel (2009), who claims to support immortality for all persons while decrying "the extension of the franchise to women" in the same article.

Recent representations of immortality, released in the 2020s, paint similarly unsettling pictures. HBO's *Made for Love* and Amazon Prime's *Upload*, while darkly comedic, illuminate the ennui and power dynamics embedded in the pursuit for eternal life. *Made for Love*, adapted from a novel of the same title, expands the trouble-in-paradise theme to consider the impact of biotechnology (specifically brain-computer interfacing) on romantic relationships. The series focuses on a reclusive tech genius, Byron, and his wife, Hazel, who realizes her husband has implanted a device in her brain to track her whereabouts and analyze her "emotional data" produced during sex, arguments, and seemingly mutually enjoyable activities. Despite the deceitful means by which the implantation is administered—and its inefficacy in reconciling miscommunication—Byron's intention is to fully commercialize the brain implant so that couples may live in harmony forever. *Upload* follows a recently deceased man's digital afterlife, which is managed by still-living employees of a mind-uploading company. Inhabitants (if we can call them that) of Lakeview, one of the more affluent digital "heavens", are subject to the same sort of premium-based structuring in privatized healthcare. To replicate real-life sensations, Lakeview residents can pay to don sense suits or engage in certain actions that remind them of what it feels like to have a body. Sneezing—and getting hard—comes at a price. A more

dystopian vision of the afterlife plays out in Apple TV's *Severance*. Employees at Lumon Industries agree to undergo a "mindwipe" procedure that separates their experiences at work from their lives on the "outside." Their on-the-job "innies" develop distinct personalities from their "outies" and neither is aware of the other. Despite this apparent split, Lumon employees uncover the company's nefarious motivations while attempting to reintegrate their consciousness.

Upload and *Severance* in particular animate the labor politics in imaginings of eternity. In *Upload*, living humans are required to operate the mind-uploading technology powering the digital afterlife and endure the same treatment that many tech companies impose on workers in our real world: poor work-life balance, surveillance, a job security paradigm dependent on customer service ratings. Undead residents also face precarious conditions. Their continued existence depends on their relationships with those who have outlived them; familial rifts and personal grievances may result in payment lapses, which may in turn result in a less lively (or altogether bleak) digital afterlife. In *Severance*, Lumon workers learn that one element of their company's agenda is to ensure eternal employment: severance no longer denotes benefits owing to an employee upon their leave, but rather a means of securing indefinite extraction. It would seem, then, that eternity is best avoided, despite humanity's longstanding preoccupation with the concept.

Many other films and television series have highlighted the role that biotechnology may play in extending the human experience beyond its current spatial and temporal limits. Hulu's *Devs* and Netflix's *Maniac*, both premiering within the past five years, explore the metaverse theme alongside grief and what can be described as general postmodern malaise; in *Maniac*, one character is beset by a disputed psychological diagnosis, the other seeks respite from aimlessness

and maladaptive behavior. The two meet in an experimental drug trial conducted by a biotech company. In one notable scene, a colleague catches the eccentric principal scientist, played by Justin Theroux, having virtual reality sex using a "Suckulus" headset. *Devs* follows a young woman as she investigates why her programmer boyfriend died on his first day at a secretive quantum computing company. After landing a job at the company, unsurprisingly owned and led by an iconoclastic tech guru, she eventually learns that its primary aim is to develop an artificial intelligence-powered metaverse. Underlying the will to transhistorical experience is the owner's desire to resurrect his dead wife and daughter. But like Shelley's story of Frankenstein, bringing the deceased back to simulated life comes at a heavy moral price. The expansion of a space-time continuum necessitates infinite possible lives—some good, some abysmal—unmoored from reality as such and without end.

In addition to the shared themes of biotechnology, eternal life, and time travel, *Made for Love*, *Upload*, *Severance*, *Devs*, and *Maniac* are all produced by real-world tech companies that are no doubt invested in Silicon Valley mythology, particularly in the pursuit of immortality. Apple and Netflix are headquartered in the same region as most other major tech companies, including Microsoft, Alphabet/Google, and Meta (formerly Facebook). Google has yet to enter the streaming market, but its co-founders Larry Page and Sergey Brin have contributed billions of dollars to their anti-aging research initiative, Calico (Molteni 2022). The irony in *Upload* is particularly layered; the show is developed by Amazon, whose owner, Jeff Bezos, is currently at work on a 10,000-year clock. Also known as the "Clock of the Long Now", the project takes cues from longtermism insofar as it is intended to expand our temporal attention beyond the current epoch, inclining us to consider the impact of climate change on future generations. To reiterate, tending to long term effects of ecological crisis is certainly a just cause, but the clock

rings farcical chimes at the tune of $42 million (Carter 2018) as Amazon continues to exploit its workers and encourage mass consumption. In addition, Bezos is not only a purveyor of exclusive space travel, another pillar of the transhuman paradigm, he has also contributed part of his great wealth to research on aging: he and alt-right tech billionaire "Peter Thiel were both early investors in Unity Biotechnology, a company devoted to developing therapeutics to slow or reverse diseases associated with aging" (Alter 2023). It would seem that both Bezos and Thiel are in league with Bostrom in the quest to overcome the "Dragon Tyrant" that is death.

This chapter explores contemporary transhumanism's ultimate destination: immortal life. I shift my focus from prediction, as a way of designing life, to home in on the biopolitics of preservation and potential. I will demonstrate how an emphasis on preservation and potential further regulates and economizes life, particularly in the way it is deployed in egg freezing and contraception. Where assisted reproductive techniques like artificial insemination, IVF, and embryonic testing emphasize the power of prediction, egg freezing and long-acting reversible contraception (LARC) function through a bio- and cryopolitical logic of preservation and potential. I will argue that the emphasis on elongating life, much like the emphasis on designing life, is deeply invested in reproductive control. Drawing from promotional discourse around contraceptive and cryonics technologies, as well as writings and profiles of radical life extension proponents, I then sketch the labor relations arising from post-biological ontology.

The bio- and cryopolitics of potential

Innumerable articles have covered the subject of transhuman immortality within the past year alone. The interest in radical life extension and age-reversing technologies has certainly increased among the general population, but the adoption of such technologies is promulgated

almost exclusively by wealthy white men working in the tech industry. In a recent article published by *Time*, "centimillionaire" and venture capitalist Bryan Johnson shares his diet and exercise regimen for avoiding death. At 46, Johnson claims his bones are as healthy as a 30-year-old's and that his heart performs as well as someone ten years younger (Atler 2023). Johnson's day begins with standard biometrics, as well as supplements and light therapy, followed by an hour-long gym session. In addition to ingesting a total of 111 pills promising various performance enhancing results, Johnson collects his stool samples and wears a device attached to his penis at night to record his erections. Despite what can be reasonably described as a pathological desire to restore his youth, Johnson abstains from common foods and habits enjoyed by most young people. In fact, he describes indulging in desserts and having sex at 1:00am as "acts of violence", though Johnson does live with his devoted disciple and chief marketing officer, Kate Tolo, who happens to be a 27-year-old woman (Alter 2023). Such a regimen can thus be described as an ethos of optimization *qua* ascetism. Crucially, being the centimillionaire that he is, Johnson is not beholden to the conditions of wage labor that inevitably ages even the most health-conscious people. Unlike workers of the world, he has the privilege of living in the present without worrying about the future.

Marxist theory has long held the belief that capital functions through a regime of acceleration, growth, and futurity. Capitalism is entwined with the rhetoric of potential. Brian Massumi interprets the "future-looking" condition of capital as a process that revolves around potential; speculation is capital's "power-function" (2018, 16-17). Potential is intrinsic to the concept of exploitation insofar as capital operates by gambling on the successful extraction of human labour power. Under the conditions of capital, the human being is a source of potential, and one that must always be maximized to create a continuous, accelerating circuit of social

metabolism. It can then be said that an economy of speculation underlines the accumulation process. Venture capitalists like Johnson reap the rewards of such speculation, particularly in the age-reversing industry, the developments of which have proven at best minimally effective, and at worst life-threatening.[23] Johnson's obsession with not dying is so extreme that at one point he enlisted his teenage son as a blood donor (Klee 2023), joining the likes of fellow vampire Peter Thiel in the quest for eternal life (Gittlitz 2016). Johnson stopped these blood transfusions after realizing they had no effect, but the media portrayal of Johnson as a modern-day Dracula remains.

A growing number of extremely rich men espousing the virtues of consuming the blood of the young should certainly give us pause. The politics of potential, as they manifest as vampiric insatiability and endlessness, legitimize the techno-utopian fantasy of post-biological immortality made possible by optimization regimens like Johnson's as well as cryogenics and brain-uploading technology. And as Vicanne Adams, Michelle Murphy, and Adele Clarke (2009) reveal, the economy of anticipation and speculation produces "an episteme, a temporal orientation, and a moral injunction, where the present is abducted into the future." Similarly, Orr (2006) argues that the language of cybernetics is simultaneously preoccupied with "both the here and now and a yet-to-come . . . that is intensely wanted and on its way" (140). Capital's relationship to time is particularly apparent in longtermism, which casts the frame of ethical and moral decision-making generations into the future. Although longertermists are supposedly focused on an epoch to which presently living beings will likely not be party—unless, of course, they are reanimated after death—their ideas are impacting life (and markets) today. Recalling

[23] Aaron Traywick, a proponent of transhumanism and life extension, died in a sensory deprivation tank. Although there is scant evidence to support their effectiveness, sensory deprivation tanks are used for muscle recovery and psychological wellbeing.

from the first chapter, the longtermist argument is based on utilitarian probability and "moral math" that ultimately ignores any obligation to the here and now. As China's one-child policy demonstrates, the application of mathematical formulas to something as complex and unpredictable as population is not foolproof; in fact, it has created immense economic and social problems decades later and is likely to continue to impact the country for generations to come.

Marx (1993) was long preoccupied with the link between capital and time, noting in the unfinished *Grundrisse* that capital seeks to "annihilate . . . space with time, i.e. to reduce to a minimum the time spent in motion from one place to another" (539). Observing the development of global capital alongside the growth of information and communication systems, Marx argued that capital accumulation depended not only on human labor power, but also on vast networks of continuous exchange. These networks accelerate the production process while creating points of exchange outside of the usual circuit wherein money, resources, and labor produce commodities that are then sold, only to start the cycle anew. Today, with the help of advanced computational models and infrastructure, capital accrues immensely through interest and shares: money in the bank self-generates; dividends pay for shareholders' investments. Such accumulation animates the speculative stage in Marx's circuits of capital, M-M'—defined as the bypassing of the production process, the movement from money to, miraculously, more money—and the "fictitious" nature of capital in the era of financialization.[24] Fictitious capital abounds in Silicon Valley, and it's unsurprising that tech entrepreneurs like Johnson would want to give up their place in the upper echelon of global wealth, hence Johnson's maxim: "Don't die."

Marx's metaphorical use of the vampire and werewolf animate the eldritch desire for perpetuity, but the prospect of eternal life adds another dimension to the relationship between

[24] See Harvey, David. *Limits to Capital*. New York: Verso, 2006.

space and time in capital circulation. Immortality enthusiasts seek to colonize, if not entirely annihilate, time by space. Billions of dollars are dedicated to research and development of technologies aimed at either reversing the aging process or suspending it altogether (Janin et al. 2024). If such investment and innovation were to result in the production of infrastructure required to maintain endless digital life, we would be confronted with the construction of a permanent circuit of capital accumulation; the perception of any limitation and the fear of eschatological fate would cease to exist. This poses many interconnected practical and philosophical issues. To start, longtermists and transhumanists would have to come to terms with the incommensurability between their apparent appreciation for quantifiable metrics and the earth-shattering potential of infinity, a mathematical concept that defies quantification. Human existence as we know it is conditioned by decay. If people could live forever, how would their deathlessness impact systems that rely on entropy and transformation? As I touched on in the previous chapters, longtermism and transhumanism are informed by eugenic selection. Who would be permitted to live forever, and how would this critical mass be maintained? The questions are . . . endless.

