

Human Aging and Entropy

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“No man who lives long can escape old age: it is an unavoidable and irreversible phenomenon.”

Simone de Beauvoir

Abstract:

In this paper I argue that the contemporary pathologizing of old age is directly tied to the notion of uselessness, understood entropically as that which cannot contribute energy for useful work. The elderly are configured as socially useless and thus presumably threaten the health and longevity of the body politic. As a result, they are marginalized, ignored, and treated as waste to be jettisoned from the system. Because understanding bodies as machines able or unable to perform work accords with the second law of thermodynamics, the first half of this paper discusses entropy as both scientific law and philosophical concept and how it works to shape human aging as a societal danger. The second section explores the lived experience of aging and the pathologized position of social uselessness through Simone de Beauvoir’s analysis of old age. As she herself ages, the place of senescence comes to play a more pronounced role in her philosophical inquiry. Writing about the lived experience of aging adds a vital dimension to the scientific and philosophical perspectives, as it foregrounds the various ways that entropy is felt: slowing, dissipating, and ultimately dying. While these should be viewed as part of the normal life cycle, they become markers of abjection which are judged harshly against the standard of social utility.

Keywords: Entropy, Entropics, Age Studies, Old Age, Simone de Beauvoir

In January 2023, *National Geographic* ran the story, “Living Longer and Better: How Science Could Change the Way We Age.” The article follows several different scientists and companies racing to develop anti-aging medications and therapies. Rapamycin, metformin, and acarbose are among the numerous drugs tested in a blooming industry seeking to “hack the aging process itself by reprogramming old cells to a younger state.”¹ Billions of dollars are currently flowing from Google’s Calico Life Sciences, tech moguls, crypto millionaires, the Saudi royal family, and other entities devoted to various scientific endeavors striving to optimize human longevity. This accelerating trend in health care promises all of us prolonged life and mitigation of disability. The guiding myth peddles the idea that if enough dedication, money, and resources are thrown into the problem, humanity might just beat entropic inevitability yet.

The maximum lifespan for a human being tops out around 120–125 years. The race is on to increase the number of people able to reach that age and even to extend the maximum lifespan beyond it. On a more moderate scale, the anti-aging industry strives to make aging healthier and more comfortable as greater numbers of people experience longer lives without the expansion of mental and bodily enjoyment. However noble the easement of the pain of aging may be, there are many concerns about the motivations behind this quest and access to available treatments. Three issues remain largely unaddressed in these developments: 1) who benefits from these potential advancements? Clearly these pills and procedures will not be available to all human beings equally, 2) why would we seek to advance human aging in a time of obvious global climatic crisis and environmental decline? 3) a largely ignored problem, lies in the undercurrent of this frenzy: the pathologizing of aging as such. As Barbara Ehrenreich notes, in the 20th century, “medical science began to think of aging as a kind of disease as opposed to a normal stage of the life cycle.”² If the hunt is on to find a cure to aging, then aging can only be seen as a sickness to treat and eradicate. This paper explores some of the considerations that must be taken into account to address this problem from an entropic perspective. The elderly serve as an important cross-section of many populations that suffer from the entropy-denying and entropy-accelerating practices rampant in late-stage capitalism. The elderly are forced to work longer, spend waning or nonexistent money for self-care (from the most banal cosmetics to the most extreme life-saving technologies and medicines) and are made invisible through marginalization.³ Additionally, the affective experience of living decline is vital to being honest about what it means to be a person aware of inescapable waning and what is at stake in the profound anxiety surrounding an inevitable biological progression.

1 Fran Smith, “Living Longer and Better: How Science Could Change the Way We Age,” *National Geographic*, January (2023): 42–43.

2 Barbara Ehrenreich, *Natural Causes: An Epidemic of Wellness, the Certainty of Dying, and Killing Ourselves to Live Longer* (New York: Twelve, 2018), 171.

3 For rich discussions on the complexities of these issues and how they affect those in precarious positions, see, for example, Karen Ball, “Losing Steam After Marx and Freud,” *Angelaki* 20, no. 3 (2015): 55–78; Jasbir K. Puar, “Coda: The Cost of Getting Better: Suicide, Sensation, Switchpoints,” *GLQ: A Journal of Lesbian and Gay Studies* 18, no. 1 (2012): 149–158; and Lauren Berlant, “Slow Death (Sovereignty, Obesity, Lateral Agency),” *Critical Inquiry* 33, (2007): 754–80.

Entropy is a multivalent concept in scientific, philosophical, and literary registers. Human aging is a process that requires all these perspectives (and more) to fully explore its significance. While this paper cannot be an exhaustive treatment, it contributes to the modern critique of the shunning of senescence. I argue that the contemporary pathologizing of old age is directly tied to the notion of uselessness, understood entropically as that which cannot contribute energy for work. Populations that are unable to perform useful labor—and the elderly are quite possibly the largest group this affects—are configured as a threat to the health of the body politic. As a result, they are marginalized, ignored, and treated as so much waste to be jettisoned from the system. They become part of what Karyn Ball describes as, the “disheartened *precariat* running on empty [functioning] as the latest expendable product of asocial-individualism.”⁴ Because understanding bodies as machines able or unable to work coincides with the second law of thermodynamics, the first half of this paper discusses entropy as both scientific law and as philosophical idea, and how it shapes human aging as a societal danger. Once utility becomes coupled with health, and health with productivity, aging becomes a kind of sickness that threatens the smooth working of the machine. As such, old age is either something to ignore (as it will ultimately take care of itself) or something to remedy. This attitude, however, only exacerbates the precarity of those who are forced to live in society’s shadow lands.

