Plantation Energy: From Slave Labor to Machine Discipline

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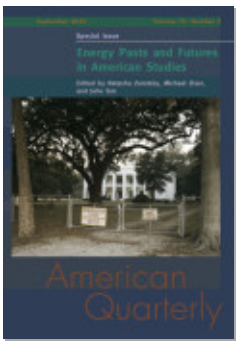

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> [Slavery] reduces man to a mere machine.
>
> —Frederick Douglass, *My Bondage and My Freedom* (1855)

Figure 1.
Kevin Beasley, *A view of a landscape: A cotton gin motor*, 2012–2018 (detail), Whitney Museum of American Art, New York, December 15, 2018–March 10, 2019, © Kevin Beasley. Photo: Ron Amstutz, image courtesy the artist and Casey Kaplan, New York.

World-weary and reanimated, a cotton gin motor could be seen spinning inside a glass vitrine, its expected industrial roar absorbed by anechoic foam lining the base of its enclosure. The machine was the centerpiece of Kevin Beasley's *A view of a landscape: A cotton gin motor*, 2012–18 (fig. 1) on view at the Whitney Museum of American Art, New York, in spring 2019. Inside the case, Beasley placed a dozen microphones relaying the noise of the massive machine to an adjacent room. There, the sensorial experience was inverted: the walls were dark, lined with sound-absorbing pads, and illuminated during performances in various colors; wires ran to synthesizers staged along the rear wall; hi-fi speakers filled the room with the motor's amplified live-feed; and, on benches or the floor, viewers sank into a machinic soundscape. With sound and sight separated, the motor's absence could be read as consent to enjoy its noise as music. In this way, *A view* spurred critical reflection on the exploitation of black musical expression conditioned on the social marginalization of black people.[1] However, Beasley refused to appropriate the motor's sound for the musical sublime; he hardly modulated its industrial roar. Instead, the motor's ready-made time and space—it powered an Alabama cotton gin from 1940 to 1973—was allowed to enter the white walls of the museum. More than an instrument, the motor was situated as a storage device whose inhuman rhythm recalled the accumulated history of the plantation and whose dislocation suggested that it was standing in for the plantation's first technologies: black slaves worked like machines under the threat of the overseer's whip.

A view called attention to the traffic between racial slavery and industrialization, a relay largely disavowed in the scientific and engineering efforts that aided racial capitalism's technological transition in the nineteenth century. In this essay, I aim to reconnect this history by proceeding through the temporal displacement of the plantation offered by Beasley's work. This approach grapples with how, in Ian Baucom's words, the time of transatlantic slavery "accumulates . . . in the cargo holds of the present."[2] By framing the plantation landscape's temporality this way, it is possible to see how the industrial age inherits slavery's technological use of humans in an unbroken chain. The steam engine, the electric motor, and the black slave are linked through the parameters of their use—as devices, as the planter's prosthetic implements for improving the land, as power sources that transformed energy into mechanical motion, and motion into profit. Bodies and machines were connected by the force they provided to do work and power plantation operations, a force that nineteenth-century physics would quantify as an abstract and transformable notion of energy. It is through this conceptualization of energy that I track

the displacement of the "new-world" plantation into industrial capitalism and explore the proximity between blackness and the machinic.

Early on in the plantation zone, black slaves were used for their metabolic energy alongside mules and horses, but by the turn of the nineteenth century, plantations were fashioned as industrial operations and steam engines began to replace pack animals. In the process, slaves were reimagined as industrial resources that were part of the mechanical processes of production like milling or ginning.[3] The shift from the artisanal to the industrial plantation entailed a shift in the energetic enframing of black labor that refined the extraction of energy and accelerated the accumulation of wealth. The whitening of American and British factories and the rising tide of abolition troubled the consubstantiality of black bodies and industrial machines, but the accumulation of energy for the benefit of white life only intensified.

Kathryn Yusoff writes that in their colonization of the "new world," Europeans organized "human property as extractable energy properties."[4] Chattel slavery's objectification of human life extended but did not exhaust the reach of this value ascribing procedure. Rather, the organization of life as extractable energy still tends the global color line that affords to some the privileges of racial capitalism and exposes to others the toxic by-products of its exploitations.[5] This hierarchy finds its antecedent in the relation between race and energy that Yusoff traces back to the fifteenth century. An austere system of racial difference was established to distinguish the fully human (European colonizer) from the not-yet-human (black and indigenous other) and, on the grounds of this fictive difference, to justify the colonizer's claim to the right to own human property. Enlightenment and post-Enlightenment thought bolstered this system of racial classing by writing the universal human—"Man"—in the model of the European. "Man's" rationality, self-possession, and self-determination were resource-intense fictions requiring the exploitation and dispossession of others to be sustained.[6] The material privilege of colonization and transatlantic slavery conditioned the writing of whiteness as a sign of the fully human, while the state of black and brown impoverishment was advanced as evidence of natural inferiority.[7]

In its experiments with the rational domination of humans and the earth, transatlantic slavery spurred "critical reflection, resistance, and innovation" that led to the globalization of Euro–North American modernity during the nineteenth century.[8] The spread of industrial technology and the acceleration of energy extraction did not end the unequal accumulation of energy afforded to whites by the system of plantation slavery. Rather, the protocols and procedures for the extraction of plantation energy were carried out under a different

guise. As Katherine McKittrick suggests, the "idea of the plantation is migratory" and is handed down through material and symbolic systems of power.[9] The plantation's energy regime was handed down through the science of heat energy and accomplice to nineteenth-century European industrial imperialism: thermodynamics. The thinkers of this heat-centered science developed calculations for the movement of matter in terms of an abstract and transformable notion of energy and the force of its dissipation into uselessness, which they named entropy. Thermodynamics linked the operation of the steam engine, the human body, and the cosmos in one unbroken chain of energy.

By suggesting that thermodynamics reproduced the protocols of the plantation—that in its laws were carried a physics and a politics—my intent is not to challenge the reality of heat energy as a motive force of matter or of concentrated thermal energy's tendency to diffuse over time. In Zakiyyah Iman Jackson's incisive phrasing:

> I would not argue that a "physical law," for instance, could be reducible to the machinations of human language, I am arguing that when one mobilizes the language of "law" or "properties" it says much about the location of the speaker and the discursive terms of the meeting of matter and meaning.[10]

Likewise, this essay is an attempt to untangle the social, economic, and cultural terms by which nineteenth-century science met energy and to account for the normative function of its recourse to the language of law. European scientists working on thermodynamics took as their model the steam engine and theorized the usefulness of energy within the terms of productivist industrial capitalism. In doing so, the normative terms on which "nature's" energy was enframed—as useful or wasted, as ordered or chaotic—interfaced with a material and symbolic system handed down by the plantation and structured by racial hierarchy, extending the unequal accumulation of energy across the line that separates slavery and emancipation.

