RUHA BENJAMIN EDITOR

CAPTIVATING TECHNOLOGY

RACE, CARCERAL TECHNOSCIENCE, AND LIBERATORY IMAGINATION IN EVERYDAY LIFE

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Ruha Benjamin, editor

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for Khalil and Malachi

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Foreword

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Troy Duster

Can a robot or an algorithm be racist? A simple question with a very simple answer. The reason why there is some confusion in the varied responses to this question is directly related to how much context and history is known about what goes into the computer programming. If the programmer knows little or nothing about the substance of the matter (e.g., from outside their own culture), the chances are very high that the seeming neutrality of "data in" will miss when there is racism embedded in the algorithm. Let's take two basic elements of a democratic society: voting rights and marriage eligibility. As a heuristic tool, it will be useful to contrast the voting access and marriage eligibility of a Japanese person of Burakumin descent (in Japan) with how American citizens of recent European or African descent in the United States are affected by voting rights and marriageability.

Here are the first lines from a *New York Times* report of September 1, 2017: "The calls started flooding in from hundreds of irate North Carolina voters just after 7 A.M. on Election Day last November. Dozens were told they were ineligible to vote and were turned away at the polls, even when they displayed current registration cards. Others were sent from one polling place to another, only to be rejected. Scores of voters were incorrectly told they had cast ballots days earlier. In one precinct, voting halted for two hours."[1]

On the surface, a strong social tradition or law determining the contours of eligibility can appear neutral, but a bit of knowledge about social history can easily reveal embedded racial or ethnic bias. As many Americans know, a fine example would be the "grandfather's clause" used in the post-Reconstruction South to prevent blacks (newly freed from slavery) from voting, as in, *one can vote only if one's grandfather voted*. This grandfather's clause had *disparate impact* on whites and blacks, and it is notable that in the last three decades, the right-tilting U.S. Supreme Court has substantially eroded "disparate impact" as grounds for challenging the constitutional standing of a law.

In the contemporary world of Japan, how might a parallel history provide access to (or denial of) voting rights—or marriage eligibility? Japanese parents spend several hundred million dollars every year paying detectives to

ascertain information on whether their marriage-age children should either break off an engagement or marry. Why?

The Burakumin of Japan are a pariah caste at the base of Japanese culture and social stratification, and have occupied the bottom rung for over 1,200 years! The Japanese, like the Swedes and the Icelanders, are meticulously good, even rabid, record keepers. So they have birth records that go back several hundred years. The Burakumin were restricted to living in their own cordoned-off villages until the Meiji reforms of 1868–71, when the Tokugawa-era laws were overturned. Japanese birth records reveal not just when one was born, but with further research, one can use the *koseki* (birth certificates for every Japanese, with more info than a U.S. certificate), to find out where one's parents were born. So the Japanese hire researchers to surreptitiously (and illegally, since Meiji times) access the koseki and thus are able to trace back two, three, or even four generations of direct ancestry. This comes in handy, even in today's Japan, where parents of young couples who want to get married hire detectives (at a cost of over several hundred million dollars annually) to trace the koseki—to make certain that their offspring do not marry a Burakumin.

Now imagine that the Japanese could concoct an algorithm that could do such tracing and embed koseki information into voter eligibility. It would be the equivalent of our grandfather's clause but disguised as simply a neutral technology for tracing voter eligibility. Unless one knows about the history of the Burakumin, that machinery could be characterized as "neutral" by a computer programmer . . . and the embedded bias would be invisible without knowledge of Japanese history.

There is a parallel in the United States. Republican governors across a dozen states have pushed for voter registration that restricts access based upon "neutral" conditions such as state-issued identification cards with photos. All that would appear neutral to a computer programmer, oblivious to systemic and voter suppression strategies designed to intimidate or restrict black voters, overwhelmingly in the South, going back to the Jim Crow laws of the post-Reconstruction. A disproportionate number of blacks were affected by the grandfather's voting eligibility—just as a disproportionate number of blacks are affected by the "neutrality" of state-issued IDs, but oh so much more subtly. Disparate impact was blatant in the law that required evidence that one's grandfather had voted but has been "neutrally" disguised in photo ID laws. The answer to the question posed at the outset? Robots and algorithms can be as racist as the designers of the generated computer programs. *Captivating Technology* examines just such hidden interconnec-

tions of seemingly neutral technologies, disentangling and identifying the social and historical, illuminating how and why it infuses the not-so-neutral "machinery."

Note

1. Nicole Perlroth, Michael Wines, and Matthew Rosenberg, "Russian Election Hacking Efforts, Wider Than Previously Known, Draw Little Scrutiny," *New York Times*, September 1, 2017, accessed January 25, 2018, https://www.nytimes.com/2017/09/01/us/politics/russia-election-hacking.html.