For these reasons, immortality remains a speculative undertaking, but it is exactly this speculative condition that has historically advanced Silicon Valley venture capitalism. Tamara Kneese (2019) has elaborated the connection between financial speculation and the desire to prolong life. “Failure itself is a feature, not a bug, of startup culture”, and this sentiment imbues venture capital (72-3). Uber is emblematic of the level of financial insecurity afforded and encouraged by speculative, “fictitious” capital. The company only began to turn a profit ten years after it first launched, and it still has “yet to become profitable on a net basis” (Bellon and Balu

2021). Despite a decade of corporate losses and scandals, Uber is "one of the most valuable companies ever to go public" (Hawkins 2019).

Uber isn't alone in this loss-growth paradigm; Airbnb just saw its first annual profit in 2022 (Putzier 2023) and rival drive-hailing company, Lyft, lost more than $1 billion in its first quarter (Hawkins 2019). The success of technology companies—that is, companies that provide the digital platforms through which services like transportation, housing, and food delivery are exchanged—is measured in terms of potential. As I have already noted, Marxist political theory understands one element of capital as a gamble on the potential extraction of labor. In our current techno-economic environment, venture capitalists bet on the possibility of a company amassing future value. Tech companies like Uber may be losing billions of dollars, and their stock prices may be staggering, but venture capitalists remain transfixed on the likelihood that these companies will become so essential to everyday life that their mere existence will pay off in the long run. This is referred to as "long end disruption", which happens when a new company claims the bottom of a market segment using a low-cost business model (Cote 2022). Uber and Lyft continue to dominate the ride-hailing industry because their low-cost, low-price model requires little overhead, and their comparatively cheap rides essentially prevent the emergence of any competitor. Investors are attracted to this form of disruption because of its absorptive qualities and the duration of extraction: hanging by a precarious thread for years on end allows for extended extractability. In this way, venture capital (VC) is a game of endurance motivated by future-oriented, longtermist thinking.

Although this sort of thinking is prominent in the tech industry, it influences other areas of commerce, and it even plays a part in the way countries gamble on the likelihood of catastrophic events. For instance, the threat of nuclear war alone is enough to profit handsomely

from the possibility of it actually happening. World powers devote massive amounts of resources to administer, research, and develop policy around war. In the US alone, 13 percent of the federal government budget ($768 billion) in 2022 was spent on defense activities, including "operations and maintenance; military personnel; procurement of weapons; and research, development, testing, and evaluation" (Center on Budget and Policy Priorities 2022). Many political theorists and risk analysts have considered the manifold tipping points required in a country's decision to marshal massive global destructive techniques (perhaps not coincidentally, some of these analysts are affiliated with initiatives focused on existential risk, a major linchpin of the transhumanist-longtermist agenda).[25] Certainly, the recent war in Ukraine is cause for increased concern that the world will once again endure the atrocities of nuclear warfare. In the meantime, there is much to be gained from the potential for such a disaster, and from other crises like global warming and pandemics. Tech billionaires have created a market for luxury bunkers (Dobson 2020), but doomsday "preppers" of all socioeconomic strata have increased in numbers, partly due to supply chain failures during the Covid-19 outbreak (Laycock and Choi 2023).

Survivalism and immortality are two sides of the same coin (or token, to use the terminology of cryptocurrency, the digital economy's preferred money system). Where preppers are motivated by the potential apocalypse, transhuman immortalists are compelled by the possibility that technology will one day radically extend human life. Both seek to outlive any catastrophic risk to survival and transcend humanity's current terminal condition. It doesn't matter whether the means for achieving immortality are ever achieved; the amount of energy and

[25] See Baum, Seth. "How to evaluate the risk of nuclear war." *BBC*, 10 March 2022, https://www.bbc.com/future/article/20220309-how-to-evaluate-the-risk-of-nuclear-war. Baum is the executive director of the Global Catastrophic Risk Institute.

resources dedicated to the pursuit of eternal life will undoubtedly increase alongside a growing economy of speculation and anticipation.

The logic of potential is also embedded in cryopreservation, the preservation of matter at extremely low temperatures, which itself is a key technique in both transhumanism and reproductive science. Following the development of artificial refrigeration in the early 1800s, cryopreservation in the form of refrigeration systems became commercially available in the mid-twentieth century. These appliances were predominantly used to keep food fresher for longer, but much of modern life now depends on cooling systems. As I noted in the previous chapter, the preservation of biological tissue, including semen and eggs, relies on cooling infrastructure. Cryopreservation thus ensures the possibility for potential life made possible through IVF—and, as transhumanists believe, through cryonics, or the freezing of human remains using liquid nitrogen in the hope that legally dead persons may one day be reanimated.

Our reliance on cryopreservation has introduced a politics of low temperature: cryopolitics. In a volume devoted to the subject, editors Joanna Radin and Emma Kowal illuminate the history of cryopreservation, which, unsurprisingly, began to pick up speed in the same period as early transhuman discourse. According to their account, Basile Luyet, a Catholic Priest, is credited as the first cryobiologist (Radin and Kowal 2017, 4). Luyet and other cryobiologists were interested in exploring "latent life", "a state of suspended animation in which it was not possible to declare something to be dead or alive" (Radin and Kowal 2017, 4). Research in suspended animation can be traced even earlier to the late 1800s in Russia, and according to Anya Bernstein, grew out of a Soviet interest in uniting humanity and achieving world peace (Bernstein 2019, 3-5). My examination of contemporary cryopreservation, however, illuminates the connection between prolonging life and lengthening the duration of labor

extraction. As I will argue, the use of cryopreservation in reproductive science provides prolonged, and multiple points of, extraction. I will also show that cryopreservation has historically attended not to "surplus" populations (Adler-Bolton and Vierkant 2022), but to those of the upper class, and even more so for the "mega rich" who hope to live forever with the help of cryonics. In other words, cryopolitics figures differentially depending on a person's net- and fictitious worth.

Cryopolitics intensifies what Haim Hazan calls hybridization, or the condition of "between-ness" made possible by globalization and a cultural emphasis on fluidity, liquidity, and durability—values imbued in "forever chemicals" and in contemporary "technologies of the self."[26] The cyborg, an organism whose biological components have been supplemented by artificial ones, is one such manifestation of this hybrid condition, but Hazan also identifies strangers, nomads, and migrants. Non-hybrids, on the other hand, are not as adept at such "border crossing": the elderly, people on the autism spectrum, and those who suffer from pain "resist the liquid touch of postmodernity" (Hazan 2015, 4). An argument can certainly be made about the discursive parallels between fluidity and (neuro)divergence—and the alienation inherent to the migrant condition—but Hazan's biopolitical analysis of hybridity nevertheless illuminates a social hierarchy based on individual autonomy, personal choice, and extractability. Dependency and finitude (conditions to which all living beings are presently bound at some point in life), are increasingly identified as "pre-modern" and uncivilized, and to be avoided when

[26] Foucault described technologies of the self as those that "permit individuals to effect by their own means or with the help of others a certain number of operations on their own bodies and souls, thoughts, conduct, and way of being, so as to transform themselves in order to attain a certain state of happiness, purity, wisdom, perfection, or immortality." See Foucault, Michel. "Technologies of the Self: Lectures at University of Vermont." October 1982, https://www.foucault.info/documents/foucault.technologiesOfSelf.en/

possible. To slip outside the network of hybridity and globalization is to risk social death (Hazan 2015, 14).

The aversion to finitude and non-hybridity manifests profoundly in cryonics, which in the American context has historically championed the importance of individual legacy. The Alcor Life Extension Foundation, founded in 1972, is a nonprofit organization dedicated to the research and practice of cryonics. As of October 2023, Alcor has reported a total of 1,927 members, including 222 who have been cryopreserved ("Alcor Membership Statistics"). To achieve the hybrid state between life and death, members may pay $200,000 for full body cryopreservation, or $80,000 to cryopreserve only the brain. Payment from life insurance policies is also accepted.

Cryonics, longtermism, and transhumanism theoretically converge through a discourse of potential. The moral imperative undergirding cryonics and egg freezing is the preservation of *potential* life for a speculative future. Cryonics also invites discussion of risk; as Alcor's website indicates, cryopreserving one's body (or brain) after death is a worthwhile experiment because the alternative—letting the dead body decompose—offers nothing after death. Although Alcor admits, "no human has ever been revived from temperatures far below freezing", its mission is supported by none other than the Father of Transhumanism, Nick Bostrom and his enthusiasm for nanotechnology, "the field of science and engineering [focused] on the design and manufacture of extremely small devices and structures" (Oppermann 2023). In The "Case Against Aging", Bostrom (2000) writes, "The concept of cryonics is optimistic, but it is not irrational . . . . Indeed, many leading experts on nanotechnology anticipate that it will make it possible reanimate cryonics patients." As I mentioned in the first chapter, the invocation of

rationalism has been historically associated with techno-positivism at the expense of other ways of knowing and inhabiting the world.

One VC-backed startup, Nectone, is working on the nanotechnology required to digitally resurrect "modern mummies" (Quigley 1998). But the company also builds on the cryopreservation methods used by the likes of older players like Alcor Life Extension. Nectone's incorporation of embalming and cryonics have proven "effective at preserving an entire brain to the nanometer level, including the connectome—the web of synapses that connect neurons" and the company's namesake (Regalado 2018). While Nectone brands itself as a mind-uploading technology, prospective customers will still need their brains preserved cryogenically so that they may be "archived" (Regalado 2018). One of the founders, computer scientist Robert McIntyre, acknowledges that the market for such a service appeals to people who believe that the technology works (Regalado 2018). Nectone has yet to prove that its technology operates as advertised, but that hasn't diminished interest: 25 people have already paid a $10,000 deposit to join the waiting list. Once again, the promise of transhuman immortality, however speculative, nurtures great investment.

Institutional efforts to prolong life can be traced back to the early twentieth century in the Life Extension Institute. The Institute, comprised predominantly of wealthy white men, espoused eugenics and the sterilization of the "unfit", and also suggested dietary restrictions and regular exercise to prolong life. The latter advice is generally regarded as legitimate; decades of science have identified various health risks associated with overconsumption of refined sugary and sedentary lifestyles. Today, the imperative to extend life beyond its finite conditions, once regarded as fringe science, continues to make inroads in mainstream medical research. Modern mummification, digital resurrection, and biohacking are increasingly viewed by both experts and

laypeople as means to a (non) end. A healthcare hedge fund (you read that correctly) led by a doctor named Joon Yun has recently entered the radical life extension market. Yun has remarked that the aging process is merely a code waiting to be cracked (Friend 2017). He has also claimed that "thermodynamically, there should be no reason we can't defer entropy indefinitely. We can end aging forever" (Friend 2017).

For those of us who do not share Bostrom's and Yun's optimism, avoiding death may seem a niche, if not altogether futile endeavor. But the fantasy of avoiding death is already deeply embedded in contemporary privatized healthcare and wellness culture. Anti-aging treatments have been disproportionately marketed to women, but they are becoming increasingly popular for men (Di Donato 2023). The obsession with youth is striking earlier, as well. Generation Z's relationship to plastic surgery and cosmetic procedures like neurotoxins and dermal fillers has been described by dermatologists as "regular skin-care maintenance" (Edgar 2023). The growing interest in products and treatments promising rejuvenation, no doubt intensified by digital marketing, evidences the power of the discourse of potential.

