Automated Vistas (I)

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New Dark Age: Technology and the End of the Future, by James Bridle, Verso.

The Second Machine Age: Work, Progress, and Prosperity in an Age of Brilliant Technologies, by Erik Brynjolfsson and Andrew McAfee, W. W. Norton.

Machine, Platform, Crowd: Harnessing Our Digital Future, by Andrew McAfee and Erik Brynjolfsson, W. W. Norton.

Bullshit Jobs: A Theory, by David Graeber, Simon & Schuster.

Four Futures: Life after Capitalism, by Peter Frase, Verso.

Radical Technologies: The Design of Everyday Life, by Adam Greenfield, Verso.

No More Work: Why Full Employment Is a Bad Idea, by James Livingston, University of North Carolina Press.

Inventing the Future: Postcapitalism and a World Without Work, by Nick Srnicek and Alex Williams, Verso.

The Age of Surveillance Capitalism: The Fight for a Human Future at the New Frontier of Power, by Shoshana Zuboff, PublicAffairs.

WHILE THE DREAM of liberation from work has persisted from antiquity into our own time, few people believed, until recently, that its fulfillment could take place in history. Until the Scientific and Industrial Revolutions, what the authors of Genesis imagined as God's curse to "eat your bread by the sweat of your brow," or what Hesiod and Ovid called the "Iron Age" of struggle to wrest a living from the obdurate soil, was considered either the way of all flesh or an instrument of divine retribution. In medieval Christendom, resignation, patience, and prayer reconciled the faithful to their arduous sentence. Human

beings might alleviate their hardship, but only God could restore the prelapsarian condition of freedom from drudgery and indigence. Enjoyed to a background score of seraphic hosannas from celestial choirs, leisure would be part of the resplendent eternity that would follow the *eschaton*.

But as modernity shifted the axis of historical agency from God to humanity, our own ingenuity and invention seemed to promise deliverance from toil and poverty, and automated production became central to the technological vision of manumission from labor. We can see a premonition well before the Christian era in a passage from Aristotle's *Politics*, where the philosopher wrote of "the statues of Daedalus," self-moving tripods that obeyed orders without fail and could even anticipate commands. With an army of these machines, Aristotle speculated, all travail and invidious hierarchy would cease: "If shuttles wove and quills played harps of themselves, master-craftsmen would have no need of assistants and masters no need of slaves." (In the *Meno*, Plato had joked that the statues had to be tied to the ground to prevent their escaping—a presentiment of modern anxiety about the autonomy of the automatons, figured in literature and film from *Frankenstein* to the recent *Ex Machina*.) Even Christian monks had visions of mechanical wonders in this fallen world. Roger Bacon mused about horseless carriages; Albertus Magnus was rumored to have built a talking head (smashed by a scandalized Thomas Aquinas); and Thomas Campanella, in his *City of the Sun* (1623), depicted boats traversing water "without rowers or the force of wind, but by some marvelous contrivance."

Heaven bent by the levelheaded passion of what Max Weber called "worldly asceticism," Calvinist ministers and businessmen preached a lucrative gospel of work and renunciation, but their pious rage to accumulate put us on a path to automation. With a structural imperative to cut labor costs and increase productivity in a competitive market, capitalism became history's first sustained generator of technological innovation, giving birth to the marvelous automatons about which philosophers and monks had only fantasized. But mechanization produced more than voluminous profits and a burgeoning surfeit

of commodities; it brought a world without work from the utopian imagination to the terrain of historical possibility.

The austerity of the Protestant ethic prevented most from contemplating such a world, but a few surmised that the ancient longings for emancipation were about to be realized. Revolutionary heir to the Enlightenment's bourgeois confidence in technological progress, Karl Marx maintained that capitalism was creating the material conditions for a passage from the "realm of necessity" into the "realm of freedom," a domain beyond toil and penury in which "human energy. . .is an end in itself." (His son-in-law Paul Lafargue would later rhapsodize about "the right to be lazy.") In "Economic Possibilities for Our Grandchildren" (1930), John Maynard Keynes envisioned a day—not far off, in his view—when, thanks to "science and compound interest," humanity had overcome scarcity and could enjoy the fruits of mechanical progress: three-hour workdays, an abundance of free time, and the opportunity for the first time in history to "take direct enjoyment in things." Still—writing in the early days of the Great Depression—Keynes cautioned that this tranquil epoch lay just over the historical horizon. While awaiting utopia, "We must pretend to ourselves and to others that fair is foul and foul is fair, for foul is useful and fair is not," he said in what he thought was the waning epoch of privation. "Avarice and usury and precaution must be our gods for a little longer still."

As the great-grandchildren of Keynes's contemporaries, are we standing in the twilight of those idols? Have the statues of Daedalus reappeared as robots, 3-D printers, and driverless cars—proleptic avatars of a historical era we could rightly call the Technocene? Are we entering a cybernetic Eden thanks to artificial intelligence and automated production? It hardly seems probable in the stressed-out perdition of what Jonathan Crary has dubbed "24/7," an economy and culture of incessant and ubiquitous production, consumption, and branding. Yet the prospect of an automated world has emerged in two ostensibly antagonistic quarters: technovisionaries who foresee a brave new world of digitalized capitalism, and a left rejuvenated by Marx's optimism about the revolutionary promise of automation.