The second section takes up the lived experience of aging through Simone Beauvoir’s analysis. While she only obliquely addresses the pathologizing of age, she provides an important voice in understanding how this happens through the othering of the elderly.⁵ As she herself ages, the place of old age comes to play a more pronounced role in her philosophical inquiry. This last stage brings to the foreground the various ways that entropy is felt: slowing, dissipating, and ultimately dying. While all stages are normal in a full life cycle, old age is judged harshly and lived poorly against the standard of social utility.

Part One: Entropy is Inevitable

The discovery of the entropy law has had profound effects on multiple expressions of human knowing and self-understanding. Although the amount of energy in the universe remains constant, disorder increases over time, inexorably leading to what Boltzmann called, the “heat death” of the universe. Eric Zencey has argued that entropy functions as a contemporary root metaphor working its way into our interpretations of a vast array of economic, psychological, social, and natural phenomena. From a psychological point of view, it represents a “fourth” blow to humanity’s narcissism (alongside Copernicus,

4 Ball, “Losing Steam,” 69.

5 For a discussion of how Beauvoir’s philosophy relates to the idea of pathologizing, see Shannon M. Mussett, “Simone de Beauvoir,” in *The Oxford Handbook of Phenomenological Psychopathology*, Andrea Raballo, Matthew Broome, Anthony Vincent Fernandez, Paolo Fusar-Poli, René Rosfort, and Giovanni Stanghellini (Oxford: Oxford University Press, 2020).

Darwin, and Freud), while from an economic standpoint, it has contributed to the impossible demand for not just constant but accelerated growth.⁶ Karl Marx and Friedrich Engels showed how the laboring body can be understood as a machine vulnerable to entropic decline. Sigmund Freud demonstrated how entropy functions as an unremitting drive toward stasis. Implicit, but not fully developed in all these treatments, is a description of the experience of living time entropically, specifically as a body/machine that breaks down and becomes socially useless.

In general, thermodynamics is the science of work understood in terms of heat and energy. The first law tells us that while matter and energy can neither be created nor destroyed (only changed), the second law informs us that heat ultimately moves from hotter to cooler temperatures, and that matter eventually moves from more complex to more homogenous states.⁷ While the quantity of energy remains constant, its quality degrades from low-entropy (and therefore useful) to high entropy (and thus useless). This means that encountering ordered configurations of low entropy are rare in the universe and warrant careful consideration. Human beings fall squarely into this category.

In the mid-twentieth century, Claude Lévi-Strauss famously noted that anthropology would be better named “entropology” because of the terrifying and depressing tendency of humanity to reduce the diversity of flora, fauna, and cultures into degraded, homogenous sameness. More technologically advanced societies usher in this destructive force at a level of acceleration matching their supposed sophistication. The more culturally “developed,” the greater the annihilation of diversity. This means our conceits of advancement are nothing more than perfections and accelerations of entropic dissolution. The science of entropy is not enough to critique this phenomenon. Science and philosophy must work together to understand why humanity not only functions in the natural order of entropic decay but increases it considerably to its own detriment.

Drew M. Dalton’s recent article, “The Metaphysics of Speculative Materialism: Reckoning with the Fact of Entropy,” takes speculative materialism to task for its general failure to account for the findings of contemporary empirical science. Dalton moves to correct this oversight in the development of a “new metaphysics of absolute reality upon which philosophy can reestablish its classical aim and projects”⁸ by turning to the laws of thermodynamics, in particular, the entropy law, which he coins the “absolute law of existence.” Entropy’s lawfulness is uniquely absolute in the assertion of energy toward equilibrium, dissipation, and disorder. Pointing to the theory of Quantum Thermodynamics, Dalton

6 Eric Zencey, “Entropy as Root Metaphor,” in *Beyond Two Cultures: Essays on Science, Technology, and Literature*, ed. Joseph W. Slade and Judith Yaross Lee (Ames: Iowa State University Press, 1990).

7 See Brian Greene, *Until the End of Time: Mind Matter, and Our Search for Meaning in an Evolving Universe* (New York: Vintage Books, 2020), 26.