To be sure, the preoccupation of modern medicine is namely to avoid death. Medical devices like those used in knee replacement restore mobility, and organ transplantation can add years of health to a formerly debilitated or ill person's life. Most advanced medical techniques today rely on advanced computation to some extent. In addition to robot-assisted surgery and cloud-based pacemakers, the biotech and medical industries have identified nanotechnology as the next frontier. As an article published in 2012 proclaims, there is "huge potential" in nanotechnology to the extent that nanobots may one day be able to repair cancer cells and optimize drug delivery (Paddock 2012). Beyond its potential benefits in disease prevention and treatment, transhumanists see nanotechnology as a means to fully realize brain-computer

interfacing (BCI)—a major step in the direction of what Ray Kurzweil calls the "Singularity", or the fusion of human and machine cognition. Kurzweil and other BCI enthusiasts, including Elon Musk, envision not only a world free from disease, but also (purportedly) a more collective, superintelligent society. But as many critics have pointed out, such technology raises questions about privacy and privilege. Although the mind-control techniques explored in *Made for Love* and *Severance* remain speculative, health policy consultant Eve Herold (2016) considers the possibility that nanotechnology might one day assist in such techniques employed by military regimes. Added to the problem of accessing private thoughts, Michael Haworth (2018) argues that BCI would inevitably disintegrate the need for language, and, in turn, collapse the distinction between self and other. Other skeptics have considered how differential access to nanotechnology will advantage already privileged groups. Despite these practical, ethical, and ontological concerns, according to its website, Musk's Neuralink is "to restore autonomy to those with unmet medical needs today and unlock human potential tomorrow"—in other words, to expand the economy of speculation.

Potential, hybridity, and extraction in reproductive science

As I concluded in the previous chapters, the discourses of transhumanism, eugenics, and population control are intimately intertwined. Here, I expand my critique to locate eugenic principles in the institutional support for long-acting reversible contraception (LARC) as well as privatized treatments like egg freezing and surrogacy. I will examine the relationship between an emphasis on potential and the desire to freeze time for the sake of prolonging labor extraction, and for the purpose of either suspending or encouraging procreation. My intention is to articulate how both commercial assisted reproduction techniques and public investment in contraception

reinforce the eugenic imperative in transhumanism. I then use this theoretical foundation to imagine and examine the labor relations resulting from the *potential* manifestation of eternal life.

Different forms of contraception have been widely deployed as methods for population control while espousing a discourse of freedom. Inasmuch as birth control affords women reproductive agency, it also reinforces an ethos of privatization and personal responsibility. Inasmuch as assisted reproduction encourages the production of "desirable" populations, neoliberal ideology in the health and technoscientific markets has also historically fostered "soft sterilization" (Brian et a. 2020) and "back door" eugenics (Duster 2003). As Michelle Murphy (2017) remarks, "birth control, in its military function, work[ed] to stem the tide of Communism" by limiting the reproduction of the poor (35). Like artificial insemination and genetic testing, contraceptive technologies have aided the biopolitical project that prevents some lives from being born "so that future others might live more prosperously" (Murphy 2017). Such quality assurance is indebted to sterilization—still the most common form of birth control among women today—but the widespread use of other methods like the pill, implants, and intrauterine devices (IUDs) function in the same way (Ducharme 2018). It is also important to note that all methods of contraception aside from the male condom and vasectomy impact women's bodies exclusively. Although men have been preoccupied with controlling women's bodies from time immemorial, pregnancy prevention has long been viewed as a women's responsibility.

My analysis focuses on the third most-used contraceptive, long-acting reversible contraception. As of 2018, ten percent of women in the U.S. rely on LARC in the form of IUDs or arm implants (Ducharme 2018). These forms of contraception are distinct from short-acting reversible contraception (SARC) techniques like the pill and vaginal ring insofar as they can be

effectively “forgotten” once implanted (Eeckhaut and Hara 2023; Mann and Grzanka 2018). Patients who use SARC methods, on the other hand, must regularly engage with and manage their contraception on a daily or trimonthly basis in order to prevent pregnancy. LARC offers a low-maintenance alternative: simply set it and forget it and enjoy the highest level of pregnancy prevention next to abstinence. In addition to its ease of use, much of LARC’s praise from the medical community focuses on its cost-effectiveness. In one study involving 1,000 women who were “at risk of pregnancy”, the use of LARC rather than short-acting reversible contraception like the pill resulted in a 31% reduction in third-party payer spending (Trussel et al. 2014). According to another article titled, “Family Planning as a Cost-Saving Preventive Health Service”, LARC carries a higher up-front cost, but saves the user between $272 and $547 annually if the device is used for five years (Cleland et al. 2011). Such reasoning aligns with both proto-transhuman and contemporary longtermist-transhuman debates around population control and cost-effectiveness, a discursive pairing essential to the argument for eugenics.

Reproductive justice scholars have illuminated the disciplinary function of LARC promotion and have criticized LARC for the way it reinscribes early twentieth century sterilization techniques. As Emily Mann and Patrick Grzanka (2018) reveal, the neoliberal logic embedded in LARC espouses “independence from social welfare systems [and] adherence to traditional notions of monogamous heterosexuality (i.e., normativity) that reflect the dominant interests of the advanced capitalist state” (338). Like most contraceptives, LARC does not protect against sexually transmitted infection. The underlying values embedded in LARC reinscribe traditional gender norms that place the burden of responsibility on the woman’s body without offering the same level of protection in return. Moreover, both public and private interests take up the task of normalizing contraceptive “agency without choice” by promoting a

"LARC-first" line of defense against pregnancy for "at risk" women (Mann and Grzanka 2018). As the authors illuminate, cultural understandings of "at risk" women are associated with reliance on social welfare systems for reproductive care, and this reliance suggests irresponsibility. On the other hand, "the responsible contraceptor [prioritizes] her education and career while deferring reproduction" (Mann and Grzanka 2018, 342). LARC users are responsible and future-oriented to the extent that they wait until their thirties (or later), when their incomes are presumably sufficient to bear the cost of having and raising children. This logic is directly transferable to the moral math embedded in longtermism, and as such, operates with the logic and economy of speculation.

Mieke Eeckhaut and Yuko Hara (2023) expand on the neoliberal and risk narratives embedded in LARC discourse, revealing the way it reinforces reproductive oppression. As the authors reveal, LARC strengthens unequal power relationships between patients and providers that have historically devalued the reproduction of already marginalized groups (Eeckhaut and Hara 2023). LARC is disproportionately marketed to young women of color and economically disadvantaged women, many of whom have faced pressure from medical professionals to either get or keep LARC (Eeckhaut and Hara 2023). In so doing, LARC threatens a more inclusive idea of reproductive autonomy by prioritizing a woman's right to avoid pregnancy. In the previous chapter, I mentioned how Dorothy Roberts (1997) has illuminated the racism inherent to framing reproductive agency exclusively as the right to abortion. Similarly, Loretta Ross and Rickie Solinger (2017) have developed a framework of reproductive justice to include "the right to *have* a child, and the right to *parent* children in safe and healthy environments" in addition to the right to *not* have a child (9). LARC does not subscribe to this model of reproductive justice precisely because its primary aim is to defer pregnancy, or to potentially preclude it altogether. For this

reason, LARC must be examined alongside the history of eugenics and the discourses that continue to support back door eugenics.

Although LARC is for all intents and purposes reversible, its widespread use has had lasting adverse effects. In the 1970s, many women were injured, and some died from infections associated with the intrauterine Dalkon Shield (Mann and Grzanka 2018). To be sure, and as I demonstrated in previous chapters, the history of reproductive medicine is littered with examples of harmful hubris and so-called expertise. The continued institutional practice of reproductive oppression is especially apparent in the expansion of immediate postpartum long-acting reversible contraception (IPLARC), which "is extensively promoted amongst Medicaid recipients, but not available to women with private insurance, indicating there seems to be little concern for whether future pregnancies are planned for women who are not poor" (Brian et al. 2020, 319). Equally concerning is the likelihood that women who are encouraged to use LARC are probably not the same women who are encouraged, or have the financial means, to freeze their eggs to defer motherhood later in life. Like artificial insemination, the cost of egg freezing varies by location, clinic, and how many cycles are required to retrieve an adequate egg supply. Egg retrieval is part of the standard IVF process (in which eggs are inseminated outside of the body before being implanted into the uterus), but for women who are not yet ready to procreate, an egg freezing cycle can range from $5,000 to $10,000. This does not include storage, which can cost up to $1,000 annually (Smith-Garcia 2022).

While LARC can offer deferred motherhood for some women, it has the potential to foreclose motherhood for others. As Eeckhaut et al. (2021) foreground, LARC operates as much as a means for birth stopping as it does for birth timing. For this reason, LARC reinforces a biopolitical model that endeavors to spare the state from unplanned (i.e., undesirable)

pregnancies, or what Adler-Bolton and Vierkant (2022) call “surplus” populations. At the same time, LARC use prolongs the labor extraction of women who are either unworthy of reproduction or motivated by the postmodern, future-oriented, neoliberal model of productivity and durability. In this way, LARC offers a double benefit by preventing the birth of unwanted lives and elongating the liquidation of (less desirable) women. This latter point is essential to a politics of potential and hybridization, as it allows for prolonged, low stakes gambling on the potential value inherent in human labor power; the halting of a woman’s fertility secures her continued labor in the workplace and ensures that she does not contribute to a seemingly overgrowing population. Moreover, the logic of eternal extraction embedded in technologies like LARC animate an aversion to a potential rupture in the accumulation of capital. The impulse embedded in LARC can thus be compared to the fantasy of splitting consciousness for the purpose of eternalizing labor. The fictional company Lumon shares with LARC the aim of prolonging the laborer’s extractability, in turn extending the potential for capital to further accumulate. At the same time, egg freezing also demonstrates a fear of finitude—in this case, a fear of death is a fear of a truncated legacy. The thematic relationship between rent, deferment, and foreclosure speaks to the financialization of reproduction.

It is not too far of a theoretical jump to say that women’s bodies are start-ups that fail more slowly and less often than VCs, but nonetheless provide the essential resources required for speculative accumulation. Although contraceptive technologies like LARC aim at controlling the reproduction of economically disenfranchised women, capital also relies on the maintenance of “surplus” populations, defined by Beatrice Adler-Bolton and Artie Vierkant (2022) as those “who fall outside the normative principles for which state policies are designed.” As Jasbir Puar remarks, today’s processes of regulating populations are not interested in the production of life

or vitality; rather, they seek to suck living labor to the point of maiming it, but not fully annihilating it. While this idea diverges from Foucault's analysis of a modern "make live" regulatory paradigm, it is supported by Marx's (1993) often cited vampire metaphor in *Capital, Volume I:* "Capital is dead labour which, vampire-like, lives only by sucking living labour, and lives the more, the more labour it sucks" (544-5). In an earlier publication, he writes, "But capital not only lives upon labour. Like a master, at once distinguished and barbarous, it drags with it into its grave the corpses of its slaves, whole hecatombs of workers, who perish in the crises" (Marx 1849). Marx's nightmare envisions capital as something that feasts on the living and continues to extract some sort of life force even after crossing the threshold of death, animating the potential value brought about by debility. As Puar contends, "in contemporary biopolitics . . . economic life can grow without the flourishing of much human life, which means precisely that illness is no longer a hindrance to, but rather is implicated in, 'make live'" (Puar 2017, 138-9). LARC adheres to the biopolitical logic of potential and debility insofar as it allows capital to vampirically feast on women's labor for a longer period while inhibiting their (over)reproduction of the surplus.