I trace these complex relations through the energetic enframing of black labor from it being classed as metabolic energy alongside the plantation's animals to it being viewed as indistinct from the mechanical operations of the industrial machines that were introduced to the plantation in the nineteenth century. As the factory is whitened, I show how the slave's untethering from the machine provided the context for the development of an abstract conception of energy and thermodynamics. Then I unearth how, divested of the problematic category of the slave, British imperial-apologists rearticulated blackness as an entropic barrier to the productive merging of abstract energy and machines,

justifying new modes of racialized dispossession, correction, and punishment. Furthermore, through the history of the nineteenth-century cotton plantation, I suggest a genealogy of the human machine that passes through the imperative to exhaust and control black rebellion. Finally, I explore how black music and its legacy of finding the "soul in the machine" offers a critique of "the human" that strains against racial capitalism's energetic enframing(s).

From Plodding Mule to Machine Tempo

The "new-world" plantation's diabolical scheme for settler colonial extraction acquired its power from simplifying a diverse ecology into standardized parts of a production machine. Slave and soil, crop, animal, and engine: planters experimented with something like the Hobbesian dream of perfectly assembled order, even imagining themselves to retain some aspect of the king's sovereign authority. This authority was activated in the name of improving the earth and its inhabitants, but it reached its apotheosis in the physical and psychic violence of slaveholding. Black captivity was the driver of the plantation's economic and social systems—it was the plantation's central energy source. As plantation operations shifted between the eighteenth and nineteenth centuries, the energetic enframing of black labor shifted as well, from being viewed as a metabolic resource alongside the planter's pack animals to an industrial reserve modeled on the power of James Watt's steam engine.

In his manual for the operation of a sugar plantation published in 1754, the West Indian planter Samuel Martin wrote that "a plantation ought to be considered as a well-constructed machine, compounded of various wheels, turning different ways and yet all contributing to the great end," of speeding up commodity production.[11] "Negroes, cattle, mules, and horses," he wrote, "are the nerves of a sugar-plantation, for the success of the whole consists chiefly in this, as in a well-constructed machine, upon the energy and right disposition of the main springs, or primary parts."[12] Martin employed the language of clockwork machines—such as waterwheels or windmills, "which serve[d] to augment or direct moving forces," but did not themselves generate force—thus, keeping within the language of European physics at the time.[13] In addition to machines that harnessed the power of the elements, animals were described in terms of mechanical work, underwriting the energetic economy of the plantation that Martin drew on. In these terms, black labor was metabolic and equated to the work done by pack animals.

Clockwork physics' metaphors were imagined in reference to the human body conceived as an automaton—machines that looked like living things

activated by springs, pulleys, and gears so that their autonomous movements gave the appearance of lifelike animation. Having long been associated with servant classes, entertainment automata were being blackened by the late eighteenth century, wedding slavery's racial signifiers to the figure of the human–machine in the popular imagination.[14] Martin, however, slips into the language of the body—nerves as opposed to gears or pulleys—to describe how plantation energy was transmitted and generated. One reading of this slippage would be to consider that although slaves—and the variety of energy sources commanded on the plantation—were conceived in part as linked automata that operated synchronically under the master's command, the potency of their energy exceeded clockwork physics' fixed limit to momentum. In other words, the metaphorical resources that linked sovereign authority to the rule of clockwork machines were no longer sufficient.

This confusion of terms is an opportunity to inject Martin's text with the historical reality of the plantation, detailed extensively in contemporary accounts and historical investigations as the promise of riches paired with grave and incalculable risk. The tropical ecosystem's unruly vegetation, extreme weather, and exotic diseases constantly threatened to undo the efforts of the settler.[15] Still, the greatest danger to a successful plantation was posed by its imported inhabitants, the captive slaves who threatened to turn their longing for freedom into a violent rebellion that would imperil the planter's investment and their life. Anxiety among "manufacturers, planters, and statesmen of the inherent instability of the system" peaked in the wake of the slave uprisings in the French sugar colony of Saint-Domingue beginning in 1791, which overturned the slave system and culminated in the founding of the black republic of Haiti.[16] Reverberations of uprising can be discerned—both acknowledged and suppressed—in the efforts of plantation reformers to remake the business of racialized slavery at the beginning of the nineteenth century partly by rearticulating the terms of extracting energy from black bodies. These efforts paralleled developments to European industrialization and the science of thermodynamics in the nineteenth century.

Beasley's installation directs us to the landscapes of cotton, but the fusing of black slaves with industrial machines started earlier, on Caribbean sugar plantations that began incorporating steam-powered mills as early as the 1770s.[17] Sugarcane production required a fixed ratio between agricultural and manufacturing operations that necessitated a delicate balance of growing, milling, husbanding, and caring for slaves—a balance referenced by Martin and various accounts of sugar plantations from South America to Louisiana.[18] Mules proved too burdensome to increase the scale of operations, and water

power confined plantations geographically. Although early experiments with replacing animal power with steam engines were uneven and short lived, by the turn of the nineteenth century an industrial transition on the plantation was underway.

Despite nerves stripped raw by the memory of the bloody Haitian Revolution, planters desperately sought to reap the financial reward of meeting the demand for sugar created by the collapse of Saint-Domingue. Older sugar operations were hampered further by Britain's prohibition of the slave trade in 1807 that severely limited the supply of new African captives to the Caribbean market. Thus, in Martinique, Cuba, Jamaica, and Louisiana, across the tropical sweep of the plantation zone, sugar masters turned their plantations into industrial projects that were more "akin to the later factories of the Industrial Revolution than to the trading and mercantilist contexts of an earlier age."[19] Planters incorporated steam engines to run mills, vacuum pan evaporators, and centrifuges; they adopted the latest scientific techniques and innovated new ones to maximize efficiency. As the French abolitionist Victor Schoelcher observed in 1824, "There are some steam engines in the French colonies. There are many of them in the English colonies. Everywhere it is the blacks who run them."[20]

No longer enmeshed to the pace of the "plodding mule," slaves now "toiled at the metered cadence of the steam age."[21] Skilled black workers might be tasked as the superintendents of machines and incentivized to ensure that they sustained the quality of their delicate tasks. But most slaves on sugar plantations performed the grueling work of feeding the mill with cane from the field; they moved in gangs through the fields overseen by a constant application of the whip comparable to the harshest form of military discipline.[22] For these slaves, Dale Tomich writes, activity was "more directly and thoroughly subordinated" to the rhythm of the machine.[23] Across the plantation zone stretching from Brazil to the United States, the period beginning at the turn of the nineteenth century was marked by the incorporation of industrial production techniques and the development of labor discipline that revitalized the institution of slavery and opened the new commodity frontiers of sugar, cotton, and coffee. Tomich and Michael Zeuske name this period "the second slavery."[24]