8 Drew M. Dalton, “The Metaphysics of Speculative Materialism: Reckoning with the Fact of Entropy,” *Philosophy Today* 66, no. 4 (2022): 6.

notes that physics may very well be on the cusp of grasping the ever-elusive Grand Unified Theory. As such, it is best for any philosophy seeking to align itself with empirical science to be grounded in thermodynamics.⁹

Speaking directly to the phenomenon of life, a curious, perhaps surprising theory emerges. Life is often conceived as a peculiar manifestation of a struggle *against* entropy. Organisms maintain integrity *despite* the fact that matter constantly and relentlessly tends toward breakdown. Life, through this commonly applied interpretation, appears as almost miraculous islands of stability amidst the general tendency toward instability. However, contemporary biology has revealed that formulating life as anti-entropic is wrongheaded. In reality, the laws of thermodynamics reveal that that:

the material function of living things is best defined as nothing more than dissipative catalysts within that system, little more than the effective agent of the transformation of relatively low entropic states (like matter) into relatively higher entropic states (like heat). We are, from this perspective, merely entropic machines: the most efficient way in which the universe can break down energy into its simplest form to be distributed evenly across the cosmos.¹⁰

In other words, life is not anti-entropy, but rather, a particularly effective facilitator of it; an idea that harmonizes with Lévi-Strauss's theory of entropology but with less emphasis on the melancholy conclusions for humanity. While life is obviously at the mercy of disease, aging, and death, these very phenomena are the facilitators of entropic decay and catalyzers of life. Life emerges from decay which is "its *secret heart* and *ultimate essence*. Indeed, in this regard, entropic dissolution appears to be the *primal cause, motivating power, organizing structure, and eventual end* of all that we are."¹¹ Taken one step further, the harder we try to stave off entropic decline, the more we play into the thermodynamic movement toward heat death. Here is where I locate the convergence of aging labor, capitalism, and the entropy law. Life is indeed an effective facilitator of entropic decay and Dalton is correct that any contemporary philosophy that engages science must take this into account. Fighting against entropy—as we find in the ubiquitous anti-aging industry—is a losing battle. What's more, however, neglecting to take this fundamental law into account in the mindless push to use up all resources as fast and as wastefully

9 This insight is what leads Dalton's call for speculative materialism to ground its insights in thermodynamic decay. This nihilating principle would be the ground of being itself, rather than its threat or denial.

10 Dalton, "Speculative Materialism," 11. Greene notes how life is one among many of the transient structures that form in the universal march toward greater entropy. "For all their majesty, these orderly arrangements are nature's workhorses, harnessing gravity and the nuclear forces to drive the cosmos toward realizing its entropy potential" Greene, *End of Time*, 59.

11 Dalton, "Speculative Materialism," 13.

as possible only hastens planetary demise which is unnecessary and clearly nihilistic. Where I want to redirect the conversation, however, is to emphasize that human society can think carefully about the ways in which we function as entropy machines. Because we inevitably use energy and produce waste does not necessitate that we diabolically accelerate it nor that we force vulnerable populations to shoulder the burdens of waste and loss while others remain relatively unscathed.

Clearly, it would behoove us then to take seriously the laws of thermodynamics when doing philosophical analyses. Strict philosophy of science or even materialism isn't necessarily required. However, acknowledging that entropy shows us on the macro and micro levels that useful energy is limited, systems require energy to maintain themselves, no system is fully self-perpetuating, and therefore all systems—at the largest cosmic to the smallest subatomic scale—will eventually decay. Entropy increase is inevitable, and the future will always be a state of higher entropy than the past. As Brian Greene explains, “the first law of thermodynamics declares that the quantity of energy is conserved over time, the second law declares that the quality of that energy deteriorates over time....the energy powering the future is of lower quality than that powering of the past. The future has higher entropy than the past.”¹² This scientific law pertains to all life, even entropy-denying human beings. Ideally, foregrounding this truth would open ethical dimensions of responsiveness and care, especially with those most exposed populations who have the least access to support and are often positioned as human waste.

Anyone who lives long enough will undergo old age and disability. Entropy, as the measure of the movement toward disorder and uniformity, is thus a necessary component to understanding the science of aging. Given that any organism exists in an open system (sharing energy and waste with its environment) aging will involve a complex exchange of energies that ultimately leads from a state of systemic and metabolic order toward the opposite state. A system defined in a thermodynamic sense “can be formulated as a collection of elements, or agents, constituting the system along with those elements that constitute the system boundary.”¹³ Thus aging must be viewed not only as the effects of thermodynamic movement toward equilibrium within the system of a body but also insofar as the body and its boundary relates to its surrounding environment in an open exchange of energy and waste. Senescence and death would be the ultimate breakdown of the system boundary and its surrounding environment. Gavin J. Andrews and Cameron Duff define organic aging in an open system “as the initial generation and later degeneration of its order.”¹⁴ The authors go on to detail the necessity of understanding aging on multiple scales, ranging from individual lifespans and biological changes in themselves and as they relate to the organic and material environment. Taking an approach that

12 Greene, *End of Time*, 34.

13 Atanu Chatterjee, Georgi Georgiev, and Germano Iannacchione, “Aging and Efficiency in Living Systems: Complexity, Adaptation, and Self-Organization,” *Mechanisms of Ageing and Development* 163, (2017): 2.