Kayla Schuller (2018) echoes Puar's points, noting that "[m]aking live happens in different racial registers in different regimes of empire, with different effects of prolonging, accumulating, extracting, and escaping life" (166). Both scholars look to Lauren Berlant's slow death theory, emphasizing the tension between life and death in contemporary biopolitics. Schuller (2018) writes, "Berlant clarifies that biopower's maxim to foster life or to permit death involves 'the authority to *force* living not just to happen but to endure and appear in particular ways'" (165, original emphasis). Puar's reading of Berlant similarly focuses on the temporal dimensions of debility, highlighting the description of slow death as the "ordinary work of living

on." This is, in fact, something that Marx considered when examining the relationship between worker health, business, and regulatory practices. He writes, "diseases . . . are conditions necessary to the existence of capital" (Marx 1903, 939). Beatrice Adler-Bolton and Artie Vierkant have elaborated this further in their indictment of privatized healthcare. The authors argue that in today's health economy, surplus populations are in fact

> an *essential* component of capitalist society, with many industries built on the maintenance, supervision, surveillance, policing, data extraction, confinement, study, cure, measurement, treatment, extermination, housing, transportation, and care of the surplus. In this way, those discarded as non-valuable life are maintained as a source of extraction and profit for capital. (Adler-Bolton and Vierkant 2022, 5, original emphasis).

In other words, maiming, rather than preserving a population's health, is more conducive to the expansion of profit. The operationalization of slow death and the "commodification of disablement" become the primary means through which potential extraction is maintained over time (Adler-Bolton and Vierkant 2022, 15). Surplus populations, or what Hazan might call non-hybrids, disproportionately face the biopolitical logic of slow death inherent in contraceptive technologies like LARC and in reproductive medicine more broadly. The patients at the Virginia State Colony for Epileptics and Feeble-Minded as well as those today in prisons and shelters illuminate the extent to which capital profits from the slow extraction (and "care") of poor, Black, and migrant women.

The materialization of both a debilitating biopolitical model and Marx's prescient description of capital as a disabling, insatiable, cannibalistic force is also evident in the commodification of the eternal life (and labor) of Henrietta Lacks. Lacks's cell tissue was removed during a cervical cancer biopsy and was found to be effectively "immortal" during the

routine culture examination. Unlike typical human cancer cells which can only survive a few days, Lacks's cells can divide indefinitely under optimal laboratory conditions. Researchers developed and commercialized a cell line, HeLa, which would be used in countless scientific pursuits, including IVF treatment (Zielinski 2010). In fact, HeLa is credited as the model for standardizing freezing practices in cryobiology, a field of research intimately tied to the sperm banking and IVF industries (Landecker 2007, 158). Despite the "billions of dollars in profits" the cell line has provided to the medical and pharmaceutical industries, the Lacks family is not entitled to any share in Henrietta's immense biological contribution (Moore 2016, 1). In fact, the legal precedent that prevents any reparations associates the commodification of body tissue with the rhetoric of bioslavery (Moore 2016, 2). But as Marlon Moore (2016) argues, HeLa cells are inherently enslaved by virtue of their total subjugation to private industries as chattel. Added to this injurious reality is the tragically unsurprising fact that Lacks's tissue was collected without her consent. Recalling the beginnings of artificial insemination, much scientific progress has been made through surreptitious and coercive practices.

It is not coincidental that Henrietta Lacks was a Black woman, a subjecthood that has been historically (and medically) inscribed as particularly durable, extractible, fungible, and expendable. HeLa's apparent invincibility and malleability resembles that of per- and polyfluoroalkyl substances (PFAS), synthetic chemical compounds commonly referred to as forever chemicals. Commonly known by the brand name Teflon, PFAS are prized for their durability and versatility, and have been widely used in cosmetics, food packaging, coatings, and textiles—so much so that 99% of the US population is contaminated with the substances (Carrington 2023). Many adverse health and ecological issues (including cancer, birth defects, and water toxicity) have been associated with PFAS exposure. Researchers have also found links

between PFAS and infertility caused by hormonal disruption, noting that "women with PFAS mixture levels one quarter higher than the average had a 40% lower likelihood of becoming pregnant within a year" (Carrington 2023). The incommensurability between PFAS-related infertility and the enduring preoccupation with population control cannot be ignored. Perhaps this is the immortal future of which transhumanists like Peter Thiel and Nick Bostrom dream: the eternal subjugation of "undesirable" women by way of suspended reproduction.

Procreation in the age of immortality

Andrea Arnold's documentary film, *Cow*, tells a similar story to the HeLa enterprise. The film follows Luma, a dairy cow, whose existence is devoted entirely to extractive processes. If Luma is not being milked, she is being artificially or "naturally" inseminated, or giving birth. Luma's life is measured in terms of output, as farmers gamble on Luma's milk production and fertility. Luma exemplifies the co-constitutive relationship between speculation and labor power, and further the relationship between labor and death. Despite the ostensibly ceaseless extraction afforded by her body (not only in its ability to produce milk, but also in its ability to produce offspring), her body is bound to a finite temporality. After prolonged, and many would say, cruel, extraction, Luma is executed because she can no longer reproduce at the rate of demand. Luma is made to live, but her life is ultimately taken. She is thus conditioned by both contemporary biopolitics (in other words, forced to live and endure a debilitated existence) and sovereign power.

Notwithstanding her nonhuman status, Luma shares with many women around the world the experience and expectation of continuous extraction. Pregnancy takes a long time, particularly for humans. Although the duration of pregnancy cannot be modified (at least at

present), reproductive medicine can control the speed at which certain populations and species reproduce. In Luma's case, her rate of reproduction must keep up with the steady demand for dairy products. In the case of surrogate mothers, what matters is the successful birth of a (wealthy) couple's baby. As Marxist feminist scholar Sophie Lewis (2019) demonstrates, the gestational labor in surrogacy outsources the wealthy woman's reproductive functions to a less-valuable woman's body. Oftentimes, the surrogate mother carries the embryo resulting from donated (cryopreserved) egg and sperm. In the same way Henrietta Lacks has no claim to her posthumous cells, the surrogate mother has no claim to the cells growing inside her.

Margaret Atwood has explored the topic of forced surrogacy in her book, *The Handmaid's Tale*, which envisions an infertile future in which the United States is governed by Christian fundamentalists. This dystopian future is not too distant from the conditions of the American plantation, nor is it too far from the world in which we currently live. The Alabama Supreme Court recently ruled that frozen embryos have the same rights to life as living children (Chandler and Mulvihill 2024). The political influence of evangelicalism is alarming but not altogether surprising. More conservative movements are aiming to further limit women's rights. This has been made abundantly clear by the overturning of *Roe v. Wade* in 2022. Combined with the enduring practice of eugenics, legally codified by *Buck v. Bell*, the stripping away of abortion rights portends a polarized political future, at the crux of which lie presuppositions around reproduction: who and what gets reproduced, and under what terms?

I have argued that today's biopolitical regimes rely on the slow, prolonged extraction of surplus populations, the reproduction of which must be continuous, but highly controlled. I have also argued that the temporal relationship between capital and extraction is essential to cryopreservation, a linchpin of both transhumanism and reproductive medicine. With this

empirical evidence in mind, how would labor politics play out if digital life emerged as a real possibility? Who would be consigned to care for and steward digital life? Perhaps a better—or at least more manageable—question is who and what benefits most from the prolonged extraction of (feminine or feminized) labor?

Feminist Marxist elaborations on social reproduction reveal the extent to which capital relies on the body, and particularly the feminine body. Silvia Federici has long been engaged in the discussion of women's relationship to capital. Like many feminist and postcolonial scholars, Federici (2014) has not only questioned women's "biological destiny" but located within this essentialist position a "body politics" that has policed women's reproduction and exploited female labor since the Middle Ages (13-15). In the transition from feudalism to capitalism, "wombs became public territory, controlled by men and the state, and procreation was directly placed at the service of capitalist accumulation" (Federici 2014, 89). This biological destiny, as Moore (2016) argues, was made all too clear in the antebellum period, during which time enslaved Black women "functioned as commerce, savings accounts and credit because their bodies were exchanged or promised as currency, and because of their potential to produce offspring" (Moore 2016, 3). To their credit, Marx and Engels identified in procreation both social and biological capacities: "The production of life, both of one's own in labor and of fresh life in procreation, now appears as a double relationship: on the one hand as a natural, on the other as a social relationship" (Marx and Engels 1964, 41). Bodies need to be (re)produced and cared for in order to maintain the labor workface, and in turn, to ensure that commodities can be produced and enter the market to be sold. Further, the maintenance of the infrastructure required for such exchange depends on the reproduction of bodies.

The optic of social reproduction has expanded to account for its manifestation in the information age. Kylie Jarrett (2016) identifies the emergence of the "Digital Housewife" alongside Web 2.0's participatory culture and in the increasingly permeable line between leisure and labor. Without diving too far into the ways cyberspace extends the arena of domestic work, suffice it to say that the unpaid labor required in "real life" communication has been replicated in the virtual social factory, namely in content moderation and mundane "click-work" offered by companies like Amazon's Mechanical Turk. But the rules of social reproduction are different for lower- and higher-income women. Working-class women who have children of their own have historically cared for wealthier families' children, or worked other pink-color jobs, extending their domestic labor beyond the home. While wealthy women's reproductive futures are guaranteed through the process of egg freezing, low-income and marginalized women face reproductive oppression and oftentimes less rewarding forms of labor (in the workplace, while gestating, and in the domestic sphere). Moreover, higher-income women are more likely to benefit from suspended time by way of egg freezing because they can afford the costs of professional childcare and enjoy job-related protections like maternity leave. In short, one wealthy woman's temporal suspension is another poor woman's temporal extraction. These existing inequalities, which are already apparent in today's "digital proletarianization" (Dyer-Witheford 1999), will no doubt magnify with the development of the Singularity. This is made all too clear in satirical commentary like that in *Upload*, but it has also been empirically proven throughout history. We need only remember capital's vampiric reliance on enslaved, nonhuman, gendered, debilitated, or otherwise under-the-table labor to imagine the social conditions resulting from the development of eternal digital life.

Where transhumanists would like us to believe that essential, menial work will eventually be undertaken by machines, labor remains an essential component of human relationships and sentient life in general. As dystopian tech narratives like *Upload* remind us, and as Marx forewarned long ago, there will always be a need for human bodies and labor despite capital's apparent autonomy and self-sufficiency. While capital today may appear to self-generate, its accumulation still depends on the production process. Much like Marx's description of the way exchange values conceal the social relations required to produce commodities, fictitious capital conceals the labor power required in advanced technological infrastructure: self-driving cars require human oversight and adjudication in the event of an accident; human hands are needed for the dexterous movements that Amazon's fulfillment center robots have yet to master; artificial intelligence is continuously monitored and evaluated by human intelligence; and the largely invisible data servers that power life as we know it are managed by humans. Living, human labor is essential in every presumably semi- or fully automated task in virtually every industry. Why would the maintenance of eternal life, made possible by digital infrastructure, be any different? Despite its speculative and dubious potential, post-biological "life" suggests a transformation of class struggle in which the ruling class lives forever, and the proletariat is consigned to the finite terms of earthly existence. It is for this reason that the pursuit of immortality is deeply invested in reproductive control to ensure a necessary, but fully controlled, labor reserve.

Will the Teflon running through my veins outlive me?