By enmeshing their slaves to the rhythms of industrial machines, planters had remade the energetic model of plantation production and, in the process, formulated a new energetic enframing of black labor that aided egregious forms of exploitation. Reformers of the plantation rethought their operations in scientific terms; they adopted the "nineteenth-century languages of physics, biology, and political economy . . . to reimagine the racialized workers as

an element of a mechanized productive apparatus."[25] Thus the steam engine oversaw the rearticulation of the terms by which the black body's fecundity was objectified so that its energetic properties could be extracted as an industrial resource on the plantation. From the perspective of white political economists in the nineteenth century, slaves were viewed as "part of the nation's natural resources, like the size of its territory or value of its cotton crop."[26] In his influential review, J. D. B. De Bow listed slaves among the various "industrial resources" of the Southern economy.[27] Taylor Evans documents numerous examples of a steam-powered black man cropping up in science fiction novels in the latter half of the nineteenth century. These representations, Evans suggests, linked white futurity to the technological command of blacks mediated through the symbolic resources of the steam age.[28]

Classing black slaves as natural resources helped to justify the institution of slavery on the grounds that, as a means of energy accumulation, slavery provided for the advancement of white civilization and, therefore, for the advancement of humanity in general. For pro-slavery advocates, the problem of settling inhospitable environments in the service of the white nation could be solved only by the unyielding command of black energy. Such grueling work was said to be too painful for "cultivated man[sic]"[29]—a rationale that shamelessly obscured the role of pain in extracting work from slaves. Some argued that "only Africans and African Americans could withstand the withering conditions of agricultural labor in the lower Mississippi Valley" and that "without them, the Louisiana Territory would be of 'little more value . . . than an equal quantity of waste land.'"[30]

Achieved by this logic is the degradation of black intelligence—phrased as a lack of will—which in turn authorized a host of exploitations and deprivations reserved for those failing to meet the conditions of full humanity. On the fictive grounds that whiteness was a sign of willfulness and of a "natural" propensity for reflexive intelligence, racial markers were linked to the accumulation and command of nature's energy. In his 1832 history of the Mississippi Valley, Timothy Flint explained that black labor could be amassed under the direction of whites and was therefore more valuable than its equivalent of white workers. He wrote:

> The union of physical force, directed by one will, is now well understood to have a much greater effect upon the amount of labor, which a number of hands, so managed, can bring about, than the same force directed by as many wills as there are hands . . . one hundred slaves will accomplish more on one plantation, than so many hired free men, acting at their own discretion.[31]

This racist enframing of black energy as something to be amassed and commanded crossed abolitionist lines; Abraham Lincoln defended the decision to arm freed blacks to fight for the Union as a "matter of 'physical force,' which could be 'measured and estimated' exactly like 'steam-power.'"[32] Even in its non-slaveholding model, whiteness is constituted by the continuous degradation and dispossession of blacks, Sylvia Wynter tells us.[33] This violence was rehearsed in the energetic enframing of black bodies as compoundable sources of extractable energy that linked proslavery advocates to abolitionists.

Abstract Energy and Abolition

The history of the second slavery shows that no fundamental incompatibility existed between slaveholding and technology-driven production. In fact, their merger created incredible wealth and status for slaveholders. First in Great Britain and then continental Europe and the United States, industrialization was aided by a surfeit of capital, the influx of cheap commodities, experiments in factory production, and the development of disciplinary techniques from the plantation zone. Factories imported the plantation's model for energetic exploitation but improved on the relative inflexibility of its labor arrangement. Histories that attribute the abolition of slavery to the institution's technological obsolescence or to a critical mass of white abolitionist sentiment tend to obscure the role slaves themselves played in resisting their captivity. Waves of rebellions and resistance drove up the cost of operations, helping shift the capital calculation to the side of "free labor."[34] Furthermore, abolitionism was not a final rejection of the economic and social relations of slavery; the globalization of modernity that followed the decline of transatlantic slavery "was financially, organizationally and technically conditioned by the slave system," and its "post-emancipation structures of recruitment, management and disciplining of international labour reproduced the essential economic relations of slavery."[35] Instead of acknowledging these inheritances, "bourgeois historiography" (in Cedric Robinson's phrasing) boasted of abolitionism's moral awakening, thus screening industrial capitalism from the grievances of the white working class.

With the elimination of the problematic category of the slave, the symbolic and discursive conflation of black bodies with industrial machines that had underwritten the plantation's political economy was seemingly cut short. In the whitened factory, a different kind of apparatus was needed to refine production and discipline labor, one that attenuated the violence of the plantation while retaining the relation it had established between human and machine—a relation that treated the body as (merely) another part in the production machine.

By the mid-nineteenth century, this task was being advanced by those working on the science of heat energy (thermodynamics) who transformed the terms of European physics by describing the movement of matter—from molecules to the sweep of the universe—in terms of usefulness and dissipation of energy. This was a cosmos for the era of steam-driven production.

In the 1820s, the French scientist Sadi Carnot was concerned with improving the efficiency of steam engines and directed his investigations at the "motive power of fire."[36] In the 1840s the German physicist Rudolph Clausius and the Scottish natural philosopher William Thomson (Lord Kelvin) rediscovered Carnot, who had died at a young age and whose work was largely ignored for two decades. Combining his experiments on heat with Gottfried Leibniz's notion of *vis viva*, or live force, they each theorized that an abstract, conserved, and transformable energy motivated the movement of matter.[37] By the early 1850s, both Thomson and Clausius had published their findings, each fully stating the first law of thermodynamics: the total energy of the universe remains constant, and thus in the transfer of force from one object to another all energy is conserved. The upshot was that all forms of energy—heat, kinetic, potential, elastic, electrical, magnetic, and so forth—were equivalent; in the performance of work, one object transfers much of its energy to another object, and whatever energy is not transferred remains in the object or is transformed into another form of energy.[38]

With the first law, productive power was no longer limited to the fixed motion of the human body, mules, windmills, and their attached devices: it was something stored, released, transferred, and perfectly conserved throughout nature. This reimagining of energy directly supported burgeoning industrial capitalism: "Physics is not only about Nature and applied just to technology, its essential function is to provide models of capitalist work."[39] Thermodynamics suggested a "generality and flexibility in . . . productive arrangements" that provided a natural explanation for the political economy of the factory.[40]

Thomson extended the reach of his dynamical theory of heat to the human body by recruiting the work of the German scientist Hermann von Helmholtz. Helmholtz investigated energy in the context of muscle metabolism, which led him to theorize energy—or *Kraft*, in the original German—to be a separate and quantifiable substance that activated the movement of matter, both living and inert.[41] Making explicit reference to the labor of the industrial working class, Helmholtz explained that food stores energy within its nutritional content that is released as heat by the body when muscles perform work; in the terms of *Kraft*, this work is exactly equivalent to the productive force generated by the factory's steam engines—"the body, the steam engine, and the cosmos were

. . . connected by a single and unbroken chain of energy."[42] Recall that at the time, sugar produced with slave labor was helping "to fill the calorie gap for the laboring poor, and ha[d] become one of the first foods of the industrial work break."[43] It was within this Atlantic circulation—of ("free" and coerced) metabolic energy, calories, and fossil fuels that thermodynamics was investigated.