14 Gavin J. Andrews and Cameron Duff, “Opening Out Ageing: On the Entropy of All Things,” *Transactions of the Institute of British Geographers* 47, no. 3 (Sep 2022): 667 DOI: 10.1111/tran.12519

involves the human, organic, and inorganic world is crucial to understanding human aging “as a more-than-human performative production.”¹⁵ Entropy is therefore the primary theoretical foundation for any study of aging as living and non-living systems not only interrelate, but all move at varying rates from low to high entropy states. Any consideration of the effects of entropy on aging humans must therefore take into account increasing entropy in all dimensions of human life: economic, social, cultural, as well as technological, natural, and material. This means that singling out older people as energy drains and therefore uniquely problematic to the body politic is not only pernicious but scientifically unsupportable.

Cara New Daggett’s recent work on energy humanities focuses on the “energetic turn” in contemporary western conceptions of labor. Using thermodynamics, and the entropy law in particular, Daggett argues that the unit of “energy” is a recent invention used to mark the shift toward *productivity* and *efficiency* as the sole registers of value in modern labor practices (and ultimately of all the Earth’s resources). Just as Zencey argues that entropy emerged as the dominant root metaphor, Daggett traces the energy metaphor which promotes unlimited progress across all inorganic, organic, technological, and human embodied practices. Bodies, technology, and the very earth itself are organized as energy to be mined, exploited, and maximized. Regarding human labor, the energy framework establishes overwork and underwork as social ills around which a great deal of capitalist anxiety congeals. Overwork is handled through the incessant emphasis on finding and maintaining energetic balances of energy input and output. Workers are understood as machines needing periodic energy tweaking and adjusting to maintain productivity. While overwork is a problem veiled under ethical concern, underwork is a far graver threat, “feared as a veritable scourge on civilization, and one that appeared much more intractable. Here were energy sinks, sites where energy sat unused or, worse, was frittered away, wasted.”¹⁶ Here is where we find not only the fears surrounding laziness, unfair distributions of resources, or social unrest, but also the obsession with how to force underperformers to increase their contributions to the social yield. The crux of the problem lies on how to increase energy output while contributing as little energy as possible in the equation. When dealing with young, able-bodied, and cognitively vigorous workers, this dilemma is less urgent as the social precarity of having to make a living carries its own punitive weight. But disabled, cognitively impaired, and older bodies are much harder to force into this form of energy accounting. To put it succinctly, old age poses a significant problem to the “preference for constant motion, action, dynamism, growth.”¹⁷

The entropy of old age is inevitable and irreversible, yet it appears as the quintessential threat to progress and growth. This is why the aging laborer is the object of hyper-fixation. The ethical position

15 Andrews and Duff, “Opening Out Ageing,” 673.

16 Cara New Daggett, *The Birth of Energy: Fossil Fuels, Thermodynamics, and the Politics of Work* (Durham: Duke University Press, 2019), 96.

17 Daggett, *The Birth of Energy*, 18.

of attention and care encourages us not to shun or ignore this inevitability, but to bring it into the fold of normalcy. This is not the custom in capitalist ideology which instead conceives of senescence as an abnormality. Old age is not understood as ineluctable or natural but rather fearful and potentially curable. The mythology of old age as a disease that medicine and technology can cure produces two particularly dangerous ideas. One centers around the belief that decrepitude be mollified or even reversed. This conviction emphasizes that cells can regenerate, systems can not only stave off breakdown, but they can actually *revert to younger states*. Chasing after these elusive elixirs of youth is of course the pastime of only those privileged with the time and material means to pursue them. Most humans will be necessarily shut off from the self-absorbed whims of this tiny elite. Yet, the neg-entropic ideology they promote spills over into the general sense that old age is a disorder, and one that only a select few will be able to reverse. The second idea is an offshoot of the first. Since cures are evasive, they must be protected from those who cannot and *should* not have access to them. These people fall in to the stereotype of what Jessica Bruder calls the “greedy geezer,” a bogeyman who takes more than they should in terms of leisure and material wealth, “while draining the lifeblood from younger generations.”¹⁸ Whereas the ultra-privileged have the right and even duty to reverse the sickness of age, the rest are meant to suffer the inevitability of decline without so much as asking for access to resources lest they be viewed as robbing future generations of their scarce supplies.¹⁹

What benefits from this, is of course, capitalism, the great anti-entropic engine rooted in an ideology of infinite expansion without the production of unrecyclable waste. Instead of taking the lawfulness of entropy to heart as Dalton above suggests, we live in an age in which science, business, and medicine collude in the overt denial of this law. None of these assumptions are sustainable and all are ultimately obscene. As Greene reminds us, “we are all waging a relentless battle to resist the persistent accumulation of waste, the unstoppable rise of entropy. For us to survive, the environment must absorb and carry away all the waste, all the entropy, we generate.”²⁰ However, in the system of the planet, utilizable energy and sustenance are limited, and waste can never be recycled completely without producing even more. Reversing the inevitability of decline and age therefore necessarily blows through scarce resources and produces more waste than it recuperates. If we paused and questioned our incessant judgment of humans as either useful or useless, these destructive practices could be mitigated. If we stopped producing senescence as an aberration, we could embrace the entropic inevitability of physical decline

18 Jessica Bruder, *Nomadland: Surviving America in the Twenty-First Century* (New York: W. W. Norton & Company, 2017), 67.