Among the most buoyant of the proliferating prophets of an impending technological cornucopia, Erik Brynjolfsson and Andrew McAfee proclaim that what they call the "Second Machine Age" will provide "the best economic news on the planet." While they concede that automation will wreak havoc on the lives and fortunes of millions of workers—a "Great Restructuring," in their grandiose, anodyne euphemism—they contend that it will spawn a federation of computerized communities of "minds and machines"; enable "sustained, exponential improvement" in technologies of production, communication, and medicine; and inaugurate a golden age of "recombinant innovation" in which the pace of scientific and technological research accelerates beyond that of all previous enlightenment. Contrary to postmodern autopsies certifying the death of all grand metanarratives, Brynjolfsson and McAfee demonstrate that the Story of Progress is still alive and robust, with engineers and their "brilliant technologies" as the latest vanguard of civilization. From *Fortune* and *Forbes* to *Fast Company* and *Wired*, this futurama of unfettered automation is the beatific vision of the capitalist illuminati. "Fear Not the Robot Apocalypse," as the *Wall Street Journal* recently admonished its readers.

Meanwhile, for technoenthusiasts on the left, the robotic erasure of employment portends a communist millennium of plenty, the culmination of the dialectical comedy that Marx outlined in the *Grundrisse* and *Capital*: as capital's substitution of machinery for workers reduces "socially necessary labor"—the wage labor on which capitalism rests—the communist horizon beckons, as workers emancipated from labor by automation will seek freedom from capital as well. (If capital produces its own gravediggers, as Marx and Engels had predicted in the *Communist Manifesto*, robots are preparing the tomb.) Releasing us from bondage to the realm of necessity as well as from capitalism, dehumanized production should, in this view, be celebrated rather than bemoaned. As Adam Greenfield quips, "Workers of every nation unite! You have nothing to lose but your jobs!" Besides, more and more of those jobs are "bullshit jobs," as the anthropologist David Graeber

pronounces them in his recent book of the same title—jobs "so completely pointless, unnecessary, or pernicious" that even the people doing them can't justify them. (Drawing on hundreds of stories and interviews, Graeber even provides a sardonically refined taxonomy of bullshit employment.) Despite the scatological burlesque, bullshit jobs are, for Graeber, no laughing matter; they wreak a "moral and spiritual damage," a "spiritual violence" that constitutes nothing less than "a scar across our collective soul." For many of these authors, the contemporary workplace is a spiritual sepulcher; as Nick Srnicek and Alex Williams maintain in their call for full automation, work increasingly "offers no meaning, fulfillment, or redemption." The choice, they assert, is between "glorifying work and the working class, or abolishing them both" by abolishing capitalism.

Driven to extinction by its own nature and logic, "capitalism is going to end," Peter Frase assures us in his assay into "social science fiction," and its ideal successor would be "communism"—an automated, classless, bountiful society. The abundance supplied by automation will allow us, the Rutgers historian James Livingston argues, to replace the "principle of productivity"—"from each according to his or her abilities, to each according to his or her production of real value through work" ("real value" meaning value determined in the marketplace)—with the principle of love or need: "from each according to his or her capacities, to each according to his or her needs." Thus, the supersession of class through automated affluence will permit us finally to enact the beloved community long envisioned in Christianity. Once productivity is no longer the measure of human worth, "our question," Livingston asserts, "becomes *not whether but how* to be our brother's keeper." The realm of freedom could be the heavenly city, without John Calvin's petty-bourgeois God.

Whether technoleft or neoliberal, the automated vistas portrayed in most of these books suggest that we're living in the advent of a Copernican revolution in the human condition: a life without the terrors and interdictions of scarcity, a state of leisure, play, and pleasurable experiment with the widest possibilities of happiness, a feasible utopia that would entail an immense metamorphosis in our

moral imagination. But in the neoliberal version, the new technologies provide high-octane fuel for the aggrandizement of 24/7; as the "gig" economy expands, work is not abolished but rather fragmented and ever more closely surveilled. With disaffection compensated by money and disenchantment beguiled by digital distractions, the rule of the technocratic plutocracy is further entrenched and magnified. The left fears either political failure or, worse, a frailty of will and desire to overcome the obsolescent Protestant ethic; as Graeber dreads, "we have effectively acquiesced in our own enslavement" to a punitive, masochistic morality. Afflicted with the habits of thought and feeling forged in the laborious millennia of necessity, we may well recoil from our own liberation and concoct new reasons for busywork. Indeed, across the political spectrum, the belief persists, Graeber complains, "not so much that work is good but that *not* working is very bad." Thus the ideal of what Srnicek and Williams call "full unemployment" becomes either baffling or reprehensible. So might we refuse to cross over into the republic of plenty, preferring to remain in masochistic bondage to work, productivity, and self-denial? Would we continue to live the life of the desert in the midst of our own technological oasis?

Yet there are reasons to believe that this mechanical Elysium—the apotheosis of professional-managerial modernity—is neither possible nor even desirable. Underneath their apparent political polarity, neoliberal and technoleft visions of automation share several troubling affinities. Following the dictates of pecuniary reason and industrial efficiency, they reduce human labor—and the people who perform it—to anonymous, inanimate abstraction, an effacement that only further consolidates the bland hegemony of instrumental rationality. Despite their earnest professions of ecological sensitivity, they depend on exponential technological mastery and exploitation of the natural world and exhibit a cavalier optimism about a decarbonized energy economy. For all their predictions of a digitalized beloved community made possible by material plenitude, they articulate a barren and commoditized future of luxurious anomie. And they assume that freedom and necessity will be strictly demarcated zones, precluding the

possibility—and indeed, the reality—of their dynamic and gratifying fusion.