Something bothered the calculations of Thomson and Clausius. Despite the first law's prediction of energy's conservation, which implied its recoverability, the scientists' independent experiments returned the problem that a portion of the original heat produced by a system could not be recovered to do work again. Heat performs work when it is released at a higher concentration relative to its environment. This occurs, for instance, when a chemical reaction breaks the bonds of complex molecules, such as those composing coal or organic matter. As a result of the reaction, lower energy molecules are formed and surplus energy is released as heat that motivates the movement of surrounding matter. As this heat energy escapes, it diffuses toward equilibrium with its environment. This unrecoverable quantity of heat is not destroyed—such an outcome would violate the first law—but it becomes useless, at least in the industrial context in which thermodynamics was theorized. In his 1865 text, Clausius named this property of heat systems entropy, giving a name to the observation that hot matter tends to cool.[44]

Entropy measures the quantity of a system's energy unavailable for doing work, and the second law of thermodynamics—the work of Clausius, Thomson, and others—states that entropy in a closed system tends toward a maximum. On a cosmic time line, the second law explained the inevitable heat-death of the universe, an ineluctable diffusion of useful energy into cold evenness, a prediction that allied European physics to Christian theology. Thermodynamics explained the limit to a livable universe and to the human control of nature on a microscopic level. The number of molecules in any system is too vast and collisions too complex to be measured and tracked; hotter molecules collide with cooler ones and produce a complex admixture that can be measured only in aggregate.[45] Entropy marks not only the limit of usefulness but an epistemological limit, too, by naming the point at which nature's microscopic complexity passes the limit of control into probability and indeterminacy.

By the end of the nineteenth century, entropy was rearticulated as the tendency of an ordered system to drift into disorder. On this symbolic register, the term floated freely as a signifier that could be applied to all kinds of complex systems and became associated with waste, uselessness, and chaos.[46] Cara New Daggett names British thermodynamics a "geo-theology" because it incorpo-

rates the earth, society, and the individual into a natural justification for the work ethic and an explanation for the eventual running down of the universe.[47]

With energy and entropy, thermodynamics cast industrial productivism as laws of physics. Indeed, the thinkers of this science made little effort to hide their alignment with industrial efforts at the time—whether it be the globalizing British, late-arriving Germans, or emerging American Empire.[48] Crosbie Smith and M. Norton Wise draw attention to the specific scientific laboratories, marine engineering networks, and machines that incubated the work of thermodynamics.[49] These local networks were aimed at advancing the reach of empire, and they were linked to a global circuit of people, ideas, commodities, and machines. Sugar and cotton plantations were central to Europe's industrial engineering efforts and acted as what José Guadalupe Ortega calls "laboratory plantations" whose production and management techniques were documented and circulated back to Europe, dispersing the ideas of the plantation.[50]

This circuit included the thinkers of energy. James Thomson, who worked alongside his mathematically minded brother William (Lord Kelvin) to develop energetic physics, superintended "the construction of several large centrifugal pumps for drainage of sugar plantations" in Jamaica and Demerara (Guyana),[51] where the violence needed to compel human beings to perform the grueling work that would later be done by machines, spurred powerful slave rebellions earlier in the century.[52]

Thermal physics gave scientific authority to the technological and political changes that were catapulting British and American wealth and spurring continental industrialization in anticipation of the dash for Africa's industrial resources. While racial capitalism disavowed the right to own human property, it drafted its protocols for the extraction of energy using a template refined on the industrial plantation. The science of thermodynamics oversaw the energetic shift from a system that enframed slaves as energetic resources within the plantation machine to an industrial-imperial imagination that took all of nature as a potential source of productive energy.

Entropy, Blackness, and Postemancipation Imperialism

As abolition untethered blacks from the plantation landscape where they were figured as industrial resources, the degradation of blackness was reconfigured to serve the interests of the industrial bourgeoisie. Blackness, which names the refusal of the white terms of order, was linked as chaos and disorganization, and the formerly enslaved were cast as natural barriers to the useful meeting of abstract energy and machines.[53] In the writing of American physician George

M. Beard, it is possible to see this logic applied sociologically. Reporting on the condition of newly freed slaves, Beard wrote that "blacks cannot summon as much energy for a moment in an emergency as the whites, since they have less control over their energies."[54] However, "in holding-on power, in sustained, continuous, unbroken muscular endurance, for hours and days," Beard writes, blacks "surpass the whites."[55]

Racial capitalism's transition from slavery had generated a contradiction. Statesmen, financiers, and industrialists viewed the formerly enslaved as a valuable source of cheap labor; black workers were described as energic, productive, and docile. Yet the degradation and devaluation that characterized postemancipation black communities was explained not as the legacy of slavery's injustice (which might justify reparation) but, in racist terms, as blacks' natural distance from technological modernity and from the trait of individual self-improvement that characterized (the fiction of) whiteness. To justify the harshness of discipline and the severity of improvement required to sustain the exploitation of former slaves, blacks were cast as lazy and rebellious. By the latter third of the nineteenth century, this contradiction was referred to in shorthand as the "negro problem."[56]

Thermodynamics provided a natural explanation for this "problem" through the terms of energetic organization and its entropic decline. "Human beings . . . pervasively and persistently, look to nature, as a source of norms for human conduct," writes Lorraine Daston, and the fear that systems will break down arrives as terror.[57] The terror of nature's revenge, of a system running out of sync, being pushed beyond its limits or being allowed to decay: entropy's prediction of matter's inevitable cooling carried a moral fear that things will fall apart, that disorder will befall even the best plans for order. For some apologists of empire, decolonial resistance, social decay, and intramural war was explained as a result of the system's energetic deficiency. In its social and political valence, entropy buttressed a racial fear: that white civilization would decline if it failed to allocate the tropics' resources or put back to work its legions of black and brown inhabitants.

H. H. Johnson posited not only a lack of will among West Africans to improve their abundant natural resources but a lack of ingenuity: "They seem to have no power of originating ideas," he writes, "but if they are lacking in originality, they are quite wonderful in their imitative faculty." Johnson's argument reinforced calls to educate and improve black and brown populations, to make them available for "modern" standards of productivity. The first priority, he wrote, was "to patiently instruct the natives first of all that idleness is the eighth deadly sin."[58] The British sociologist Benjamin Kidd employed a no-

tion of abstract energy to explain the natural privileges of whiteness and the advantages of the West. He wrote that "the people of the great Anglo Saxon republic of the West" have an exceptional "endowment which its people have received from nature" of "nervous energy." In 1899 Kidd extended this logic into a racist argument for the British administration of the Caribbean: "The black races under the new order of things . . . have not developed the natural resources of the rich and fertile lands they have inherited. Nor do they show any desire to undertake the task."[59] Kidd's imperial-energetic reason shows blacks caught within the energetic enframing of transatlantic slavery, only now as a kind of entropic element within the human population whose guardianship of the tropics stood in the way of the West's accumulation of civilization-advancing energy.