19 Teresa Ghilarducci notes that this view of the elderly plays right into the false consensus that old people should work as long as they can before retirement for their own benefit and for the good of society. Otherwise, the fear goes, they will take away resources from younger generations. Teresa Ghilarducci “Making Old People Work: Three False Assumptions Supporting the ‘Working Longer Consensus,’” *Politics & Society* 49, no. 4 (2021): 562. Not only is there no evidence that the elderly are vampires on the young, Ghilarducci shows the many ways that social services across ages produces intergenerational health as the wealth is shared among rather than siphoned off by age groups.

20 Greene, *End of Time*, 42-43.

as normal and therefore worthy of care, time, attention, and shared resources. To facilitate movement in this direction, the lived experience of aging must be added to the discussion.

Part Two: Aging is Inevitable

There are multiple ways to take entropy into account when dealing with inevitable biological decline. Matter is neither created nor destroyed, but whether energy coalesces into relatively bounded structures such as stars, mountains, or bodies, or dissipates into homogeneity determines its value from a human perspective. Human aging is both a physical and a psychological experience. Physiologically, “with advancing age, bodily processes slow down, such as metabolic cycles, food absorption rate, respiration rate, blood flow, etc. thereby reducing the action efficiency of the system as a whole.”²¹ There is no possibility of maintaining systemic integrity in perpetuity due to the constraints within and outside of a bodily system. Psychologically, these physical changes can be undergone through a variety of attitudes, many of which are contingent upon the situation of the aging individual.

All organisms die and aging is inevitable. If we live long enough, old age is inevitable too. Why, then, is it treated, as Beauvoir notes, “as a kind of shameful secret that ... is unseemly to mention”?²² Going one step farther, why is it understood as a kind of disease that can *and should* be cured? Where does the ground get primed for this conception of, what Beauvoir calls “that normal abnormality”?²³ As addressed in the previous section, science and philosophy are vital angles in understanding the phenomenon of human aging. But aging is also a lived experience, and one that varies widely depending on the time and place in which it is undergone. Beauvoir’s existential analysis of the phenomenon of old age from both objective and subjective standpoints aids in teasing out the relationship between entropic thinking and the marginalization of those deemed socially useless. She maintains that no system of thought can ever adequately name and alleviate a problem unless it also takes into account how the problem is lived by those most directly affected by it. Old people under late-stage capitalism are cast aside the moment they no longer offer any form of use value, regardless of what they may have contributed earlier in life. This, for Beauvoir, is an unethical and unsustainable condition.

21 Chatterjee, Georgiev, Iannacchione, “Aging and Efficiency,” 4.

22 Simone de Beauvoir, *The Coming of Age*, trans. Patrick O’Brian (New York: W. W. Norton & Company, 1996), 1. I maintain the English translation of *La vieillesse* as *The Coming of Age*, in the footnotes, but refer to the book as *Old Age* in the paper as this is a more accurate translation.

23 Beauvoir, *The Coming of Age*, 286.

Life is an unstable system undergoing constant change and physical breakdown signals perceptible energy loss. Systemic balance is only temporarily achieved because organic matter is in constant flux. Age is, however, a particular kind of change: “an irreversible, unfavorable change, a decline.”²⁴ As Beauvoir remarks, this assertion implies a value judgment regarding how we understand decline. Much like the vague horror evoked by the thought of universal heat death, “old age looms ahead like a calamity.”²⁵ Even the mere thought of old age is existentially unsettling. Unlike the other animals for whom aging is less dramatic, our metamorphosis is, according to Beauvoir, a complete transformation. This is because we are self-aware of how this unidirectional process works. While the human body begins a kind of “retrograde” alteration at a relatively young age, such slackening is not necessarily a universally negative phenomenon. This is because for human beings, “the body itself is not in a purely natural state; it can compensate for loss, deterioration and failure by various adjustments and automatic responses, by practical and intellectual knowledge.”²⁶ Where certain physical changes move toward slowing and cooling, entropics teaches that degradation in one system often lends energy to others. It is a gross oversimplification to assume that biological aging (rather than death) is a thorough and total systemic breakdown. Systems can borrow and lend energy to each other in direct, indirect, and novel ways.

Zencey explains that “in one of its more accessible guises, the second law of thermodynamics holds that energy spontaneously degrades from more useful to less useful forms, even if it accomplishes no work in the process.”²⁷ What counts as work, of course, is of central concern. In capitalism, work is necessarily that which can be commodified—energy bought and sold to the highest bidder and paid for at the lowest cost. For a host of reasons, this discounts many of the activities that humans do to better themselves, their families, and their communities. As a result, most old people in these societies face aging with fear and despair over the very real possibilities of untreated physical ailments, poverty, and loneliness.²⁸ While these concerns are at the vanguard of Beauvoir’s voicing of the shame surrounding aging, the underlying problem can be encapsulated by the pathologizing of old age through an overt denial of entropic decay.