Thus automation raises questions, not only about the ramifications of our technological prowess, but also about our humanity and the nature of the world where we discover it. As Shoshana Zuboff convincingly argues, artificial intelligence and automation constitute the armamentarium of "surveillance capitalism," in which the onus of technological development shifts from machines that overcome human limitations to machines that change or direct our behavior in accordance with market imperatives. "The aim now," she writes, "is not to dominate nature but rather human nature." Of course, in some intellectual circles, to consider "human nature" is to commit the intellectual faux pas of "humanism," and to dwell on "the nature of the world" is to engage in the kindred impropriety of "metaphysics." Earlier writers on technology were not embarrassed to pose such ambitious questions, or to think about tools and machines in terms of an indecorous metanarrative. Lewis Mumford, for instance, contended that the history of technology was a conflict between "authoritarian" and "democratic technics." From the earliest Neolithic empires to our cybernated systems of production and warfare, authoritarian technics has invested control over tools, machines, and people in a class of technical and organizational experts—first kings, priests, and their stewards and now executives, engineers, technicians, and bankers—and has aimed at nothing less than ontological dominion: the achievement of omnipotence over matter, especially over that enigmatic biochemical entity known as the human being.

Dubbed by Mumford "the megamachine," authoritarian technics has been enchanted by "three magical aims: superhuman power, material abundance, and remote control." In Mumford's view, the complete elimination of work was a dream that emanated from authoritarian technics—"a slave's dream," he wrote in *Technics and Human Development* (1967), as well as "a desperate but unimaginative slave's hope." While that hope recoiled from the real curse that work must be in technically primitive and repressive conditions, calls for the abolition of work ignored the fact that "work which is not confined to the

muscles, but incorporates all the functions of the mind, is not a curse but a blessing"—a blessing enabled by a smaller-scale, democratic technics more directly controlled by their users. In Mumford's view, cybernetics and automation constituted the pinnacle of the authoritarian pretensions of the megamachine: the eradication of human beings from production and the embodiment of their dispossessed qualities in machines.

We could relegate Mumford and his concerns about automation to some moribund "discourse of man," but as James Bridle reminds us in his labyrinthine meditation on an impending "new dark age," "our technologies are extensions of ourselves, codified in machines and infrastructures"; they tell us who we are just as much as the arts, literature, religion, and philosophy. What do automation and artificial intelligence tell us about ourselves at this moment? What do they reveal about the desires of the inhabitants of advanced capitalist societies? Far from marking a quantum leap into an utterly unprecedented stage of human history, the most imperative issues surrounding automation turn out to be the most perennial. Our crisis of work and technology compels us to ask, as Graeber formulates the question, "how should society be best arranged to produce the sort of human beings one would like to have around, as friends, lovers, neighbors, relatives, or fellow citizens?" Of all the urgent problems we face, "in the final analysis it's still the only really important one."

Against the propensity to discuss automation purely in economic and technological terms—the cuneiform of Wall Street, Silicon Valley, and their ideological deputies—we need to insist that the future of work is primarily a moral, political, and even spiritual matter. As the frontier of the "posthuman" or "transhuman" beckons, we need to ask the kind of questions now too often dismissed as the detritus of traditional humanism: What is a human being? What is the good life? What roles do work and technology play—and not play—in human flourishing? At their best, the authors discussed in this two-part essay pose these questions, and the best of their answers should lead us —unlikely and even unimaginable as it sounds—to rebel against the future being programmed by the algorithmic sorcerers of the corporate

technostructure, and short-circuit the robot apocalypse presaging the true and only heaven of the meritocrats. Without retreating into technophobic folly, we need automated vistas that are truer to the essence of our godlike but corporeal humanity.

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Automation has had three interrelated purposes: increasing productivity, lowering the cost of labor, and conferring upon capital control over the social and technical processes of production. While economists have focused on productivity and costs, not all of the worldly philosophers have greeted automation with unalloyed euphoria. In *Wealth of Nations* (1776), Adam Smith emphasized the "improvement in the productive powers of labor" made possible by the division of labor, but his misgivings about its impact on workers are seldom cited—certainly not in business schools and the textbooks they assign. Since, Smith mused, "the understandings of the greater part of men are necessarily formed by their ordinary employments," the worker who performs simple and repetitive tasks "has no occasion to exert his understanding or to exercise his invention in finding out expedients for removing difficulties which never occur." As a result, he "becomes as stupid and ignorant as it is possible for a human creature to become"; like that of Mumford's dullard and downtrodden slave, his mind sinks into "torpor," and he loses the capacity to form "any generous, noble, or tender sentiment." By degrading artisanal skill, mechanization barbarized workers—"unless," Smith recommended, "government takes some pains to prevent it." Foreshadowing generations of liberal reformers, Smith proposed education as the antidote to technological obsolescence and dispossession.

If Smith pointed to the economic and existential effects of mechanization, Andrew Ure, other Victorian economists, and later champions of "cybernetics" emphasized its authoritarian character. In *The Philosophy of Manufactures* (1835)—one of the patristic texts of managerial ideology—Ure insisted that capital's most formidable enemies were "self-willed and intractable" artisans, who were soon to be supplanted, he hoped, by "mere onlookers of machines." Like

many subsequent acolytes of automation, Ure fetishized industrial technology, attributing life and agency to the thoughtless inventions of engineers; the factory, he surmised, is "a vast automaton composed of various mechanical and intellectual organs, acting in uninterrupted concert. . .a self-regulating, moving force." Writing two decades after the Luddite rebellion against the introduction of machinery into textile mills, Ure also made it clear that the automaton embodied the political will of capital. This "Iron Man," he reflected, was "designed to restore order among the industrious classes" and "strangle the Hydra of misrule." "When capital enlists science in her service," he wrote sternly, "the refractory hand of labor will always be taught docility." Much of management writing before the era of cybernetics comprised a pedagogy of mechanical submission. From Ure's "philosophy of manufactures" to Frederick W. Taylor's "scientific management"—the first canonical literature of stewardship for the modern pharaohs of industrial capitalism—automation was both a boon to productivity and a powerful instrument of class subordination.