Machine Discipline on the Plantation

Kevin Beasley's cotton gin motor called attention to the way blacks were worked on cotton plantation at the rhythm of the machine age. It was this innovation to the management of labor that turned the United States into the cotton kingdom and catapulted the accumulation of white wealth.[60] Cotton had long been a small-scale plantation crop, but at the beginning of the nineteenth century—in the period of the "second slavery"—a revolution in business practices took place across the Southern cotton industry that skyrocketed the efficiency of production. Developments in gin design and the incorporation of steam engines broke through the bottleneck in production at the stage of cleaning and baling the soft cotton fibers before they were shipped off the plantation.[61] Planters systematized operations with techniques of accounting, made innovations to the division of labor, and streamlined production, all in order to austerely manage the ever-increasing daily quotas of cotton picked by field hands. More important than any particular technology were the new ways slavers imagined working their slaves like machines that increased efficiency and made cotton plantations wildly profitable.[62] As a result, cotton production spread across the American South.

Never at a risk of outpacing the gin, overseers enforced quotas by deploying a brutal and systematic regime of whipping. As it was refined, this approach to working cotton hands spread throughout the plantation complex and became known as the "pushing system." The historian Edward Baptist writes that "every cotton labor camp used torture as its central technology," to push slaves to meet increased quotas of picked cotton.[63] Records from plantations evidence a modern system to track picking that increased the efficiency of work by fac-

toring in the amount and intensity of whipping to each slave's output. Pickers were commonly referred to by overseers as "hands," which, metonymy aside, was the only apparatus used to pick cotton until the 1930s. Baptist writes:

> Hands now moved "like a bresh heap afire"—"as if," a Mississippi planter wrote, "some new motive power was applied in the process." As if, in other words, mechanical engines hummed inside the enslaved, as if the disembodied hands . . . moved by themselves over the cotton plants in the field.[64]

At the intersection of accounting, logistics, and torture, black slaves were imagined as human machines in the mobile metaphors of thermal physics and engines that dominated the era's imagination. In this way, slavers too were involved in a project of conceptually tearing the slave from the industrial machine. For them, the task was not about rediscovering productivism in nature—as it was for the theorists of thermodynamics—but about calibrating the violence and discipline meted out to the enslaved to push the pace of production.

In these cotton fields, blacks were treated as another element in the plantation machine—a relation passed down from Samuel Martin's artisanal-mechanical model to second slavery's industrial juggernauts—which suggested that the operations of the body, its physics and not only its biological constitution, should be classed as racial markers. Slaves' coerced performances were explained as blackness's animality and then its machinic-ness, which permitted slavers to bypass a confrontation with black humanity. On the cotton plantation, discipline was enacted not to entangle the body's movements to the pace of the steam engine as it was on the sugar plantation but to experiment with the limits of the human body to achieve machine-like productivity. I want to suggest that the genealogy of the human machine since the nineteenth century passes through the imperatives of enervation and exhaustion that were undertaken in anticipation of black rebellion.

Similar to their counterparts who ran sugar plantations, cotton planters drew on the gang labor model to devise the "pushing system." As opposed to gang labor, task work was decentralized and sometimes overseen by black drivers or out of the sight of whites. In such arrangements, plantations looked more like feudal plots, with slaves being charged with a portion of land to tend and cultivate or with a specific task to be completed over a set duration; the reward for efficient work was more free time.[65] Pushing required gangs: pickers moving in groups, row by row through the fields, continuously within sight of the overseer and always in fear that any slowdown would be met with an application of the lash. Baptist documents the especially heinous nature of gang work

under the "pushing system," which led to low birthrates and high mortality among slaves.[66] Prior to "second slavery's" industrialization that increased the throughput of crops to market, the extra speed of gang work might have only led to wasted crops and exhausted slaves, but in the nineteenth century the brutality of pushing proved economically rational.

Task arrangements were the outcome of decades or centuries of struggle between slaves and their masters. Pushing and the use of gang labor were not only about economic efficiency but were a way to enact control. While the brutality of the nineteenth-century plantation regime—the visibility of its violence, its domination of time, and the intrusiveness of its surveillance—was experimented with in earlier plantation arrangements, under pushing there was remarkably less opportunity for slaves to enact what in another context James C. Scott calls the "weapons of the weak."[67] With the fresh memory of the Haitian Revolution, systematizing and speeding up production was more than a way to pace mechanization; regimented gang work was a way to limit slaves' free time and experiment with their bodies' enervation. In Saidiya Hartman's words, this was "discipline with its clothes off"[68]—a discipline aimed at exhausting black energy.

"The Soul in the Machine"

Black life persisted anyway, surviving the world that planned on its exhaustion. In part, this was because the enslaved experimented with the task at hand, learning to perform a superhuman virtuosity for picking cotton or harvesting cane. Slave narratives describe entering a disembodied state in which work was done automatically, ambidextrous hands moving without pause.[69] Field hands performed machine-like movements at the rhythm of the industrial age as a way to avoid the whip and resist complete enervation, as a survival strategy whose more-than-human calibrations anticipated our technological modernity. This essay has been an effort to strain against a strict differentiation between human and machine—that is, between the rational and self-determined human and the un-willed human thing. Precisely such a distinction is presupposed in a notion of rightful ownership and "dominion over the things of the earth," and is presupposed in the justification for dispossession, correction, and premature death—in the antiblack violence—imposed on those who fail to meet the conditions of self-improvement.[70]

The institution of slavery was justified on the grounds that blacks were less-than-human—animals, monsters, or machines—yet it was precisely their human qualities, their kinship relations, their capacity for pain and humiliation,

and their intelligence that slavers exploited to wrest obedience and generate profit. On the plantation landscape, the treatment of blacks like technological instruments—like "man-shaped ploughs," in George Lamming's words, or as human engines, as I have argued—disclosed at once the machine in the human and the human in the machine.[71] This was a dangerous problem for whiteness because it challenged the myth of self-determination grounding its genre of the human. Thus, between the nineteenth and twentieth century, automatons were blackened, further wedding representations of human machines to the qualities of subservience, un-willed-ness, and spirit-lessness associated with blacks.[72] In a relay with the cultural realm, the efforts of science and engineering that aided racial capitalism's emergence from slavery rediscovered the properties of the human machine in terms of energetic usefulness and, later, informational organization. In the process, the material history of racial subjugation that conditioned the writing of the human machine was evacuated by being rendered as (laws of) nature.