24 Beauvoir, *The Coming of Age*, 11; see also 37. Throughout the book Beauvoir is emphatic that “the word decline has no meaning except in relation to a given end—movement towards or rather from a goal” *The Coming of Age*, 86. In other words, there is nothing inherently repugnant about decline except insofar as it is socially categorized to be such.

25 Beauvoir, *The Coming of Age*, 5.

26 Beauvoir, *The Coming of Age*, 12. Beauvoir observes that with the industrial revolution and the rise of capitalism, old age suffers from profound discreditation. This is because “modern technocratic society thinks that knowledge does not accumulate with the years, but grows out of date. Age brings disqualification with it: age is not an advantage” Beauvoir, *The Coming of Age*, 210.

27 Eric Zencey “Some Brief Speculations on the Popularity of Entropy as Metaphor,” in *The North American Review* 271, no. 3 (1986): 6.

28 The ways in which capitalism is deeply entwined with the abject othering of the aged was not lost on Beauvoir’s analysis. It forms a central component of her discussion in *Old Age*.

Beauvoir studies aging as a decline and general slackening of energy on an existential and physical level most directly in *Old Age*, her last systematic philosophical treatment of an othered population. Like woman in *The Second Sex*, the old person is pushed to the margins of society—neither fully human, nor fully object. But this role provides no social utility and is thus unlike women who prop up patriarchal power. Woman’s role is ambiguous—praised, feared, hated, and adored—but always useful. However, the old person is almost entirely shunned because they provide no clear use value. In fact, they are not only valueless but perceived as a sap on younger populations. As a result, old age fills us “with more aversion than death itself;” it is “old age, rather than death” that is life’s real opposite.²⁹ In part, this is because the old person, significantly, *can no longer provide meaningful labor*, and thus becomes “a useless mouth to feed.”³⁰

The observation that old people are comprehended by society as useless due to their incapacity to provide socially exploitable labor is a primary theme of her play, *Useless Mouths*. There she observes the inclination to regard old age as one kind of disease that threatens the scarce resources of the common good. In the play, the socially useless are literally excised from society. Children, women, the infirm, and the elderly are cast out of the fictional medieval town of Vaucelles in a cruel attempt to extend dwindling rations until spring when reinforcements are anticipated. It is significant that the category of “useless mouths” is so broad in this play because it accentuates the overly narrow interpretation of utility based on a very particular kind of masculine intellectual and physical labor. Those who run the city and those who build the city are useful, all others are dehumanized to the point of murder by deprivation. One of the town elders declares that the “council has decided to get rid of the useless mouths. Tomorrow before sunset they will be driven into the ditches: the infirm, the old men, the children. The women.”³¹ Here the elderly appear as one category of many that fall outside of the parameters of social utility. As the useless mouths become increasingly dehumanized in the attempt to hoard resources for the benefit of a small set of men, the flaws of this homicidal logic become apparent. The town is surrounded, sealed off from the rest of the world. It therefore functions as a closed system with limited supplies of energy to sustain life. Entropic loss is a dominant threat throughout the story. The town elders reason that the most capable bodies should have access to shrinking rations because this increases the likelihood of the town’s survival until spring. However, Beauvoir subtly challenges this rationale by showing that the able-bodied men who will be the beneficiaries of this fuel are instead the greatest producers of waste. The political leaders do nothing more than walk about, scheming and arguing. And the only workers present are devoted to the pointless task of completing a belfry that seems to never advance in progress.

29 Beauvoir, *The Coming of Age*, 539.

30 Beauvoir, *The Coming of Age*, 39.

31 Simone de Beauvoir, “The Useless Mouths,” in *Simone de Beauvoir: “The Useless Mouths” and Other Literary Writings*, ed. Margaret A. Simons and Marybeth Timmerman (Urbana: University of Illinois Press, 2011), 56.

The failure to work within the confines of entropic loss only exacerbates it.³²

Not only do the town leaders arbitrarily decide who and what counts as useful, but the category of uselessness also becomes a kind of disease. One character even goes so far as to call the ill-fated populace “vermin” that should have been disposed of long before the time of crisis.³³ Here we see the very enactment of the marginalizing and pathologizing of the socially powerless. When this transformation of usefulness to waste is completed, they are no longer seen as human, but as parasites who threaten the social body. Consequently, it becomes morally permissible to dispose of them. Positioned as vermin, the only solution becomes to “cure” the hazard through eradication. The operation of scapegoating of those perceived as a threat remains a lifelong concern of Beauvoir’s philosophy, politics, and ethics.

When Beauvoir turns to *Old Age*, her attitude has shifted toward the specific marginalization that the elderly experience. In *Useless Mouths*, those who are othered form a group far larger than the men in power who are willing to kill them. This gives them power to resist through their numbers. In *The Second Sex*, the category of Woman occupies the space of the absolute Other without reciprocity, yet women still compose roughly half of the human population. In *Old Age*, the elderly form a category smaller than the previous iterations. The old become “useless mouths” almost exclusively. In fact, Beauvoir employs this specific phrase throughout *Old Age* in the various ways she characterizes their plight.