ALCHEMICAL BODIES

> The desire to regain one's mother is in reality the desire to regain the self. This is surrender unto the mother, so she may live eternally.
>
> — Ramana Maharshi[27]

> The word "nature" does not designate a definable and constant entity. With reference to life there is not one nature; there are only associations of states and circumstances, varying from place to place and from time to time.
>
> — René Dubos

> *I maintain that this is a life worth keeping.*
>
> — Cynthia Dewi Oka

So far, I have been discussing the possible social, political, and metaphysical consequences of the increasing preoccupation with, and potential achievement of, immortality. In this chapter, I turn my attention to consider what ethics might emerge from alternative worldviews that set their sights not on some faraway horizon, but on the here and now. I begin with a brief examination of the current state of radical feminism to situate my project between the seemingly oppositional orientations of xenofeminism and ecofeminism. Building on Black feminist and care frameworks, I then survey the potential for a feminist biocommunism to combat capital's manifold crises. I conclude by developing what I call a vital-fatal politics

[27] Quoted in Aviv, Rachel. *Strangers to Ourselves: Unsettled Minds and the Stories that Make Us*. New York: Farrar, Straus, and Giroux, 2022, pp. 110-111.

through an examination of life/death and human/nonhuman entanglements in gestation. My investment in finitude engages what Rosi Braidotti (2013) refers to as a posthuman theory of death, one that resists the twinned dreams of capital accumulation and immortality. Where posthumanism reckons with the aftereffects of humanism, transhumanism continues to propagate visions of eternal life made possible by advanced computation despite ongoing and intertwined social, political, and ecological crises. My formulation of a vital-fatal framework advances an uncomfortable biopolitical reframing: a feminist politics for the Anthropocene should seek not only an equal right to live, but also an equal predisposition to die. Taken together, my emphasis on feminism, ecology, and finitude resituates the fragility of the body as fundamental to responsible world-building.

Feminism for the end of the world

In the first chapter, I briefly discussed xenofeminism and its positioning as a gender-abolitionist rationalism. In 2015, the six-women cyberfeminist collective Laboria Cuboniks wrote the "Xenofeminist Manifesto: A Politics for Alienation", in which they emphatically claimed, "If nature is unjust, change nature!" Similar to the way feminist theorists expanded Marxism to highlight the essential role of women's labor in capitalism, Laboria Cuboniks, obviously inspired by Donna Haraway's "Cyborg Manifesto," sought to inject a feminist agenda in technoscientific critique. The result was intended as not only a feminist, but also a "post-colonial, queer, and sub-altern" reconfiguration of neo-rationalism and accelerationism (Sollfrank and Banker 2016). To mobilize this radical reconfiguration, xenofeminists urge that we embrace alienation, reclaim rationalism from the grip of white masculinity, and resist the glorification of nature, the latter of which has only throttled queer, trans, and differently-abled

people. The Xenofeminist Manifesto also argues that biological essentialism is to blame for the continued discrimination against those who experience pregnancy or involve themselves with child-rearing duties. It makes a particularly profound point when it declares, "we must engineer an economy that liberates reproductive labour and family life, while building models of familiality free from the deadening grind of wage labour" (2015).

One founding member of Laboria Cuboniks, Helen Hester, has elaborated her position in a book appropriately titled *Xenofeminism* (2018) and in several articles and interviews, in which she lays out the movement's many intricacies and theoretical genealogy. To begin, Hester acknowledges the limits of an accelerationist Prometheanism in envisioning a radical gender politics (Hester 2019) and appears to trouble the total adherence to rationalism when she locates xenofeminism in the same philosophical current as speculative realism and object-oriented ontology, both of which refute the correlation between mind and world (Navarro 2019).[28] I find Hester's (2018) nuanced criticism of ecofeminism convincing and important; a feminist politics that underscores the power of biology and nature should not do so at the expense of bodily sovereignty, nor should it reduce womanhood to motherhood (38-39). Equally compelling is Hester's (2018) addition of reproductive justice elements, including "support for having and raising children in conditions of safety" (126). Another member of Laboria Cuboniks, Patricia Reed (2019), seems to gesture in a similar direction when she acknowledges the importance of building coalitions and "being in and of [a] world" marked by crisis.

While I appreciate xenofeminism's commitment to troubling supposedly given structures like gender, I question the extent to which rationalism in any form provides the

[28] While both speculative realism and object-oriented ontology take primary aim at Kantian metaphysics, Kant himself was greatly inspired by Descartes, the father of rationalism, and he accepted the Cartesian idea that knowledge is generally acquired *a priori.*

necessary foundation for the radical politics that movement envisions. As David Golumbia argues:

> For at least one hundred years and probably much longer, modern societies have been built on the assumption that more rationality and more technē (and more capital) are precisely the solutions to the extremely serious problems that beset our world and our human societies. Yet the evidence that this is not the right solution can be found everywhere. (2009, 13)

Granted, Golumbia does not provide specific examples that prove rationalism is an ineffective worldview but suffice it to say that its narrow, yet overwhelmingly influential purview has aided utilitarian and dualistic thinking, and as such, has negated other epistemologies. The idea that some ways of thinking are rational also suggests that other ways are irrational, thus reinforcing gendered notions around what constitutes legitimate knowledge.

In addition to its emphasis on rationalism, xenofeminism's preoccupation with optimization technologies risks emulating transhumanism's eugenic tendencies to the extent that it reinforces a politics of hybridity; according to xenofeminists, we must adapt to our hyper-mediated reality and repurpose technologies that are "prone to imbalance, abuse, and exploitation of the weak" (Laboria Cuboniks 2015). Inasmuch as xenofeminism argues that "[n]othing should be accepted as fixed, permanent, or 'given,'" its emphasis on alienation seems to suggest that the onus is on individual bodies, rather than social and political systems, to adapt and transform. When Laboria Cuboniks (2015) affirms, "Our lot is cast with technoscience, where nothing is so sacred that it cannot be reengineered and transformed so as to widen our aperture of freedom" and when Hester (2019) herself contends, "Biology is not destiny, it can be technologically transformed," I am reminded of the billions of dollars invested in medical enhancement

technologies that profit from the circulation of normative ideals of beauty and promises of a supposedly ageless future. The commodification of youth and agelessness encourages women to continuously sculpt their bodies for the purpose of satisfying (white, heterosexual) men's pleasure, but the expanding obsession with age reversal and deathlessness has crept across gender lines, intensifying the transhuman discourse of self-optimization. While I have elaborated on the ways the do-it-yourself biohacking movement fosters potential liberation from institutional gatekeeping in medicine (Mularoni 2021), I also realize that biohacking is increasingly emerging as a health and wellness enterprise wherein people are encouraged to achieve and maintain the best version of themselves as the world literally burns (Kloetzli 2024).

For this reason, I am interested in reconciling the incoherence in the xenofeminist argument, which contends that we ought to regard technology as fundamental to human advancement and, at the same time, distinct from or outside of biological functioning. To determine that nature is unjust, and to subsequently call for its manipulation—something that both xenofeminism and transhumanism enthusiastically support—is a decidedly anthropocentric gesture to the extent that it once again affirms certain "truths" associated with human nature.[29] I am thinking here of liberty as a right endowed exclusively to the human, and only to some humans at that. According to Laboria Cuboniks (2015), "The construction of freedom involves not less but *more* alienation" (emphasis added). But, as any historical materialist would remind us, alienation has always benefited the aims of capital by reducing the proletarian human subject to an instrument of labor.[30] Silvia Federici (2014) identifies in the capitalist work-relation the

[29] It is worth noting that philosopher Catia Faria is all but convinced by xenofeminism except for what she identifies as a species bias in the movement's deficient description of what constitutes the "alien." See Faria, Catia. "Xenozoopolis: Unnatural Solidarity," *Medium*, 3 January 2021, https://catiafaria.medium.com/xenozoopolis-unnatural-solidarity-4ea29b061247.

[30] As I mentioned in the first chapter, there are points in Marx's writing that evidence his Prometheanism, but as many scholars have pointed out, Marx's work is marked by a tension between humanism and naturalism. See Cooper, David E. 'Prometheanism: Marx, Nietzsche, Pragmatism, and 'Reactionary Modernism,'' *The Measure of*

emergence of "the conflict between Reason and the Passions of the Body," which is to say an estrangement between what is socially coded as "masculine" and what is coded as "feminine" (134). The privileging of the mind has valorised the individual male genius, in turn subjugating the supposedly passive (nonhuman, feminine) body. This sentiment is inscribed in political world-making, specifically in the construction of liberal humanism. Szymon Wróbel (2020) observes that even advocates of a supposedly Left politics "submitted to the temptations of individualism, consumerism, competition, privilege, and proceeded as if there were no alternatives to state that rule in the interests of markets" (302). For these reasons, I am not convinced that the xenofeminist reinterpretation of alienation can be extracted from its corollaries: privatization, estrangement, accumulation, and whiteness. Perhaps it is for this reason that Hester abandons the tenet of alienation in her book.

Scholars across disciplines have called attention to the troubling discursive entanglement of liberalism, alienation, and anti-humanism. Rosi Braidotti (2013) illuminates how anti-humanism, a framework upon which both transhumanism and xenofeminism heavily rely, "often end[s] up espousing humanist ideals," freedom in particular (29). Similarly, Achille Mbembe (2019) identifies in the tradition of Western metaphysics the tendency to ground relations between humans and objects through the discourse of freedom (94). According to Mbembe (2019), "[t]his tradition assumes that there is a division between the technical world of humans and the natural world of nonhuman animals" (94). This is indeed a position Marx unsettles when discussing the interconnections between Nature and laborers as they manifest in the means of production; everything (human and nonhuman, living and non-living) becomes a source of

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Things: Humanism, Humility, and Mystery. Oxford: Oxford University Press, 2007; online edn, Oxford Academic, 3 Oct. 2011, https://doi-org.libproxy.newschool.edu/10.1093/acprof:oso/9780199235988.003.0004, and Sheasby, Walt. "Anti-Prometheus, Post-Marx: The Real and the Myth in Green Theory," *Organization & Environment*, vol. 12, no. 1, 1999, pp. 5-44. JSTOR, http://www.jstor.org/stable/26161508. Accessed 2 May 2024.

extraction in the service of capital. In her examination of labor as a condition of life, Hannah Arendt (1954) writes "[b]ecause men were dominated by the necessities of life, they could win their freedom only through the domination of those whom they subjected to necessity by force" (84). The condition of one's freedom, then, hinges on the domination of another's. This paradigm is particularly apparent in the discourse of reproductive freedom; political conservatives and proponents of abortion continually compete in a zero-sum game. And as Dorothy Roberts (1999) underscores, reproductive freedom is framed almost exclusively as "the protection of an individual [white, middle-class] woman's choice to end her pregnancy," with little regard for Black and brown women's reproductive agency (6). These positions reveal the extent to which the discourse of freedom is inherently imbued with white bourgeois privilege.

The aims of xenofeminism may stop short of achieving eternal life, but an emphasis on alienation from nature (and by extension, from the body) reaffirms liberal humanist values embedded in technoscience. The movement's accelerationist lineage, originating in the work of racist neo-reactionary philosopher Nick Land, further problematizes the emancipatory interpretation of alienation; as a theory invested in legitimizing white supremacy, it is difficult to, in Hester's words, "strip accelerationism for parts." Jules Gleeson (2019) and Annie Goh (2019) have criticized xenofeminism on such grounds, and even polarizing feminist Nina Power (2020) has observed that reproductive technologies have not been accompanied by social revolution and that techno-feminism has not escaped techno-capitalism. Sophie Lewis (2019b) remarks that in an age of increasing xenophobia the xeno- prefix should give us pause: whose bodies are served by *more* alienation? If the teleology of transhumanism and xenofeminism is at best limited to abstraction and at worst based on individual freedom, even the most progressive agenda will fail

to scale to planetary survival. Gender abolitionism must be accompanied by collective practices of care attuned to the precarious planetary condition as much as it ensures bodily autonomy.