A view of a landscape—Kevin Beasley's exhibition that began this essay—refused to narrate the plantation's violence in terms of black dehumanization and subjective suffering. Instead, the cotton gin motor's sonic disbursal recalled the legacy of those who experimented with the body's machinic calibrations, who strained against (the imposition of) the plantation's energetic enframing of their flesh, and whose performances moved in resistance to annihilation. Thinking with Beasley, it is possible to feel the plantation's rhythm accumulate in technological capitalism and global modernity, in the "cargo holds of the present," whose "irreducible condition" is the transatlantic slave trade and the settler's plantation technology.[73]

During the exhibition's run Beasley held performances with a host of other musicians who were invited to collaborate with the motor's separated and amplified sounds. These performances were examples of what Katherine McKittrick and Alexander Weheliye describe as black music's tradition of humanizing "supposedly discrete, abstract, rigid, inhuman machines by making them usable in heretofore nonexistent modalities."[74] In Beasley's words, black music carries the legacy of "find[ing] the soul in the machine."[75] Performing with the cotton gin motor, Beasley and his collaborators repurposed its operations and interrupted the machine's energetic enframing as merely a tool for transforming electrical energy into accumulation. In turn, they interrupted the machine's degradation as a thing with no value, and they troubled the degradation of human beings valued only in terms of their use—a degradation that sustains racial capitalism's organization of bodies as extractable energy. This has been one of my aims: to trace the transit of the plantation's energetic enframings and to interrupt its protocols for organizing what and who matters.

Notes

I would like to thank Kevin Beasley for the gift of his work and the generosity to allow it to appear in this essay, the editors of the special issue of *American Quarterly*, and the autonomous reviewers for their invaluable feedback. For assistance through many early drafts of this essay, I would like to thank Shannon Mattern, Rafi Youatt, the Global Politics Workshop at The New School, Hugh Raffles and the 2019–20 GIDEST fellows, Roberto Montero, George Shulman, and Andrea Guyer. Finally, I would like to give special acknowledgment to my adviser, Victoria Hattam, for her unwavering support.

1. Jace Clayton, "Close-Up: Breaking Point," *Artforum*, 2019.
2. Ian Baucom, *Specters of the Atlantic: Finance Capital, Slavery, and the Philosophy of History* (Durham, NC: Duke University Press, 2005), 325.
3. In the early twentieth-century displacement of the plantation that Beasley's motor was quite literally involved with, Southern farmers desperately clung to the status of their slaveholding predecessors with sharecropping and tenant farming arrangements. The technological changes to the global economy that coincided with the abolition of slavery, foreshadowed the replacement of field hands with mechanical harvesters in the coming decades. See Nan Elizabeth Woodruff, "Mississippi Delta Planters and Debates over Mechanization, Labor, and Civil Rights in the 1940s," *Journal of Southern History* 60.2 (1994): 263–84.
4. Kathryn Yusoff, *A Billion Black Anthropocenes or None* (Minneapolis: University of Minnesota Press, 2018), 40.
5. See Laura Pulido, "Flint, Environmental Racism, and Racial Capitalism," *Capitalism Nature Socialism* 27.3 (2016): 1–16; Denise Ferreira da Silva, "On Heat," *Canadian Art* (blog), 2018, canadianart.ca/features/on-heat/.
6. The critique of "the human" as an overrepresentation of European enlightenment "Man" draws from the work of Sylvia Wynter. See "Unsettling the Coloniality of Being/Power/Truth/Freedom: Towards the Human, after Man, Its Overrepresentation—an Argument," *CR: The New Centennial Review* 3.3 (2003): 257–337; and "Race and Our Biocentric Belief System: An Interview with Sylvia Wynter," in *Black Education: A Transformative Research and Action Agenda for the New Century*, ed. Joyce E. King (Mahwah, NJ: Lawrence Erlbaum Associates, 2005). My use of gendered language is done to retain the context of Euro–North American thought in which maleness was a sign of one's place in the category of the universally human. With Wynter, I aim to trouble "the human" insofar as it carries not only a sexual presumption of maleness but a racial presumption of whiteness.
7. See Paula Chakravartty and Denise Ferreira da Silva, "Accumulation, Dispossession, and Debt: The Racial Logic of Global Capitalism—an Introduction," *American Quarterly* 64.3 (2012): 361–85; Denise Ferreira da Silva, "1 (Life) ÷ 0 (Blackness) = ∞ – ∞ or ∞ / ∞: On Matter Beyond the Equation of Value," *E-Flux Journal* 79 (February 2017).
8. Robin Blackburn, *The Making of New World Slavery: From the Baroque to the Modern, 1492–1800* (New York: Verso, 1997), 588; Paul Gilroy, *The Black Atlantic: Modernity and Double Consciousness* (Cambridge, MA: Harvard University Press, 1993). By modernity, I do not mean a progressive history but what Frantz Fanon described as "a succession of negations of man and an avalanche of murders" (*The Wretched of the Earth*, trans. Constance Farrington [New York: Grove Weidenfeld, 1991], 311).
9. Katherine McKittrick, "Plantation Futures," *Small Axe: A Caribbean Journal of Criticism* 17.3 (2013): 3.
10. Zakiyyah Iman Jackson, "Outer Worlds: The Persistence of Race in Movement 'Beyond the Human,'" *GLQ: A Journal of Lesbian and Gay Studies* 21.2–3 (2015): 217.
11. Samuel Martin, *An Essay upon Plantership*, 4th ed. (London: Reprinted for A. Millar, 1765), 36.
12. Martin, 1–2.
13. Jessica Riskin, *The Restless Clock: A History of the Centuries-Long Argument over What Makes Living Things Tick* (Chicago: University of Chicago Press, 2016), 150. Clockwork machines inspired both Isaac Newton and René Descartes's mechanistic physics, which explained a fixed limit to the production of force in nature.
14. See Eric Lott, *Love and Theft: Blackface Minstrelsy and the American Working Class* (New York: Oxford University Press, 1993); Jane Goodall, "Transferred Agencies: Performance and the Fear of Automatism," *Theatre Journal* 49.4 (1997): 441–53; and Benjamin Reiss, "P. T. Barnum, Joice Heth, and Antebellum Spectacles of Race," *American Quarterly* 51.1 (1999): 78–107.
15. Monique Allewaert, *Ariel's Ecology: Plantations, Personhood, and Colonialism in the American Tropics* (Minneapolis: University of Minnesota Press, 2013), 37–38.