To address the existentially lived dimensions of this appalling situation, Beauvoir provides not only philosophical and literary studies, but additionally chronicles her own experiences of aging. Seeking to join lived experience with philosophical observation, she illustrates that what it *feels* like to age is as important as systematically criticizing the ways a given society harms the elderly. Rooted in the phenomenological tradition, she describes human temporality as projection into the future. The past is meaningful only insofar as it shapes forthcoming possibilities. From an entropic standpoint, the ceaseless futural movement of being-toward-death encapsulates the embodied experience of time’s arrow. To be human is to imagine oneself in the future and to configure the present toward the attainment of one’s coming self in a unidirectional flow. As Beauvoir ages, she becomes progressively aware that she is entering a new landscape. When we are children, the future appears enormous and vast; in middle age, the future and past exert a kind of push and pull as we are drawn into the dynamic

32 The role played by the belfry is further explored in Shannon M. Mussett, “Useless Mouths or Useful Labor? Simone de Beauvoir’s Relevance to Modern Gray Labor Force Exploitation,” in *Routledge Handbook of Contemporary Existentialism*, ed. Megan Altman, Hans Pedersen, and Kevin Aho (Milton Park: Routledge, 2024).

33 Beauvoir, “Useless Mouths,” 47. As Liz Stanley and Catherine Naji observe, the pathologizing of the vulnerable and scapegoated other is directly tied to Beauvoir’s experiences of living in Occupied Paris, bearing witness to the Nazi deportation and murder of thousands of her fellow citizens. Liz Stanley and Catherine Naji “Introduction’ to *The Useless Mouths*,” in *Simone de Beauvoir: “The Useless Mouths” and Other Literary Writings*, ed. Margaret A. Simons and Marybeth Timmerman (Urbana: University of Illinois Press, 2011), 16.

of recollection and working toward further self-development. Old age is significantly different than either of these life stages.

Beauvoir writes of the struggle to confront the time after midlife in her autobiography, *The Coming of Age*. When we enter old age, the weight of the past pushes us forward into an ever-shrinking horizon. The future seems fixed “in that it is both short and closed. It is the more closed the shorter it is, and seems all the shorter for being the more closed.”³⁴ This temporal reduction understandably induces anxiety. If life is defined by movement into an indefinite future, the shrinking of that future is often intensely disquieting. Yet, it is also the human condition. Ignoring, belittling, or fearing this inevitability only cheapens the fullness of finite life in all its temporal dimensions.

The observation of the shrinking future is even more pronounced in the preceding volume of her autobiography, *Hard Times*, which caused a “furious outcry” when she dared to discuss the taboo of growing older.³⁵ The world, Beauvoir discerns, becomes smaller, narrower, and more sharply finite as old age approaches: “to grow old is to set limits on oneself, to shrink. I have fought always not to let them label me; but I have not been able to prevent the years from enmeshing me.”³⁶ Poignantly, she experiences this shrinking future very specifically as a crisis of work and social relevance. What had once been an orientation toward labor as what was yet to come, becomes a sense of lost possibilities and accomplishments fallen into a ceaselessly swelling past. While she does not specifically name her fear as that of becoming useless, the creative process is one tied to the supposed freedom of youth. All that remains is the ossification of aging and the experience of inevitable physical breakdown. Feeling the inescapability of the end looming, death haunts her waking and sleeping life. In fact, she writes (at 50, nonetheless) that “it has already begun. That is what I had never foreseen: it begins early and it erodes.”³⁷ The experience of time not as future possibility, but as the erosion of form illuminates the entropic dimensions of aging. Instead of growth into complexity, Beauvoir describes age as breakdown and destruction, the movement from complex situations and possibilities into the habits and repetitions of the present. Beauvoir’s experience directly connects to the way that entropy is often understood metaphorically as pessimistic, as a “convenient shorthand for articulating a sense that things are running downhill, falling apart, getting worse.”³⁸ However, there is ultimately little value to

34 Beauvoir, *The Coming of Age*, 373. Later she describes the experience of old age as a “limited future and a frozen past” Beauvoir, *The Coming of Age*, 378.

35 Beauvoir, *The Coming of Age*, 1.

36 Simone de Beauvoir, *Hard Times: Force of Circumstance Vol. II: Hard Times*, trans. Richard Howard (New York: Paragon House, 1992), 377.

37 Beauvoir, *Hard Times*, 379.

38 Zencey, “Some Brief Speculations,” 9.

denying the physical realities of aging. This is why Beauvoir is unafraid to write about them, and in so doing performs her rejection that her own labor would become useless.³⁹

The marginalization of most elderly is not entirely arbitrary insofar as they age out of many activities and social contributions. However, Beauvoir emphatically argues that our understanding of human decline is only meaningful in a social context. While on a biological and physiological level, the body's systems succumb to deterioration, there is nothing in this that demands it be seen as a purely adverse condition except insofar as it is deemed as such by the society in which the old person lives. In short, there is nothing inherently *pathological* about aging.⁴⁰ Old age is not to be vilified or cured, it is to be respected and accepted as central to the fullness of human life.