After World War II, the spread of automated processes throughout industry—primarily initiated to undermine the newly acquired power of organized labor, as David F. Noble demonstrated in his invaluable *Forces of Production* (1984)—triggered what one economist called an "automation hysteria" in the nation's business, technical, and opinion periodicals, from *Business Week*, *Fortune,* and *Popular Science* to *Harper's* and *Saturday Review.* While much of this "hysteria" was corporate propaganda, the most politically incisive assessment of automation came from none other than Norbert Wiener, the MIT mathematician often recognized as the leading progenitor of "cybernetics," the science of information he had developed while conducting ballistic research for the US Army during the war. Alarmed by the willingness of scientists and technicians to collaborate with the national security apparatus, Wiener also suspected the corporate interest in cybernetics, realizing that the purpose of automation under capitalism was to discipline and displace labor. Since, he wrote in *The Human Use of Human Beings* (1950), the automated machine is "the precise equivalent of slave labor," workers forced to compete against

it "must accept the economic conditions of slave labor." (He also warned his fellow professionals that "the machine plays no favorites between manual labor and white-collar labor.") A positivist for most of his career, Wiener ultimately drew on magic and religion to explain his contemporaries' infatuation with automation. In *God and Golem, Inc.* (1964), a philippic against uncontrolled technological expansion, Wiener referred to many of the researchers who staffed the laboratories of universities and corporate industry as "gadget-worshippers" and "priests of power." Impatient with the limitations of flesh, these magi of modernity saw in cybernated production a beatitude of servility, cleansed of workers who tire, complain, get sick, organize unions, and strike for justice.

As what Wiener called "the modern counterpart of the Golem"—in Jewish folklore, a large clay statue animated through kabbalistic incantation—automation represented the robotized quintessence of authoritarian cosmology and politics. Condemning the hubris and avarice that fueled the refinement of automated technology, Wiener railed against the "sin" of using "the magic of modern automatization to further personal profit." Indeed, Wiener was so concerned about labor's fate under automation that in the summer of 1949 he contacted Walter Reuther, president of the United Auto Workers, and suggested a common front against what he characterized as a "very pressing menace." Perhaps, he suggested to Reuther, unions could "steal a march on the existing industrial corporations" and develop a strategy by which labor could manage the inevitable displacement of workers and reap a larger share of automation's benefits.

Although the two men met in the spring of 1950, no such march was ever stolen. This nonevent helps explain why today's automation hysteria is so inflected by the interests and obsessions of business and technological elites. Those elites themselves changed during the New Deal order in ways that illuminate the current enthusiasm for all things automated. Arising in the gray-flannelled era of managerial capitalism, the postwar cybernetic frenzy dovetailed with the birth of a new business culture—one characterized by a "new spirit of capitalism," as Luc Boltanski and Eve Chiapello have dubbed it—which

enlisted the bohemian ethos of aesthetic self-expression and personal eccentricity in the service of capital accumulation. In what Thomas Frank has called this "conquest of cool," a nascent corporate counterculture rejected the buttoned-down compliance of the Organization Man and instead applauded "nonconformity," "creativity," and "breaking the rules." At the same time, figures such as Stewart Brand forged an exotic "cyberculture," to use Fred Turner's term, out of fascination with emergent computer technology: a mélange of New Age spirituality and the antihierarchical and postmaterialist rhetoric of the New Left and the counterculture.

Over the last half-century, as neoliberal economics combined with the rapid computerization of production, finance, and communications to dissolve the foundations of the New Deal order, automation has penetrated all sectors of US manufacturing and service industries. Meanwhile, epitomized by the laptop and the iPhone, the digital transformation of everyday material culture has legitimated the exaltation of technoentrepreneurs such as Bill Gates and Steve Jobs. (The latter's death in 2011 occasioned a quasi-religious orgy of mourning at the passing of a "visionary.") Along with George Gilder, Nicholas Negroponte, Kevin Kelly (founder of *Wired*), Ray Kurzweil, and other technoideologues of the 1990s and 2000s, Gates and Jobs pioneered a genre of digital futurology—popular among the Silicon Valley digitocracy and their devotees—in which the social and political conflicts of capitalist societies would be overcome through networked abundance: "friction-free capitalism," "business at the speed of thought," "the world is flat," etc., ad nauseum. By the 2010s, personified by Jeff Bezos, Mark Zuckerberg, Peter Thiel, and Elon Musk, the technomaniac character of neoliberal futurism was at one with the faith that markets will produce the best of all the possible worlds conceived by upscale visionary experts—the scientists, engineers, designers, and artists who comprise the "creative class," to use Richard Florida's unctuous epithet.

Brynjolfsson and McAfee are director and codirector of MIT's Center for Digital Business and its Initiative on the Digital Economy (IDE). Affiliated with the Sloan School of Management, IDE describes

itself on its website as "a team of visionary, internationally recognized thought leaders and researchers"—in other words, an ideological vanguard of organic intellectuals defining the boundaries of technical and professional creativity in corporate capitalism. Like other breezy "thought leaders" determined to "change the world," IDE proudly advertises its research programs in the vernacular of corporate culture: "organizational strain," "digital leadership," "peer-to-peer marketplaces," "brand relationships," and "platform foundations." (They also champion "synergy"—a flashy rune from 1990s technoincantation—"data equity," and a "sustainable digital economy.") Its advisory board includes Nobel laureates Robert Solow and Michael Spence, Eric Schmidt (former CEO of Google), Reid Hoffman (former COO of PayPal and cofounder and former CEO of LinkedIn), and James Manyika of McKinsey and Company, the mother of all consulting firms.