Where xenofeminism highlights the historical association of nature with oppression—insofar as Western colonialism has sought to master nature at every turn and subsequently construct it through the lens of normativity—my understanding of nature is inextricably tied to the technological. The co-shaping of biological and technological forces is especially apparent in the medical context: hormone therapy mobilizes the body's own molecular functioning in a variety of medical uses, including trans health; insulin treatment engages biological processes necessary for sustaining life; Botox mimics the microbe that causes botulism, but more effectively. A radical feminist politics should, then, acknowledge the imbrication of the biological and the technological, as much as it does the human and the nonhuman, in political transformation. In other words, it should account for an understanding of nature as an episteme—a form of alchemy, perhaps—in its own right. This point has been elaborated by ecofeminism, which has centred an ecological approach to knowledge production.

As I said in the introduction of this dissertation, studying whiteness requires personal and institutional reckoning. To truly engage the "openness, messiness, and conflict" required in collaborative thinking and practice, xenofeminism must be willing to recognize its limitations, lest it be appropriated by the commercial biohacking industry, or worse, legitimize the exclusionary and eugenic dimensions of biological enhancement (Navarro 2019). Indeed, xenofeminism must be willing to consider "the call to slow down and scale back" as a direction that is neither exclusionary nor impossible to mobilize; indeed, as the Covid-19 pandemic illuminated, local political action is crucial to species survival (Laboria Cuboniks 2015).

The following section revisits Marx's concept of the means of production while considering Black feminists' engagement with mothering and contemporary ecofeminist developments invested in degrowth and dealienation. As a political strategy, ecofeminist political economy argues for "the much-needed decrease in social metabolism" (Barca, 2019, 207). How might we reimagine ecofeminism in ways that avoid the fetishization of nature and "golden age" thinking, and, at the same time, steer xenofeminism in a direction that attends to ecological crisis? What possibilities emerge from a framework of slowness and interdependence rather than techno-fetishism and alienation? Can we reimagine a story and method of science that honors the body's alchemical capacities without longing for its non-end? Echoing David Golumbia's (2019) feeling that "our societies function best when they are balanced between what we will call here rationalism and whatever lies outside of it" (13) and Haraway's (1990) understanding of a cyborg politics as "the struggle against perfect communication" and phallogocentrism (176), I suggest an alliance between xenofeminism and feminist biocommunism to take charge of this era of planetary precarity.

Dealienating the means of (re)production

A feminist politics invested in equitable world-making must aim to circumvent the patriarchal, colonial legacy of technoscience. This aim is certainly part of the xenofeminist agenda and of the cyborg politics envisioned by Haraway but para-state organizations in Black and brown communities have long been engaged with forming resistance against and building alternatives to institutional oppression. This engagement predates cyberculture and, as such, evidences a precedent for working outside of technoscientific protocols. But if we are to recuperate elements of the Xenofeminist and Cyborg Manifestos, I suggest we begin by

questioning the dissonance between the body's capacity to evolve and the general resistance to radical social transformation. As Ruha Benjamin (2013) asks, "*If our bodies can regenerate, why do we perceive our body politic as so utterly fixed?*" (172). What potential harms develop from a reliance on the biological body's capacity to regenerate?

Postcolonial and feminist scholars have located a racist, neoliberal ethos of productivity and hybridity in the discourse of resilience. Reflecting on her germinal book *Black Feminist Thought,* Patricia Hill Collins remarks that the work takes aim at the discourse, reaffirmed by African Americans, that Black women "can do everything forever" (Story 2014, 131). Drawing on interviews with survivors from Palestine, Northern Ireland, South Africa, Qatar, and Jordan, Malaka Shwaikh (2023) exposes the way resilience discourse "romanticizes [oppressed individuals and communities] as exemplary in coping with adversities, obscuring their humanity and even diminishing the depravity of oppressive projects that work to maintain control over their suffering." Resilience discourse reinforces a narrative that subjugated individuals are less vulnerable, and more flexible and adaptable to unjust and violent systems (Shwaikh 2023). For this reason, the discourse of resilience in itself is a form of structural violence. Shwaikh identifies the way the Global North marshals resilience discourse to both fetishize the strength and adaptability of people facing extreme humanitarian crises and, at the same time, distance itself from acknowledging its part in such crises. But the impact of resilience discourse is also felt in wealthy countries. An emphasis on resilience in the United States, for instance, masks the impact of a crumbling social infrastructure and in turn places the primary responsibility on individuals to not only endure exhausting conditions, but to thrive in them. For those who are economically disenfranchised, productivity is required, and vulnerability is not an option. As

I explored in the previous chapter, the neoliberal emphasis on hybridity and resilience concretizes a social contract largely based on the extraction of labor.

Against the myth of resilience, Shwaikh (2023) illuminates how communities in Palestine combat the myriad structures of violence not by focusing on survivors' coping mechanisms but on forming support systems for legal advice and health and family resources. To this end, Shwaikh (2023) suggests we reframe our understanding of communities facing adversity through a language of care that embraces vulnerability and collective justice. Disability justice scholar Mia Mingus (2017) similarly emphasizes interdependence in the movement toward a more just and accessible world. Despite the virtue of individualism promulgated by Western liberalism, theories and practices of care illuminate the ways in which living necessarily involves relying on others. I am reminded of Lauren Berlant's (2011) political formulation of relations, which reveals that our interpersonal and systemic connections have the power to both hurt and help us. Collins profoundly illustrates the way our proximal relations impact our way of thinking. Contrary to the enduring idea that academic work necessitates alienation from one's community, family, and even one's self, Collins (2000) cites her responsibilities as a mother and mentor as a major driver for generating theory (viii). Sara Ruddick echoes both Berlant's and Collins's claims when she writes that the commitment to caring for children, "whatever mix of happiness and sorrow it brings", "expands a mother's intellectual life" (1989, 89). Notwithstanding their tendency for conflict, interdependent relationships are fundamental to the way we inhabit and make our world.

For nearly as long as America has been a sovereign nation, underserved communities have actively practiced para-state organization and mutual aid to combat the state's incompetence. The Free African Society (FAF), formed in Philadelphia in 1787, was one such

organization. During the Yellow Fever Epidemic of 1793, the physician and civic leader Benjamin Rush called on the Society to aid white citizens in caring for the sick, orphaned, and dying. The FAF responded to the call in a gesture of life-threatening solidarity. Fraternal societies as well as Hispanic and Indigenous mutual aid networks grew in the early twentieth century (Adereth 2020). In the 1960s, the Black Panther Party's "survival programs" provided nutritious food to school children, funded medical research, and housing assistance. Before the privatization of formerly public services, socialized health care programs were prescribed by Western liberalism because they were indicative of sensible economic thinking; a population's health was thought to largely determine its wealth, as the production of goods and execution of services depended on a healthy, capable workforce. As I examined in the previous chapter, a biopolitical shift in which debility is prized for its extractive potential has since overtaken a formerly sensible approach; now one's wealth largely determines one's health. And as the global pandemic cast into high relief, the degradation of social services, coupled with the rising costs of medical care, has revealed how easily a formerly healthy person can slip into long-term sickness.

To tend to our fragile individual and planetary conditions is to engage in what Cynthia Dewi Oka (2016) calls the *social practice* of mothering (51, original emphasis). In its radical incarnation, mothering acknowledges both "the critical role biological mothers play in sustaining humanity" as well as queer and alternative parenting that sustains life beyond the circumscribed boundaries of the biologically produced heteronormative nuclear family (Ross 2016). Against "hetero-patriarchal, white-supremacist capitalism," Dewi Oka (2016) argues that the only path to liberation is through understanding how to depend on and be responsible for each other (57). Part of this work, Dewi Oka furthers, involves equitable birth policies and collective caregiving.

Angela Garbes (2022), who describes mothering as "essential labor," argues that embodied mothering "can be our best offense and defense against the inhumane, distinctly American lifestyle" (15). Both Dewi Oka and Garbes draw on their mothering experiences as ethnic minorities to demonstrate its revolutionary capacity. And while both thinkers identify in the practice of mothering acts of strength and resilience, they also underscore the importance of care and vulnerability in ethical world-building. Naomi Gaines, a single Black mother activist, locates mothers at the "root" of communities, reifying the etymological connection between roots and radical action.[31]

But even those who appreciate the revolutionary capacity in mothering acknowledge the long history of presenting the mother figure and acts of caring as either mundane or "lacking in any social or economic value" (Dewi Oka 2016, 51). Alexis Pauline Gumbs describes a risk in affirming the practice of mothering to the extent that both the national narrative and queer studies disparage the image and role of the mother, particularly the poor, Black mother. But it is precisely this generalized dismissal in which Gumbs locates the Black mother's queerness: to engage in Black mothering is inherently a queer action because Black people were never meant to survive (2016, 119), a point made all too clear by the fact that Black infants are more than twice as likely to die than their white counterparts (CDC 2022; Matoba and Collins 2017). Gumbs (2016) argues that Marxists feminists and queer theorists tend to "throw the Black babies out with the bathwater" when "critiquing the heteropatriarchal family as a complicit force in the reproduction of capitalist oppression" (120). Such "anti-social"[32] and "anti-species"[33] ideas have

[31] Quoted in Aviv, Rachel. *Strangers to Ourselves: Unsettled Minds and the Stories that Make Us*. New York: Farrar, Straus, and Giroux, 2022, p. 147.
[32] See Edelman, Lee. *No Future: Queer Theory and the Death Drive*. Durham, NC: Duke University Press, 2004.
[33] See Haraway, Donna. *Staying with the Trouble: Making Kin in the Chthulucene*. Durham, NC: Duke University Press, 2016.

been influenced the Left's embrace of anti-natalism *qua* radical environmentalism. As such, arguments for zero population growth, voluntary human extinction, and "childfree by choice" reaffirm white feminism and anti-black queerness while negating the fact that Black and brown communities struggle to survive. By reclaiming the role of the mother and the practice of radical mothering in the academic queer left, we attend to and honor the body in all its creative capacities, including its fragility. By rethinking family as a starting place for collective responsibility and political action, we engage in care practices rather than alienation.

Inasmuch as my inspiration for a radical feminism originates in re-thinking the value of mothering and vulnerability, I am also motivated by Stefania Barca's ecological socialism. Integral to Barca's formulation is the concept of degrowth, which has recently been taken up enthusiastically by Marxists who have grown increasingly weary of the underlying Prometheanism in Marx's work and the persistence of capitalist realism. Kohei Saito is one such Marxist who has helped to reclaim ecological aspects in Marx's thought[34], but other notable names associated in the degrowth movement include Giorgos Kallis (2018) and John Bellamy Foster (2020) as well as ecofeminists and activists Leigh Brownhill and Wahu Kaara (Brownhill, Turner, and Kaara 2012). As the name suggests, degrowth "signifies radical political and economic reorganization leading to drastically reduced resource and energy throughput" (Kallis et al. 2018). I am particularly inspired by feminist engagements with degrowth. Barca (2019) describes degrowth as "the process by which Marx's four forms of estrangement—from the products of labor and the natural world, from the labor process, from species-being and from other humans—are actively reversed through collective action" (209). Along this line of

[34] Saito argues that degrowth communism was in fact part of Marx's critique of political economy, but it was eclipsed by the Promethean theme. See Saito, Kohei. "Introduction." *Marx in the Anthropocene: Towards the Idea of Degrowth Communism*. Cambridge: Cambridge University Press, 2023, pp. 6-7.

thinking, Leigh Brownhill, Terisa E. Turner, and Wahu Kaara (2012) underscore the function of dealienation in the regrowth of the commoning and the subsequent degrowth of capital. I see the investment with regrowing a commons as a compatible element to radical mothering as well as the xenofeminist call to "[build] models of familiality free from the deadening grind of wage labour."