16. Sven Beckert, *Empire of Cotton* (London: Penguin Books, 2015), 102.
17. Dale W. Tomich, *Slavery in the Circuit of Sugar, Second Edition: Martinique and the World-Economy, 1830–1848* (Albany: State University New York Press, 2016), 238.
18. Tomich, 276.
19. James E. McClellan, *Colonialism and Science: Saint Domingue and the Old Regime* (Chicago: University of Chicago Press, 2010), 291.
20. Quoted in Tomich, *Slavery in the Circuit of Sugar*, 289.
21. Richard Follett, *The Sugar Masters* (Baton Rouge: Louisiana State University Press, 2005), 93.
22. Follett, 91–109.
23. Tomich, *Slavery in the Circuit of Sugar*, 291.
24. Dale Tomich and Michael Zeuske, "Introduction, the Second Slavery: Mass Slavery, World-Economy, and Comparative Microhistories," *Review (Fernand Braudel Center)* 31.2 (2008): 91–100; Dale Tomich, *Through the Prism of Slavery Labor, Capital, and World Economy* (Lanham, MD: Rowman & Littlefield, 2004). See also Anthony E. Kaye, "The Second Slavery: Modernity in the Nineteenth-Century South and the Atlantic World," *Journal of Southern History* 75.3 (2009): 635.
25. Daniel Rood, *The Reinvention of Atlantic Slavery: Technology, Labor, Race, and Capitalism in the Greater Caribbean* (New York: Oxford University Press, 2017), 199.
26. Stephanie McCurry, *Confederate Reckoning: Power and Politics in the Civil War South* (Cambridge, MA: Harvard University Press, 2012), 223.
27. J. D. B. De Bow, *The Industrial Resources, Etc., of the Southern and Western States*, vol. 2 (Merchants' Exchange New Orleans: Office of De Bow's Review, 1853).
28. Taylor Evans, "The Race of Machines: Blackness and Prosthetics in Early American Science Fiction," *American Literature* 90, no. 3 (2018): 553–84.
29. De Bow, *Industrial Resources*, 2:206.
30. Walter Johnson, *River of Dark Dreams: Slavery and Empire in the Cotton Kingdom* (Cambridge MA: Belknap Press of the Harvard University Press, 2017), 31.
31. Timothy Flint, *The History and Geography of the Mississippi Valley*, 2nd ed. (Cincinnati: E H Flint, 1832), 244.
32. Quoted in Eric Foner, *The Fiery Trial: Abraham Lincoln and American Slavery* (New York: W. W. Norton, 2012), 255.
33. Sylvia Wynter, "Sambos and Minstrels," *Social Text*, no. 1 (1979): 149–56.
34. Cedric Robinson, "Capitalism, Slavery, and Bourgeois Historiography," *History Workshop Journal* 23.1 (1987): 127. A growing consensus of literature tracks the development of capitalism in the nineteenth century to the economic and social system of racialized slavery, confirming and updating Eric Williams's thesis that abolition was driven by capital rather than moral interests (*Capitalism and Slavery* [London: A. Deutsch, 1964]). See also Joseph E. Inikori, *Africans and the Industrial Revolution in England: A Study in International Trade and Economic Development* (Cambridge: Cambridge University Press, 2002); Catherine Hall, *Legacies of British Slave-Ownership: Colonial Slavery and the Formation of Victorian Britain* (New York: Cambridge University Press, 2014); Sidney W. Mintz, *Sweetness and Power: The Place of Sugar in Modern History* (New York: Penguin Books, 1987). Recently, a critical mass of scholarship has traced American economic development in the North to the influx of cheap commodities and investment capital generated by slaveholding in the South. For a small sample of this literature, see Beckert, *Empire of Cotton*; Beckert and Rockman, *Slavery's Capitalism*; Johnson, *River of Dark Dreams*; Grandin, *Empire of Necessity*; Julia Ott, "Slaves: The Capital That Made Capitalism," *Public Seminar* (blog), April 9, 2014, www.publicseminar.org/2014/04/slavery-the-capital-that-made-capitalism/.
35. Robinson, "Capitalism, Slavery, and Bourgeois Historiography," 136.
36. Sadi Carnot, *Reflections on the Motive Power of Fire*, trans. E. Mendoza (Mineola, NY: Dover, 2005).
37. Leibniz's *live force*—which contrasted with Descartes's *quantity of motion*—evoked an imagination of movement that was lively and unsettled rather than steady or fixed, and it suggested that an energetic substance inhered to and sparked the movement of objects—both living and nonliving. Calculated as the product of an object's mass and the square of its velocity (or mv^2), *vis viva* prefigured the modern formula for kinetic energy ($\frac{1}{2}$ mv^2). See Jennifer Coopersmith, *Energy, the Subtle Concept: The Discovery of Feynman's Blocks from Leibniz to Einstein* (Oxford: Oxford University Press, 2015), 44; Riskin, *Restless Clock*, 99; Emile Meyerson, *Identity and Reality*, trans. Kate Loewenberg (New York: Dover Publications, 1962), 204.

38. For physics, *work* has a precise definition. It is the quantity of converted energy needed to displace a physical body a certain amount in the direction of an applied force.
39. George Caffentzis, *In Letters of Blood and Fire: Work, Machines, and the Crisis of Capitalism* (Oakland, CA: PM Press, 2013), 13.
40. Caffentzis, 13–14.
41. Crosbie Smith explains that the important difference between Helmholtz's *Kraft* (implying "separation in space") and Thomson's *energy* can be explained by the different scientific traditions in which the two worked. For the history of science, this distinction is unquestionably significant. However, for my purpose, what is crucial is how Helmholtz's development of *Kraft* and a theory of the transformation of energy in the context of the body's metabolism was recruited by Thomson to incorporate the work of the body into his imperial-industrial physics of heat energy (*The Science of Energy: A Cultural History of Energy Physics in Victorian Britain* [Chicago: University of Chicago Press, 1998], 126–27).
42. Anson Rabinbach, *The Human Motor: Energy, Fatigue, and the Origins of Modernity* (Berkeley: University of California Press, 1990), 52.
43. Mintz, *Sweetness and Power*, 149.
44. Rudolf Clausius, *The Mechanical Theory of Heat: With Its Applications to the Steam-Engine and to the Physical Properties of Bodies* (London: J. Van Voorst, 1867), 357.
45. At the microscopic level the entropic movement of molecules is too complex to be measured, thus, Newton's determinist laws needed to be supplemented with statistical distributions to make the measure of entropy useful. This was work advanced especially by James Clerk Maxwell, Ludwig Boltzmann, and J. Willard Gibbs.
46. Stephen G. Brush, *The Temperature of History: Phases of Science and Culture in the Nineteenth Century* (New York: B. Franklin, 1978); Bruce Clarke, *Energy Forms: Allegory and Science in the Era of Classical Thermodynamics* (Ann Arbor: University of Michigan Press, 2001); Barri J. Gold, *ThermoPoetics: Energy in Victorian Literature and Science* (Cambridge, MA: MIT Press, 2012).
47. Cara New Daggett, *The Birth of Energy: Fossil Fuels, Thermodynamics, and the Politics of Work* (Durham, NC: Duke University Press, 2019). Crosbie Smith argues that for William Thomson and his cohort of Scottish natural philosophers including his brother James Thomson, William Rankine, James Clerk Maxwell, and Peter Guthrie Tait, thermodynamics was a way to reconcile an equal devotion to physics, industrial-imperialism, and Presbyterianism (*Science of Energy*, 313).
48. Daggett, *Birth of Energy*, 133–62. German scientists figured prominently in the development of thermodynamics, yet German states had little if any part in transatlantic slavery. Still, even prior to unification, German economies were embedded in the economic circuits of slavery and profited from European colonization. After unification, this led to the brief period of holding overseas colonies (1884–1920), which they retained through brutally violent tactics. Researchers have pointed to a cultural memory of antiblackness carried from the history of being enmeshed in European racial capitalism; see Heike Raphael-Hernandez and Pia Wiegmink, "German Entanglements in Transatlantic Slavery: An Introduction," *Atlantic Studies* 14.4 (2017): 419–35. For the fascinating history linking the German development efforts in Africa and American cotton plantations, see also Andrew Zimmerman, *Alabama in Africa: Booker T. Washington, the German Empire, and the Globalization of the New South* (Princeton, NJ: Princeton University Press, 2012).
49. Smith, *Science of Energy*; Crosbie Smith and Matthew Norton Wise, *Energy and Empire: A Biographical Study of Lord Kelvin* (Cambridge: Cambridge University Press, 1989); M. Norton Wise, "Mediating Machines," *Science in Context* 2.1 (1988): 77–113; Ben Marsden, "Blowing Hot and Cold: Reports and Retorts on the Status of the Air-Engine as Success or Failure, 1830–1855," *History of Science* 36.4 (1998): 373–420; Ben Marsden and Crosbie Smith, *Engineering Empires: A Cultural History of Technology in Nineteenth-Century Britain* (New York: Palgrave Macmillan, 2005); I. Grattan-Guinness, "Work for the Workers: Advances in Engineering Mechanics and Instruction in France, 1800–1830," *Annals of Science* 41.1 (1984): 1–33; Robert Fox, ed., *Reflexions on the Motive Power of Fire: A Critical Edition with the Surviving Scientific Manuscripts* (Manchester: Manchester University Press, 1986); M. Norton Wise and Crosbie Smith, "Work and Waste: Political Economy and Natural Philosophy in Nineteenth Century Britain (III)," *History of Science* 28.3 (1990): 221–61.
50. José Guadalupe Ortega, "Machines, Modernity, and Sugar: The Greater Caribbean in a Global Context, 1812–50*," *Journal of Global History* 9.1 (2014): 1–25.
51. James Thomson, *Collected Papers in Physics and Engineering* (Cambridge: Cambridge University Press, 2016), lxvii.