Grounding their neoliberal future in the "brilliant technologies" jubilated in their subtitle, Brynjolfsson and McAfee devote their most absorbing pages to developments in software, robotics, digital sensors, information networking, and medical diagnostics. "Science fiction keeps becoming reality," they tell us, and they offer ample reason to believe them, from androids and driverless cars to biometric and genomic sequencing devices. (Greenfield's descriptions of "the Internet of things," augmented reality, digital fabrication, and computerized cryptocurrencies such as Bitcoin are as informative and astonishing, but they're also warier and more politically astute.) AI means more than robots, drones, smart homes, and Amazon's Alexa. It means automated screening for speech disorders that assists pathologists and therapists; it means cochlear and retinal implants that might consign deafness and blindness to oblivion. Any critique of artificial intelligence must take these truly humane innovations into account; it's all too easy to mock amazement at digital technology as the latest brand of modern fetishism.

The spectacular technology isn't the problem with Brynjolfsson and McAfee's neoliberal vista; it's their fundamentally insipid, quantitative, and politically vacuous conception of the good life. The banality

of their prose illustrates the thinness and mediocrity of their vision. Cliché and boilerplate abound: we're told that we need more "out-of-the-box thinking"; we're assured that automation is "enriching our world and our lives" and that it's giving us "more choice and more freedom" (except, of course, the choice and freedom to reject it); we're supposed to be enthralled by how digitalization occasions "mind-melting encounters with technology." (That may be a malapropism; I think they mean "mind-melding" à la Spock of *Star Trek*.) This is the huckstering idiom of "startups," "blue-sky thinking," and "elevator pitches"; it's the world-historical palaver of business schools, tech conferences, and "innovation bazaars," where "disruption" and "revolution" designate new ways of ordering sushi or squeezing oranges. It's the hive mind of wunderkinder who consider Malcolm Gladwell a fount of sagacity, and who swill the panglossian moonshine that flows from the pages of Steven Pinker. It articulates a view of human history as a technoeschatological epic in which literature, the arts, and religion are surpassed and invalidated by the mind-melting circuitry of the iPhone X. The "second machine age" will, they tell us, "make mockery out of all that came before"—an astonishingly arrogant expression of historical illiteracy.

This ignorant but self-assured disdain for the past partakes of an even more broadly impoverished conception of intellectual life. To neoliberal technorati such as Brynjolfsson and McAfee, intellect is a thoroughly instrumental faculty, an ensemble of "skill sets" to be assembled and utilized for monetary and technological ends. According to this "computational thinking," as Bridle dubs it, the world that intellect seeks to apprehend is transparent and, ultimately, manageable; all problems can be defined in numbers and resolved with the correct application of credentialed expertise. (Mystery is either an insufficiency of data or the twaddle of humanist romanticism.) Modeled implicitly after data processing, the life of the mind, they inform us, is the realm of "knowledge creators, problem solvers, and innovators." "Creativity" almost always means "problem-solving," usually for the purpose of designing or marketing ever-cooler gadgets and services. Education "makes us more productive" and "augments the nation's

capital stock." Schools should better prepare children to "read discerningly," which turns out to mean "search broadly for relevant information" and sharpen "broad-frame pattern recognition." Their sage advice to secondary and college students is to "fill up your toolkit" with technical and business proficiency. (Not that they want a nation of boorish technicians; "in some cases," they add uncomprehendingly, education can be "intrinsically rewarding." Art, literature, and everything else out of which digital technology has made a mockery can still be studied as "complements to low-cost data and cheap computer power.") The self-important vapidity of the technocratic wing of the professional-managerial elite is distilled in the term "thought leader": at once oafish and self-congratulatory, it denotes the neoliberal reduction of intellect to hollow, competitive computation, the branding of intelligence as a research-and-development enterprise.

With the mechanization of production as its implicit template, the cognitive project of neoliberal technocracy is the automation of the human intellect, the rewiring of the mind to work with the speedy and unreflective precision of algorithms. When the world becomes a computational problem, the mind becomes a glorified abacus; as "reality itself takes on the appearance of a computer," in Bridle's words, "we think more and more like a machine, or we do not think at all." A journalist and visual artist, Bridle reports that more and more specialized and even everyday intellectual work is being outsourced to artificial intelligence. More than ever driven by the profit motive, scientific research is increasingly the province of computers rather than human beings, whose physical and temporal limitations slow down the pace of knowledge accumulation. Today's pharmaceutical laboratory, for instance, consists less of the white-coated, clipboard-wielding scientists of yore than of "vast libraries of chemical compounds. . .fed into machines and tested against each other." (The ironic result is that the rate of new drug development has declined significantly over the last decade. "Messy human empiricism," Bridle suggests, might be a better mode of discovery—if only the drug companies' obsession with profitability would allow that messiness.) Tomorrow's journalists may be computers: Yahoo, the Associated Press, and a growing number of

other news outlets now rely on "Automated Insights" to sift through stories and press releases and generate articles on sports and business. This faith in the reliability of technology has percolated from the intelligentsia into the general population in the form of what Bridle calls "automation bias," an inclination to value and trust automated information more highly than our own experiences and observations—up to the point, he shows, where we might literally follow it to our deaths. Bridle cites several instances in which airline pilots, drivers, and hikers have perished because they relied on automated positioning systems rather than the evidence of their own senses.