The essential problem within this dangerous notion lies in the myriad ways capitalism functions as an anti-entropic machine—one that treats human beings as cogs, useful only insofar as they contribute to the continued generation of capital.⁴¹ The experience of the aged is therefore often one in which they are either forced to be useful by working well beyond their capacities or desires, or to suffer lives of precarity and deprivation. In the final pages of *All Said and Done*, Beauvoir says that the letters she received from old people after the publication of *Old Age* “proved to me that their state was even darker and more wretched than my description.”⁴² In the end:

What is so heart-breaking about the replies of old people who are asked whether they would rather go on working or retire is that the reasons they bring forward are always negative. If they would rather go on, it is out of fear of poverty; if they would rather stop, it is in order to look after their health; but in neither case do they look forward to that particular way of life with any kind of pleasure. They do not see either work or leisure as a form of self-fulfillment; neither the one nor the other is freely chosen.⁴³

The shrinking future should not require that freedom is cruelly truncated or overtly denied. There is no reason to cast the aged into the past, forcing them to be in some senses the living dead, or to push them into the category of dependent object instead of independent subject. Entropy necessarily pushes *all* life toward demise, but there is nothing within this law that demands that the end be humiliating, painful, and fearful. And there is nothing in this law that says aging can *and should* be cured.

39 In the final volume of her autobiography, *All Said and Done*, Beauvoir writes that at a certain point, aging no longer affected her as a dramatic break with youth. She felt that the biggest cut came as she crossed the threshold between youth and middle age but as she grew older, the passage of time became more endurable. *All Said and Done*, trans. Patrick O'Brian (New York: Paragon House, 1993), 34.

40 In fact, Beauvoir explicitly divorces old age from disease. See, Beauvoir, *The Coming of Age*, 284.

41 To make this point, Beauvoir writes that “between youth and age there turns the machine, the crusher of men—of men who let themselves be crushed because it never even occurs to them that they can escape it” Beauvoir, *The Coming of Age*, 543.

42 Beauvoir, *All Said and Done*, 462. See also, 132–133.

43 Beauvoir, *The Coming of Age*, 274.

Conclusion

The modern pathologizing of old age emerges from the configuration of human bodies as machines oriented toward production, progress, and efficiency. The body conceived as a machine came to light at the same time as the discovery of thermodynamics. However, bodies as machines quickly turns into the formulation of human beings as nothing more than reserves of energy to do or not do useful work. If they are no longer capable of functioning in that way (or of buying their way out of the dilemma entirely) they become a threat to the body politic—to be fixed, silenced, or eradicated.

This paper has argued that piecing together the contemporary understanding of old age as a disease to be cured (rather than an inevitability inherent in all organic life) requires exploring the many ways that entropy operates on scientific, philosophical, and metaphorical registers. Science teaches us that entropy is a law and philosophy cannot and should not dismiss this. Critical engagement with the tendency toward systemic breakdown and organic death must be at the heart of any philosophy that engages the most toxic contemporary practices and hopes to offer new directions for human development. In addition to science and philosophy, the existential account of aging provides a necessary corrective to overly theorized, detached, and impersonal accounts. While Beauvoir does not directly formulate the challenge as treating old age as a disease to be cured, she provides an important reason as to how this came to be. Aside from the materially privileged who can try to evade wretchedness through access to cutting-edge health and medical technologies, leisure, and pleasure, most old people suffer their declining final years as “useless mouths,” perceived to be drains on scarce resources while providing no social utility. But the ethical response to aging should not be one of fueling a fantasy of evading it through the myth of eternal life. Not only is this impossible from an entropic perspective but given limited energy, the more one system grows and thrives, the more others will be deprived and starved. Under capitalism, this then means that the wealthy and powerful will take energy and resources from the whole. Setting aside the vanity and self-absorption of individuals who think they have a right to live longer than is humanly necessary, there are the very real effects of taking disproportionate amounts of finite energy for the elite and off-putting waste into the human and natural environment. Not only is this unscrupulous, not only does it hasten planetary breakdown for everyone and everything, but it also necessarily produces populations such as the underprivileged elderly who shoulder the worst of the effects, particularly when they are no longer able to justify their existence through labor.

What would be truly radical in the face of these injustices would instead to become stewards of limited energy, sharing it responsibly among the various human and non-human systems that depend upon it.⁴⁴ The elderly occupy the future that awaits us all. A total reorientation toward this normal inevitability,

⁴⁴ This is the approach argued for in Shannon M. Mussett, *Entropic Philosophy: Chaos, Breakdown, and Creation* (Lanham: Rowman and Littlefield, 2022).

a refusal to cast it as a sickness to be cured, and a redirection of resources and energy on the model of care rather than exploitation will work to make the future—for all of us—one that any of us would want.

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