Along with Black feminism, an ecofeminist engagement with dealienation is particularly attuned to the struggles of working-class people in the shaping of ecological class consciousness. Barca locates labor as a site of and for democratic decision-making. Specifically, she argues that a political strategy based on degrowth and dealienation decreases the space between workers and the products of their labor. As Barca's investigation reveals, degrowth initiatives concretize the relationship between feminism and ecological justice. The combined framework identifies "the gendered division of labor" as a primary cause for ecological crisis, and for this reason, situates "reproduction as a crucial terrain for anti-capitalist struggle and ecological revolution" (Barca 2019, 214). The origins of this orientation date back to the shift from pagan society to capitalism. Federici reveals how land privatization in the seventeenth century coincided with the feminization of labor, leaving many women with few options to work for a wage (prostitution being a common one). Land expropriation created a power relationship in which employers could cut workers' pay and lengthen the working day, all while prices for foodstuffs were increasing (Federici 2014, 72). Women, who paid the highest price under this new regime, participated in anti-enclosure riots, facing imprisonment and further marginalization as a result. Today, women-led movements like the Global Women's Strike continue to underscore the connection between work and environmental sustainability at great personal risk.

As Black feminists and ecofeminists reveal, women have long been engaged in social protest. Crucially, their discursive emphasis on social reproduction illustrates how the body's value is measured in terms of extractability. The body is the primary link between nature and the production process; the body functions as a conduit for capital through its reproductive and labor capacities. For Barca, exposing the hard, nonfungible line of the human body renders the forces of reproduction visible. These forces are the "(racialized, feminized, dispossessed) subjects who reproduce humanity by taking care of the physical environment that makes life itself possible" (Barca 2020, 1). From Barca's account, we learn of the brutal murders of Brazilian forest defenders Zé Claudio Ribeiro da Silva and Maria do Espirito Santo. Barca's narrative proximity to these human subjects, and the natural resources they sometimes die defending, reminds us of "the fragility of the material world" (Hayles 1999, 49). Despite the interdependency between the relations of production, "capitalism . . . diminishes or annihilates the life-enhancing potentialities of the forces of reproduction" (Barca 2020, 6). Economic growth is contingent on a condition of chronic precarity, but precarity eventually gives way to collapse. As the past two decades have viscerally demonstrated, bubbles *always* burst. If alienation is a "distinguishing trait of the capitalist work-relation", then *de*alienation and degrowth offer a counter manoeuvre (Federici 2014, 135). Specially, de-alienation "focuses on the reconstruction of peoples' relationships with themselves, others, with the fruits of their labor, the labor process, and nature" (Brownhill, Turner, and Kaara 2012). A dealienation of re/production therefore recognizes that the forces of production are vulnerable and finite. Bodies, in their present incarnation, eventually die; machines wear out from abiotic stress; natural resources are depleted. All matter, mortal or machinic, is subject to the irreversibility of time.

To imagine a degrowth model along the lines suggested by ecofeminist socialism, I draw on Nick Dyer-Witheford's "prospectus for biocommunism, a communism emerging from the catastrophes capital now inflicts throughout the *bios*, the realm of life itself" (2022). Dyer-Witheford's formulation envisions six elements essential to biocommunist organization: "new disaster relief systems; opening borders to migrants fleeing calamity; expropriation of capital from crisis-critical industries; rationing of consumption; mobilization of emergency labor; and ecological and economic planning." As Dyer-Witheford (2022) reveals, the current construction of emergency infrastructure is "shot through with authoritarianism and discrimination" to the extent that vital systems cater to commerce. Both Hurricane Sandy and Covid-19 evidence how low-income populations are further marginalized in times of disaster. As a collectivist mode of social reproduction, biocommunism marshals what Nancy Fraser terms a "politics of care" that resists the ways in which capitalism instrumentalizes crisis (Fraser 2016). Dyer-Witheford (2022) suggests both state-led initiatives and communal mutual aid practices to this end. The discursive emphasis on care continues in biocommunism's recognition of the "proletarian nature of global migration." The solution to the refugee crisis is not simply a matter of permitting the "right to move," but also one that enforces a "right to stay" (Dyer-Witheford 2022). The opening of borders must be accompanied by the termination of conditions, like military interventions and ecological malpractice, that motivate migrant flight in the first place (Dyer-Witheford 2022).

Dealienation is baked into biocommunism insofar as it advocates for "new forms of communal ownership [and] the abolition of privatized ownership and production" (Dyer-Witheford 2022). This emphasis on social equalization also manifests in biocommunism's call for rationing as both a limit *and* a promise, as well as in a radical re-thinking of labor. As Dyer-Witheford (2022) asserts, in a biocommunist framing "essential work" is part and parcel of "a

system whose prime directive [is] the social and ecological well-being of its population." In this vision, the elements involved in social reproduction—in Barca's formulation, the "forces of reproduction"—are essential to the means of production. Within a biocommunist framework, domestic labor is refigured as a collective endeavour toward ecological stability. The final element in biocommunism, planning, foregrounds the possibilities in a degrowth model. Specifically, it suggests "a mode of production beyond capital" that would "[trade] off high consumerism for free time, environmental plenitude, social solidarity and species-survival" (Dyer-Witheford 2022).

To further propel both a language and a politics of care, I suggest injecting an anti-eugenic component into the biocommunist framework. I am particularly inspired by Szymon Wróbel's (2020) framing of biocommunism as a process of "population empowerment" in which "power over life is transformed into the power of life itself." A feminist biocommunism, I argue, engages a biopolitics that resists the racist, eugenic principles in technoscientific reproductive technologies. My addition to Barca's and Dyer-Witheford's formulations draws on reproductive justice to highlight the radical dimension of mothering as well as the body's reproductive capacities. Expanding on the biocommunist elements sketched above, a feminist biocommunism seeks to 1) resist the heteronormativity embedded in reproductive technology, 2) cultivate a framework of reproductive justice that endows an equal right to reproduce on one's terms, 3) de-commodify reproductive technology like IVF and egg freezing so that it is financially accessible, 4) advance a rationing of resources rather than a Malthusian approach to population control, 5) envision domestic work and social reproduction as essential work, and 6) marshal a biopolitics that underscores the importance of finitude—that is, a model of planning that attends to the fragility of the material world. Together, these feminist inflections in biocommunism intend to

reckon with the limits of earthly existence. If, as Abou Farman (2021) remarks, transhuman immortality aims to secure post-biological lives, then an emphasis on degrowth and decay endeavors to save life as we know it—that is, life that is predisposed to mortality (248). This work of population empowerment is being undertaken by programs like the California Abundant Birth Project, which provides expectant parents at risk of preterm birth with guaranteed income. As the long history of mutual aid demonstrates, beyond a post-scarcity mindset lies abundance.

To reiterate the ecofeminist claim, there is no degrowth without dealienation. Inasmuch as any feminist politics strives to engage anti-capitalist practices, it must also strive to "[overcome] the existing state of affairs", specifically the strategies dedicated to the regulation of life (Wróbel 2020, 302). This is, according to Wróbel, the charge of biocommunism. My engagement with Wróbel's conception of population empowerment is invested in resisting the longtermist-transhumanist embrace of Malthusianism and in anti-natalist arguments on the Left that see no recourse to ecological preservation. These fatalistic orientations neglect the fact that food security was an issue long before overpopulation emerged as a political ideology. In fact, earlier historical records underscore the problem of low birth rates, compounded by pandemic conditions, particularly as it materialized in the political economy of accumulation and extraction. In the sixteenth century, Europe began to experience population decline because of "the reluctance of the poor to reproduce themselves" (Federici 2014, 86). The population crisis coincided with economic crisis resulting from labor shortages and dwindling trade, for it was not the ruling class that perished at higher rates, but rather the day-laborers. According to Federici (2014), this period of demographic and economic plight sets in motion "the first elements of a population policy and a 'bio-power' regime," including disciplinary methods for procreation (86). This regime is maintained by the discourse of individualism in contraceptive technologies

and by political systems that predispose poor people and ethnic minorities to unsafe and unhealthy conditions, the combined effects of which are reflected in today's falling birth rates.

This is all to say that capital, as an always-accelerating deathless phenomenon, cannot help but create conditions under which population is inherently beset by crisis. A move toward degrowth refigures population empowerment as part of the process of social equalization. A biocommunist approach to population affirms Marx's "hatred for Malthusianism" insofar as it affirms the proletariat's "right to love" (Lefebvre 1995, 140). Although Henri Lefebvre (1995) argues "this hatred was not motivated by a moral principle, and even less by any populationist policy," he admits that Marxist thought is concerned with "the intensification and broadening of life" (140). But the broadening of life seems to suggest very much an interest in population policy, or at least a social metabolism that takes the issue of reproduction into account. To underscore Wróbel's formulation of a biocommunism as an overcoming of state-enforced biopolitics, a broadening of life—a vision of life that is shared with others—resists the eugenic principles embedded in the management of life. To cultivate "the power of life itself," a feminist politics must enforce both degrowth and dealienation. The preservation of life thus hinges on an economy of finitude.

Towards a vital-fatal politics

"Mortal" is a curious word. As a noun, it denotes a human being; as an adjective, it describes the condition of said noun as causing death, or fatal.[35] Etymologically speaking, life can only exist in a reciprocal tension with death. According to Donna McCormack (2021), being is always-already haunted precisely because it is conditioned by time (60). This haunted quality

[35] *Merriam-Webster.com Dictionary*, s.v. "mortal," accessed December 18, 2022, https://www.merriam-webster.com/dictionary/mortal.

in ontology is especially apparent in organ transplantation, where the dead "other" is incorporated into a living body (McCormack 2021, 59). We witness a similar haunting in autoimmune disease, where a once healthy body fails to cohere with the subjectivity it envelops. Even under optimal conditions, there is something already unfamiliar in the relationship between the body and the self. For example, I cannot discern my internal organs from those of someone whose age and lifestyle are similar to mine. As Iris Marion Young (2005) argues, pregnancy "reveals a paradigm of bodily experience in which the transparent unity of self dissolves and the body attends positively to itself" (47). That we are not necessarily privy to our own bodies makes manifest the complex relationship between biology and subjectivity, and between vitality and death.

If the line between life and death is already tenuous, how are we to psychically navigate the terms of living? I find an unlikely ally in Benjamin Bratton (2021), who argues for a *positive biopolitics* that "accepts death as part of life." Similarly, Rosi Braidotti (2013) suggests "an affirmative posthuman theory of death" to expand an understanding of life as one that is interconnected and interdependent rather than singular and autonomous (110). In other words, a posthuman theory of death advances ecological, rather than individualistic, thinking and practice. As I have demonstrated in my analysis of the politics of alienation and potential, to engage in collective thinking and radical mothering is to engage a biopolitical model of degrowth and destruction. Specifically, it is to respond to Achille Mbembe's (2019) question, "[if], ultimately, humanity exists only through being in and of the world, can we found a relation with others based on the reciprocal recognition of our common vulnerability and finitude?" (3). My wager is that such ethical thinking hinges on the body's fragility precisely because flesh creates responsibility (Sobchack 2004, 178); it *binds* us to the Other (McCormack 2021, 67).

That we are bound by a common vulnerability and finitude is supported by urban ecologist Christopher Schell, who was interviewed for a Radiolab podcast episode titled "Cheating Death." The episode's theme originated in producer Maria Paz's enduring feelings of loss and subsequent longing for a life that remained, like a still picture, an eternal present. It is worth quoting their exchange at length:

> *CHRIS SCHELL: But in this reality [of eternal life]? In this reality, nothing's dying anymore. That means that that energy, it's gone. So if we're not getting new energy for new things to grow, we may be at stasis, y'all. That means potentially no new babies, no new life. No change in that system. Because if everything is immortal, then why would you end up having selection for certain traits to allow for those organisms to be better suited for the environment? Why does it matter? They're not gonna die anyway.*
>
> MARIA PAZ: Chris says, in a world where nothing dies ...
>
> *CHRIS SCHELL: Life essentially halts at a standstill. And yeah, everything is alive to exist in this new reality, but it doesn't change. It doesn't morph. It doesn't evolve. It isn't dynamic. The extravagant, extraordinary biomes that we currently have that exist on this planet, they all stop.*

Echoing both Darwin's theory of evolution and Martin Hägglund's philosophy of finitude, Schell reminds us that life as we know it is contingent on heterogeneity, errancy, and death. The human capacity to care, and the earth's capacity to evolve, is incompatible with homogeneity and deathlessness. As Schell illuminates, to exist in an eternal present is to remain motionless.