The instrumentalist recasting of intellectual life reflects a broader triumph of the quantitative, the transfiguration of aesthetics and morality by the metrics of sales figures and outcomes assessment. For Brynjolfsson and McAfee, the good life is a positivist, hip consumerism, with the calculus of the gross domestic product wrapped in the raiment of the bohemian bourgeois. Wealth is an endless metastasis of stuff, good, apparently, because it simply exists: more writers and artists are busy creating "content"; we can "consume" more information and entertainment; the new technologies will enable us to "increase both the variety and the volume of our consumption." The question of whether or not that "content," variety, and volume are any good, or any good for us—whether it's wealth or "illth," as John Ruskin would have put it—can be dismissed as the reactionary rant of snobs and curmudgeons. Besides, we're informed in a remarkable nugget of thought leadership, there is "quantitative evidence that the overall quality of music has not declined." Alas, there's been little in the way of scientific research into love, friendship, or community, as "we don't have a lot of formal metrics for those kinds of value," they write with apparent chagrin. (Imagine the Excel spreadsheet for romance: "How do I love thee? Let me tabulate the ways.")

When coupled with global market forces, the unrelenting quantitative gestalt culminates in a cultural regime of blandness. "A certain deadening sameness. . . has begun to blanket the world," as Greenfield notes of the dispiriting monotony of contemporary corporate and consumer architecture. Exemplified in "the Internet of things"—the vast

network of everyday devices now connected to the Internet—a melancholy tedium spreads as entrepreneurs and corporations attempt to fill the social and emotional voids created by their own technology with commodified digital replenishments. (Sean Parker, one of Facebook's earliest investors, admitted to an October 2017 conference sponsored by the media company Axios that he and Zuckerberg had deliberately designed their creation to be addictive.) As Greenfield shrewdly discerns, "sadness" permeates the texture of our lives "as the planet's extraordinary diversity of lifeways yields to the unlimited perfect reproduction of the modes of taste, self-expression, and subjectivity" favored by our overlords in tech and finance.

As both Greenfield and Zuboff show, this instrumentalist, logarithmic sensibility enables "the colonization of everyday life by information technology." A professor of urban design at University College, London, and a former design director for Nokia, Greenfield devotes much of his unsettling volume to reporting the varieties of invasion and settlement by the corporate digital imperium. As we increasingly rely on our smartphones to navigate and perform our personal and professional tasks, algorithms determine more of the contours of our mundane experience and interpersonal affairs, and the apps facilitate "the seamless splicing of revenue-generating processes into ordinary behavior." Firms such as Amazon, Rite Aid, and Wendy's use devices to scan employees' eye movements, track their locations, monitor their interactions with customers, measure their time in the bathroom, and even ascertain their emotional states. However brilliant and beguiling the technics, automation under capitalist auspices, Greenfield reminds us, is not and has never been about relieving workers of burdensome, monotonous labor; employers show no compunction—especially in these days of union decimation—about making employees grind in intensely stressful and dangerous conditions. The application of intelligent machines, whether in the workplace, your living room, or your hand, is about the capitalist imperative to "mediate and monetize everyday life to the maximum possible extent."

For Zuboff—who is a professor at Harvard Business School and no vendor of technophobic hysteria—this "dispossession of human

experience" is central to "surveillance capitalism," in which the tra-
ditional logic of accumulation mandates the expropriation and mon-
etization of human life itself. Through the commercial exchange
of information among firms, the personal data supplied by users of
Facebook, Google, and other social-media platforms becomes "a
proprietary behavioral surplus, fed into advanced manufacturing
processes known as 'machine intelligence,' and fabricated into predic-
tion products that anticipate what you will do now, soon, and later."
These "prediction products" are in turn inserted into what amount
to "behavioral futures markets" in which infocapitalists speculate on
our behavior and grow stupendously wealthy doing so. (This is why
calls for Facebook to do more to "protect privacy" are so feckless; such
demands are "existential threats that violate the basic mechanisms
of the entity's survival.") The ultimate goal of what Zuboff calls this
"instrumentarian order" is the complete eradication of uncertainty
and contingency to plan investments and ensure the reliability of prof-
its. For the purposes of surveillance capital, there can be no clear and
rigid line between the automation of the workplace and the automa-
tion of the person; money commands the machinic overhaul not only
of production but of self and society as well. With social media, capital
has "shifted from automating machine processes . . . to using machine
processes to shape your behavior . . . [from] automating information
flows about you to automating you." "The automation of the self,"
Zuboff warns, is "the necessary condition of the automation of society."

For both Zuboff and Greenfield, the infiltration of our lives by cor-
porate technology has insidious political consequences. "Surveillance
capitalism" depends on an enormous and inviolable asymmetry in
knowledge; our lives are mined and monetized but we have no knowl-
edge about what the owners of our experience know about us. The
digital ethos—Bridle's "computational thinking"—inhibits "our abil-
ity to think meaningfully about the future," in Greenfield's words, by
reformulating every political question as "a choice between varying
shades of technical development." This is the postpolitical culture of
technomeritocratic capitalism, and Brynjolfsson and McAfee exem-
plify its narrow and complacent ideological profile: they are clueless

about empire and class but clearly convinced of their sharp-minded pragmatism. The military origins of cybernetics go unremarked, as do any potential applications of digital technology to warfare and surveillance; they groove on the commercial uses of drones, but say nothing about their weaponization. Like imperial reach, class does not exist in the Second Machine Age, having apparently been abolished by technology, which is, they claim, the primary factor in the growth of "income inequality" (one of the more analgesic and risible formulations of our age). If "digital technologies tend to increase the economic payoff to winners while others become less essential," they do so only because of capitalist property relations that determine the production and distribution of wealth. Among the winners in the neoliberal perestroika, our world-changing thought leaders thoughtlessly adopt the standpoint of capital throughout, surveying human beings and their digitalized replacements through the prism of pecuniary reason. From the vantage of mercenary rationality, the brilliance of the brilliant technologies resides not in their microprocessed intelligence but rather in their use to expedite the degradation and removal of human labor. A robot, they observe, "can work all day without needing sleep, lunch, or coffee breaks," and it also "won't demand healthcare from its employer or add to the payroll tax burden"—an "obvious advantage," they conclude, and it certainly is an obvious advantage *to business*. Defined in the terms of pecuniary genius, the logic of automation is the logic of capital.