52. See Emilia Viotti Da Costa, *Crowns of Glory, Tears of Blood* (New York: Oxford University Press, 1997).
53. Sylvia Wynter suggests that Euro-North American thought is structured by an order–disorder dualism maintained by the segregation of "the Ultimate Chaos that [is] the Black," which is why Wynter links blackness to entropy ("The Ceremony Must Be Found: After Humanism," *Boundary 2* 12–13 [1984]: 37).
54. George M. Beard, *American Nervousness: Its Causes and Consequences* (New York: G. P. Putnam's Sons, 1881), 188.
55. Beard, 190.
56. Zimmerman, *Alabama in Africa*, 38–41.
57. Lorraine Daston, *Against Nature* (Cambridge, MA: MIT Press, 2019), 19–20.
58. H. H. Johnson, "British Africa and the Trade of the Interior," *Proceedings of the Royal Colonial Institute* 20 (1888–89): 98.
59. Benjamin Kidd, *The Control of the Tropics* (New York: Macmillan, 1898), 72–73.
60. See Sven Beckert, *Empire of Cotton* (London: Penguin Books, 2015); Edward E. Baptist, *The Half Has Never Been Told: Slavery and the Making of American Capitalism* (New York: Basic Books, 2014).
61. Angela Lakwete debunks the myth of Eli Whitney's invention of the cotton gin by showing that it was a collaborative effort of mechanics and cotton workers, both free *and* enslaved, who sought to attenuate the tedium of cleaning cotton fibers. See Lakwete, *Inventing the Cotton Gin: Machine and Myth in Antebellum America* (Baltimore: Johns Hopkins University Press, 2005).
62. Baptist, *Half Has Never Been Told*; Beckert, *Empire of Cotton*.
63. Baptist, *Half Has Never Been Told*, 142.
64. Baptist, 134.
65. Richard Follett, *The Sugar Masters* (Baton Rouge: Louisiana State University Press, 2005), 93, 96.
66. In the period when planters adopted the pushing system, Baptist notes a rise in infant mortality among slaves in the American South comparable only with those parts of the tropics stricken worst with malaria (*Half Has Never Been Told*, 122).
67. James C. Scott, *Weapons of the Weak: Everyday Forms of Peasant Resistance* (New Haven, CT: Yale University Press, 2008).
68. Saidiya Hartman, *Scenes of Subjection: Terror, Slavery, and Self-Making in Nineteenth-Century America* (New York: Oxford University Press, 1997), 138.
69. Baptist, *Half Has Never Been Told*, 137.
70. Fred Moten, *In the Break: The Aesthetics of the Black Radical Tradition* (Minneapolis: University of Minnesota Press, 2003), 11; Moten, *A Poetics of the Undercommons* (New York: Sputnik & Fizzle, 2016), 15.
71. George Lamming, *The Pleasures of Exile* (Ann Arbor: University of Michigan Press, 1992), 120.
72. I would like to thank an anonymous reviewer for pressing me to clarify how I understand the relationship between the *performance of the human machine* and the human proper. My suggestion is that the degradation of the idea of the *human machine*, which was/is opposed to the human proper, was/is a way for racial capitalism to bypass a confrontation with how its structural inequalities compel and exploit the human body's capacity for and racialize its machinic performance. For more on the relation between blackness and machines that informs this view, see Fred Moten, "The Touring Machine (Flesh Thought Inside Out)," in *Plastic Materialities: Politics, Legality, and Metamorphosis in the Work of Catherine Malabou*, ed. Brenna Bhandar and Jonathan Goldberg-Hiller (Durham, NC: Duke University Press, 2015). For literature on black performance and machines, see Uri McMillan, *Embodied Avatars: Genealogies of Black Feminist Art and Performance* (New York: New York University Press, 2015), 48–49; Louis Onuorah Chude-Sokei, *The Sound of Culture: Diaspora and Black Technopoetics* (Middletown, CT: Wesleyan University Press, 2016); Wynter, "Sambos and Minstrels"; for a history of the degradation of the machine in the European context, see Riskin, *Restless Clock*, 150.
73. Fred Moten, *Black and Blur* (Durham, NC: Duke University Press, 2017), 198.
74. Katherine McKittrick and Alexander G. Weheliye, "808s & Heartbreak," ed. Tyrone S. Palmer, Casey Goonan, and Mlondi Zondi, *Propter Nos* 2.1 (2017): 26. McKittrick and Weheliye make reference to the Roland TR-808 drum machine, which was central to the development of hip-hop in the 1980s and was considered a low-quality tool that produced machine-like sounds. I am also thinking of Stevie Wonder's use of the Talk Box, a machine that modulates the voice into stilted and robotic tones, on the David Frost show in 1972 (youtu.be/PnR19INlXV8).
75. Kevin Beasley and Fred Moten, "On Poetry and the Turntable," in *On Value*, ed. Ralph Lemon and Triple Canopy (New York: Triple Canopy, 2016).