I now turn my attention to the comingling of life and death as it manifests in the mortal gestating body to develop a vital-fatal body politics. I focus on the body's capacity to gestate to

problematize gender and sex-specific social and health conditions. My intention is to identify a thread between xenofeminism and ecofeminism in thinking of the body-as-technē.

Pregnancy is a violent process; it is, unequivocally, much more dangerous to the future (or would-be) mother than abortion.[36] Gestation and delivery involve myriad health risks, including hypertension and diabetes, as well as ectopic pregnancy and excessive bleeding, both of which can be life-threatening. Such risks are disproportionately magnified for low-income mothers, and even more so for Black mothers, who are more than twice as likely to die during pregnancy (Hoyert 2023). This insight is not meant to reduce the psychic and physical pain of those gestators who face difficulty when attempting to conceive. However, it is intended to expose the destruction inherent to reproduction, particularly as develops under the conditions of racialized and privatized healthcare. In addition to the systemic violence embedded in pregnancy, the biological (but not necessarily human) process responsible for the creation of life is an inherently violent ordeal. Julia Kristeva (1981) remarks, pregnancy is experienced as "the splitting of the subject: redoubling up of the body, separation and coexistence of the self and another, of nature and consciousness, of physiology and speech" (31). Crucially, the splitting and redoubling required in the making of life happens unconsciously.

In order to conceive and carry a fetus to term, the gestator's immune system must be defeated by the placenta, a temporary fetal (and therefore, foreign) organ that begins to develop after implantation. In the process of downregulating the immune system, the placenta's tendrils attach themselves to the uterus to transfer blood between mother and foetus (such an image conjures the cosmic Cthulhu). This process demonstrates the technological capacities inherent to the human body, in turn animating what Braidotti (2013) calls the "immanent force of *zoē*, or life

[36] I use "mother" in addition to "gestator" to acknowledge the history of women's bodies as primary sites of reproduction as well as social constructions of reproduction.

in its nonhuman aspects" (66). The placenta's life-giving force illustrates the comingling of the human and the nonhuman in mothering. Considering that mammals likely evolved from egg-laying to live-birth because of an ancient retrovirus, we might begin to think of the placenta as the original prosthesis, or even the original mother (Radke and Bressler 2021). The nonhuman martyr, as it were, marshals destructive methods for life-giving ends. And yet, the cultural fetishization of the child as a symbol of (and for) the future conceals the destruction essential to the creation of life. Like transhuman immortality, such a narrative is predicated on endless potentiality, rather than finitude, in the puritanical vision of procreation.

As I concluded in the previous chapter, contraceptive technologies have reinforced a politics of potential to serve the interest of the market. Long-acting reversible contraception has been widely deployed as methods for population control while espousing a discourse of freedom. Inasmuch as birth control affords women reproductive agency, it also reinforces a biopolitical model that endeavours to spare the state from unplanned (i.e., undesirable) pregnancies. In so doing, contraceptive technologies have aided the biopolitical project that prevents some lives from being born "so that future others might live more prosperously" (Murphy 2017, 114). To reiterate Michelle Murphy's astute analysis, proponents of birth control believed that preventing the births of poor people would halt the spectre Communism (2017, 35). Together, the discursive emphasis on individualism and the biopoliticization of agency, made manifest through technologies like birth control, serves the aims of capital.

I turn to Sophie Lewis, who builds on the feminist Marxist call for family abolition to disengage from the discursive emphasis on alienation, individualism, and potential as it manifests in reproduction. Lewis examines surrogacy to identify the myriad ways in which the gestational body is alienated from the product(s) of its labor, but gestation in all forms (whether

surrogated or not) is oftentimes an alienating experience. As engagements with Foucault's biopolitical framework demonstrate, the clinic is responsible for both medicalizing pregnancy and pathologizing women's bodies.[37] For this reason, medicine and public health participate in the social construction of the child-as-future metaphor, often at the expense of maternal wellbeing. Lewis suggests we shift our ideological orientation toward gestation from one that reinforces privatization to one that takes a decolonial approach. Full surrogacy describes the "[cultivation of] non-oedipal kinship and sharing reciprocal mothering labors between many individuals and generations" (Lewis 2019a, 314). Lewis identifies queer co-parenting, mutual aid, and open adoption as methods for resistance against the commercialized, heteronormative model of familial relationships. I see such methods as manifestations of a feminist biocommunism, particularly in the way they radically re-envision parenting models and domestic labor.

Lewis's (2019a) argument is structured primarily around abolition rather than destruction, and I find her somewhat throwaway remark that considers the world-destroying potential in gestation particularly motivating (167). What politics and world-making arise from dreams of destruction? Can a greater focus on death and degrowth create more equitable living conditions for humans and nonhumans? Such questions begin to carve paths for what Bratton calls a *positive biopolitics* that resists the trap of techno-utopianism (a major flaw in much of Bratton's thinking). To this end, I suggest a reconfiguration of procreation as not only a human right, as reproductive scholars have long held, but also inextricably tied to death insofar as it is conditioned by the mortal body. Although procreation has historically sustained labor power (in

[37] See Clarke, Adele. *Disciplining Reproduction: Modernity, American Life Sciences, and "the Problems of Sex."* Berkeley: University of California Press, 1998; Schuller, Kyla. *The Biopolitics of Feeling: Race, Sex, and Science in the Nineteenth Century*. Durham, NC: Duke University Press, 2018.

turn, sustaining capital), the combination of social reproduction and class struggle has advanced social infrastructure like healthcare and welfare programs (Thorburn 2015, 10). In this way, social reproduction sustains life itself through a politics of care. Gestation is, therefore, always concerned with the means of reproduction. We come into the world because some*body* goes into labor.

The Left's embrace of anti-natalism as both a moral and ecological imperative, aside from its turn toward a self-imposed eugenic fatalism (as opposed to a vital-fatalism), neglects both the gestating body's world-destroying capabilities and the role that gestation plays in health. In an interview with *Time* magazine, Toni Morrison exposes the discontinuity between the body's reproductive phases and the socially accepted age at which people ought to reproduce (Angelo and Morrison 1989). Morrison laments that the body's reproductive capacity is tethered to the economy: the body's "nature"—that is, its technē—can only be realized if a person's income can afford to procreate. The social imagination around reproduction, as Morrison underscores, is driven by ruling class interests. Morrison's vision, in which she describes the possibility for young mothers to also lead fulfilling professional lives, animates the destructive potential in gestation. To dissociate the body, and the process of reproduction, from the market is both life-affirming and world-destroying insofar as it challenges the fixity of the body politic. To reinterpret a xenofeminist refrain, let the proletariat—in all its gender configurations—bloom!

My argument for a vital-fatal body politics also recognizes that gestation and birth play parts in reproductive health and emotional wellbeing. For women who suffer from autoimmune disease, pregnancy has been shown to alleviate symptoms by downregulating the immune system (Radke and Bressler 2021). New research reveals that nulliparity, the medical term to describe a woman who has never given birth, increases women's risk of developing uterine fibroids and

certain cancers (Bologna 2022; Jondle 2020). Gestators who engage with midwives and doulas in place of, or in addition to, biomedical health experts may feel more empowered and more connected to their bodies and communities, particularly if one's care team is trauma-informed (LoGiudice et al. 2023). To be sure, and as I mentioned earlier in this section, the process of bringing life into this world is not without risk. But it is risk that underlines our feeling of responsibility to others and the world. An equal emphasis on vitality and finitude reinforces the temporal, collective condition of life. Inasmuch as reproduction grounds humanity's "right to stay", it also sets the finite terms of life. For this reason, life-affirming principles and practices must strive to secure both an equal right to live and an equal predisposition to die.

As the entanglement of life and destruction in pregnancy demonstrate, the body is always-already technological to the extent that it is natural (which is to say that it is socially constructed). The body's natural technological capacity, however, suggests new ways of thinking about nature beyond human construction, entrapment, and alienation. For this reason, we might begin to reconsider nature as a force of *zoē*, and as such, a means for destabilizing presuppositions associated with the "human." Against the metanarrative suggested by discourse that separates nature from culture, Braidotti (2013) urges us to engage with "a materialist, vitalist, embodied and embedded" theory of posthumanism (50). This iteration of posthumanism "avoid[s] the contempt for the flesh and the trans-humanist fantasy of escape from the finite materiality of the enfleshed self" (Braidotti 2013, 90). Along this line of thinking, a vital-fatal body politics understands nature as an instrument for population empowerment. It finds the largely automatic and somewhat nonhuman processes in gestation at once destructive and life-affirming.

Last words

Part of the work of what has been historically described as "intellectual labor" is reinterpreting and stewarding aging ideas so that they continue to generate meaning. Some ideas age better than others; as I have demonstrated, critics of transhumanism have revealed its political baggage, particularly its eugenic lineage and apparent trajectory. I realize that my application of a feminist politics aligns with earlier waves of feminist scholarship that emphasizes embodiment as much as it does with thinkers associated with xenofeminism—or perhaps it is more accurate to say that I find xenofeminism and earlier feminisms equally problematic. As much as I am moved by Arendt's (1954) framing of natality "as a miracle that saves the world," I realize that this sentiment could be wielded by political reactionaries who value women only for their reproductive power (247). Moreover, Arendt, like many Western philosophers, places stock in a dialectics of freedom through action (made manifest "by virtue of being born"), without much attention to the social construction of gender and the way it manifests in labor practices and politics in general (Arendt 1954, 247). In the same spirit of critique, we would do well to remember that anti-naturalism has also leveraged political decisions permitting the widespread use of forever chemicals insofar as gambles on the body's adaptability for the purpose of prolonged extraction. And while I see emancipatory potential in gender hacktivism, my fidelity lies with corporeality—not the corporatization of life materials. Historically, imperial, colonial, and patriarchal powers reap the rewards of biological manipulation. For this reason, we ought to seek and demand grounds for mutual responsibility rather than claiming territories of freedom.

I am tempted to further distance myself from the conservative pro-life agenda, but I hope my devout allegiance to the Communist cause has proven that my argument is not sympathetic to

puritanical thinking. Rather, I have endeavoured to articulate a natalism against the eugenic pro-life ideology that continues to imbue political and moral structures. My understanding of life as intimately tied to death has intended to combat the neoliberal emphasis on potential and alienation embedded in technoscience. In other words, it has sought to underscore "the expressive intensity of a Life we share with multiple others, here and now" (Braidotti 2013, 190). My lot is cast with those who share a sense of responsibility to the material world.

… Some years ago, my mother was talking about the things I said as a child. My youthful neologisms were innocent, but I experienced intense embarrassment from the memory of behaving foolishly and from the fact that the memory stirred in my mother what I interpreted as a mocking glee. I can't remember the exact exchange before she said, "We had fun together, didn't we? I think you had a good childhood." I think I said that I didn't like to think about the past. Dejected and hurt by this unexpected remark, my mother turned silent.

In the years since that conversation, I have felt deep regret over my response. Although I felt that my mother appeared to take pleasure in humiliating me, I acted ungenerously in the moment. Looking back, I wonder if my mother even intended to embarrass me or make me feel anything but loved.

If I could turn back time…

How heartbreaking it is to know we'll never truly understand another person, or even ourselves. How vital.

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