This class unconsciousness leads them—like their meritocratic peers in business, technology, universities, and government—to attribute inequality and unemployment to cognitive default, not avarice or injustice. They dutifully pick up the meritocrat's burden: "We simply aren't thinking hard enough," they insist at one point; "we aren't being creative enough." When Brynjolfsson and McAfee think hard and creatively, they conclude that whatever turbulence will be unleashed by automation can be finessed or mitigated by economic growth and consumer spending, which will serve as the therapeutic surrogate for a redistribution of power and property. Observing happily that over

the last two centuries living standards have risen "roughly in line with dramatic increases in productivity," they fail to add that this happened thanks not to technology but to labor unions, workplace struggle, and redistributive welfare states—First Machine Age relics tagged by neoliberals for the vault of historical antiquities. Realizing, like Wiener, that automation will not only eliminate jobs but also exert a powerful downward pressure on wages, they engage in a meandering and unenthusiastic discussion of a universal basic income (UBI) before settling on a negative income tax like that once proposed by the neoliberal doyen Milton Friedman—a measure designed both to eliminate the welfare state and to ratify market allocation. (Brynjolfsson has hinted that he is not opposed to raising taxes on the wealthy. When, at the January 2019 Davos summit, Dell CEO Michael Dell ridiculed Representative Alexandria Ocasio-Cortez's proposal of a 70 percent tax rate on higher incomes by demanding, "Name me a country where that's worked—ever," his fellow panelist Brynjolfsson replied, "the United States.") As among other thought leaders and "influencers," certain thoughts and influences—for instance, workers' control of technological design through labor unions or neighborhood and regional councils—have been banished from respectable discussion. For all their self-professed "visionary" powers, they never envision the possibility that workers could shape the process of automation by democratic means.

If their automated vista portends anything, it's the subtle but definitive replacement of democracy by management, expertise, and proprietorship—the postpolitical mainframe of neoliberal hegemony. Like other votaries of depoliticized politics, Brynjolfsson and McAfee prefer to circumvent rather than disassemble democratic institutions. Ardent moderates, they chide both "ardent conservatives and diehard liberals" and pledge allegiance to the sensible center, where philosopher-wonks deliberate, insulated from the passions of the meritless plebeians. As in Plato's *Republic*—arguably the ancient prototype for modern meritocracy, with the authority of its rulers legitimated and mystified by a recondite epistemology—sovereignty in the Second Machine Age will rest with the savants of the proper

esoterica. While the theater of democracy will remain for the nuga-
tory performance of popular self-government, the hippest plutocracy
in history will form the effective political directorate. "Shaping how
society will use technology is not just, or even mainly, a job for gov-
ernment," they warn, but rather the prerogative of "entrepreneurs and
managers"—the Disruptors and Innovators and Thought Leaders and
Visionaries, the patriciate of monopoly-automated capitalism.

　　This is the neoliberal sublime as fancied in Wall Street and
Silicon Valley: a world of entrepreneurial selves untethered by materi-
al or human necessity, the cybercultural empyrean of hipster individ-
ualism charged with fiber-optic grandeur. It's also a world scrubbed
clean of human presence, as is clear when Brynjolfsson and McAfee
describe Eatsa, an automated vegetarian restaurant chain based in San
Francisco. From ordering a meal to receiving it, patrons, they effuse,
never "have to speak or interact with a single human being." (The
cooks remain hidden behind a polished, high-tech wall.) Although
they never explain why such an impersonal, eremitic eatery should be
a desirable place, their enthusiasm hints at an unwitting gnosticism,
a misanthropic distaste for the slowness, imprecision, and inefficiency
attendant upon fleshly finitude. (A kindred gnostic aspiration animates
the work of Ray Kurzweil and other "transhumanists," who hope to
achieve a prosthetic immortality by uploading their minds to comput-
ers.) Freedom here means an antiseptically contractual posthuman-
ism, incapable of sustaining a common good irreducible to a tally of
consumer sovereignties.

　　Brynjolfsson and McAfee's futurism is explicitly capitalist: "cap-
italism is not perfect, but it's far better than the alternatives" is their
pedestrian alibi. (Disappointingly, Zuboff agrees. Although she de-
nounces the "rogue capitalism" of the present, she praises the prote-
an "plasticity" of the market. For her—as for, say, Senator Elizabeth
Warren of Massachusetts, a champion of what might be called
professional-managerial populism—capitalism must be curbed but
not abolished by democracy.) For Silicon Valley and its ideological
satellites, the shibboleths of growth, productivity, and innovation

remain drearily sacrosanct: "the economy must invent new jobs and industries" is their resolutely in-the-box thinking. True to the mega-mechanical imperative endemic to authoritarian technics, the Second Machine Age would only intensify the velocity of 24/7, escalating the frenzy and vexation in the pressure cooker of neoliberal society. Even if buoyed by a basic income or a negative income tax, the population of the automated capitalist world would scurry from one low-paid gig to the next, toiling, Greenfield fears, in an economy of "desperation and precarity" marked by "the continuity of business as usual."

But if automation unfolds in the historical conjuncture when capital becomes economically superfluous but remains politically invulnerable, Frase—an editor at *Jacobin*—argues that it could evolve into a postcapitalist dystopia he calls "rentism": in which a small elite amasses wealth through extraction of rent rather than commodity production. (Through licenses, copyrights, and fees, ownership of intellectual property in particular confers the power to tell others how to use an idea or information or database that you "own.") While this elite controls the material and intellectual technology, the rest are rendered quiescent with bread and circuses, a measly downward redistribution of wealth through a universal basic income, and a pan-optical apparatus of surveillance and enforcement to neutralize any dissent. Graeber believes that we've already arrived at a dictatorship of the rentiers. Speculating that "the existing system *isn't* capitalism"—at least not the sort that Smith, Marx, Friedman, or Hayek would recognize—"managerial feudalism," as he calls it, is "increasingly a system of rent extraction" in which "economic and political imperatives come to largely merge." (For Graeber, this also explains bullshit employment, which, because it creates no "value," would seem to make no sense in capitalist terms.) Regardless of whether "managerial feudalism" has come or is soon to appear, it's a world anticipated in films of the 1970s such as *Rollerball* and *Network*, where corporations have become de facto governments and rely on entertainment to distract and tranquilize the low-paid, harried masses. (Bleakly echoing Graeber, the German sociologist Wolfgang Streeck portrays a similar

scenario of "neofeudalism," a long interregnum of corporate rule in which capitalism languishes but refuses to die.)

But there's another, more malevolent dystopia of scarcity, inconceivable to chirpy thought leaders in TED talks: "exterminism," as Frase designates it, in which the wealthy secede into a far-flung sanctuary of gated communities, private islands and estates, and fortified urban centers—"an inverted global gulag" of luxurious enclaves, sealed off from the growing misery of the world's proletariat and insulated from the manifold inescapable calamities triggered by planetary warming. (Brynjolfsson and McAfee are utterly silent about the ecological future as well as the energy sources for their turbocharged capitalism.) Exterminism incubates in the vast institutional matrix of the "war on terrorism," the militarization of US police forces, and the pestilence of the prison-industrial complex. In these conditions, automation and artificial intelligence provide a more efficient mechanization of tyranny.

While Frase and Greenfield focus on the dystopian politics of capitalist automation—in which a demoralized and powerless populace is amused or bludgeoned into submission—Bridle portrays the specter of a world animated by irrationality, a culture of paranoia that resists the unseen and unaccountable regime of algorithms. For Bridle, automation represents a system that, despite its scientific and technological veneer, serves to nurture unintelligibility, bewilderment, impotence, and madness. The prevalent metaphor of "the cloud," for instance, "is used to obscure the real operation of technology." While the global digital infrastructure is a material and political reality—a concatenation of ocean floor cables, fiber-optic lines, phone systems, satellites, and computer centers, all organized through states and corporations—the notion of "the cloud" confers "the aura of something noumenal and numinous," a vapory colossus outside the agency and comprehension of ordinary mortals. Yet this ideology of digital sublimity doesn't always mesmerize the incognoscenti; it is constantly undermined by the technology itself, with sometimes harrowing consequences. As Bridle explains, although the modern mythology of progress is now more than ever "reified into technology itself" in the form of digitalized computation that purports to enable prediction

and control, the volume of information supplied is experienced by most people as overwhelming, while the complexity of computer networks and their discrete parts renders them puzzling and opaque to most users. Thus, while there is more information than ever available to more people, we have less capacity to understand and act meaningfully on what we know; instead of enlightenment and mastery, "more information," Bridle concludes, "produces not more clarity, but more confusion." Increasingly desperate to orient themselves, people formulate or lend credence to "ever more byzantine theories of the world," especially those that attribute events to the nefarious machinations of conspiracies—US government involvement in 9/11, birtherism, and white genocide in South Africa, to name a few.

Rather than simply mock or dismiss these ideas, Bridle turns them into parables about the epistemological injustice of the digital age. He shrewdly observes that conspiracy theories have "more to do with the relation of people to power than that of people to truth," and quotes Frederic Jameson's insight that conspiracy is "the poor person's cognitive mapping in the postmodern age. . .a desperate attempt to represent [late capitalism]." No longer restricted to the poor, hysteria about conspiracies and "fake news" is not simply stoked by Facebook and other platforms hungry for revenue; it is made possible, in part, by the obscurity endemic to digital technics. The proliferation of irrationality has been fueled, Bridle argues, not only by racism or by the avarice and libertarian irresponsibility of social-media platforms, but by a broader, more disturbing sense of incomprehensibility fostered by illegible technology and the inundation of data that it generates. (The recent media furor over "Russian hacking" of the Democratic National Committee is a depressing example.) Thus, at the same time that the brilliant technologies ballyhooed by the digital intelligentsia undermine confidence in the validity of sense experience, they weaken whatever fragile defenses we erect against temptations to unreason and credulity.

Under neoliberal capitalist auspices, then, automation would not usher us into the land of abundance and leisure envisioned by Keynes. Instead, it would provide the material and ideological foundations of a cool, technocratic plutocracy that unites the digitalized

fantasies of Silicon Valley with the mercenary reason of Wall Street. Stigmatized as losers in the meritocratic scramble—in which "merit" is defined as intellectual competence in the production and service of wealth—everyone else would be consigned to an oblivion of precarious, underpaid, bullshit labor, ballasted (maybe) by scraps redistributed through a universal basic income, and enchanted by a plethora of personal devices whose design, consumption, and obsolescence would mark the machinic contours of the good life. Where it isn't something to be surpassed—a vulnerable relic of the analog age—the human is a computational problem, an algorithm rather than a mystery.

Would automation be any different in a more democratic, even socialist, political economy? Released from their capitalist integument, would robots and other digital technologies aid in human flourishing, rather than diminish it? Or is there something in the very nature of automation that would undermine both democracy and socialism? The second part of this essay, which will appear in the next issue, will take up these and other questions.