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I am deeply grateful to the contributors to this volume for investing their energy and insights to bring this project to life. I had long admired each of them as thinkers, and now I stand in awe of their generosity and diligence as collaborators. I was told earlier in my career by more than one person that edited volumes were not a smart investment of time. I am so glad I did not listen! Habitual stubbornness for the win. Working on this book has been one of the most rewarding experiences and I have no doubt this is because I had the opportunity to work so closely with people who continually blow my mind *and* put it back together in new ways.

This book would not have been possible without the incredible support of Princeton University's Department of African American Studies. It is a rare thing, I suspect, to love, respect, *and* enjoy the company of one's colleagues. But that is the case here. Anna Arabindan-Kesson, Wendy Belcher, Wallace Best, Eddie Glaude, Reena Goldthree, Joshua Guild, Tera Hunter, Naomi Murakawa, Kinohi Nishikawa, Chika Okeke-Agulu, Imani Perry, Stacey Sinclair, Keeanga-Yamahtta Taylor, Judith Weisenfeld, and Autumn Womack teach me that is possible, even within old systems, to forge new ways of relating and being together. And it is an open secret that none of our work would be possible without the *incomparable* staff, past and present, Allison Bland, Elio Lleo, Jana Johnson, April Peters, and Dionne Worthy.

This department exemplifies the idea that technologies are not just "out there" in the world, but they include the everyday social tools that we all employ in our interactions with one another, containing or liberating, tearing each other down or building one another up. I am incredibly fortunate to work with people who choose the latter again and again. The freedom and encouragement I have experienced in this context teach me that it is possible to build new worlds in the midst of old ones.

The seeds of this project were first planted at the "Ferguson Is the Future" symposium at Princeton University in September 2015, which was funded by generous grants from the David A. Gardner '69 Magic Project in the Council of the Humanities and the Lewis Center for the Arts. The symposium was also cosponsored by the Princeton Department of English, Program in Gender and Sexuality Studies, and Department of African American Studies, Council on Science and Technology, Princeton Public Library, and

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Introduction

DISCRIMINATORY DESIGN, LIBERATING IMAGINATION

Ruha Benjamin

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> All paradises, all utopias are designed by who is not there, by the people who are not allowed in.
>
> —TONI MORRISON

> What is so astonishing about the fact that our prisons resemble our factories, schools, military bases, and hospitals—all of which in turn resemble prisons?
>
> —MICHEL FOUCAULT

Technology captivates.

Capturing bodies. Dashcams on the front of police vehicles recording traffic stops turned deadly, as with the arrest of Sandra Bland on a Texas highway. Robot cranes reaching thirty feet in the air, monitoring images and heat signatures throughout Camden, New Jersey, deepening police occupation of impoverished neighborhoods.[1] Crime prediction algorithms labeling black defendants "higher risk" than their white counterparts, reinforcing popular stereotypes of criminality and innocence behind a veneer of objectivity.[2] Electronic ankle monitors wrapping around the limbs of thousands of people as they await trial or serve parole . . . an "attractive alternative" to cages, more humane and cost-effective than jails, we are told. Tools, in this way, capture more than just people's bodies. They also capture the imagination, offering technological fixes for a wide range of social problems.

Electronic tracking and location systems are part of a growing suite of interventions dubbed "technocorrections."[3] Indeed, these interventions

come bubble wrapped in rhetoric about *correcting*, not just individuals, but social disorders such as poverty and crime. In the first-ever report analyzing the impact of electronic monitoring of youth in California, we learn that e-monitoring entails a combination of onerous and arbitrary rules that end up forcing young people back into custody for "technical violations."[4] Attractive fixes, it turns out, produce new opportunities for youth to violate the law and, thereby, new grounds for penalizing them. But perhaps this is the point? Could it be that we don't need technocorrections to make us secure, that we need social insecurity to justify technocorrections?[5]

Captivating Technology examines how the management, control, and "correction" of poor and racialized people provide the raison d'être for investing in discriminatory designs.[6] The volume aims to contribute to a long-standing sociological concern with structures of inequality. These "default settings" encompass legal, economic, and now computer codes, and move past an individual's intention to discriminate, by focusing analysis on how technoscience reflects and reproduces social hierarchies, whether wittingly or not. From credit-scoring algorithms to workplace monitoring systems, novel techniques and devices are shown to routinely build upon and deepen inequality.[7] Racist and classist forms of social control, in this sense, are not limited to obvious forms of incarceration and punishment; rather, they entail what sociologist Carla Shedd calls a "carceral continuum" that scales over prison walls.[8]

Even what is now popularly known as the "prison industrial complex" is vaster than most of us realize. As the editors of *Captive Genders* Eric Stanley and Nat Smith catalog, it includes "[i]immigration enters, juvenile justice facilities, county jails, holding rooms, court rooms, sheriffs' offices, psychiatric institutes," along with an extensive set of social relations that include "prison labor, privatized prisons, prison guard unions, food suppliers, telephone companies, commissary suppliers, uniform producers, and beyond, the carceral landscape overwhelms."[9] Indeed, the enormity of the terrain is overwhelming, especially for those individuals, families, and communities that are caught in the crosshairs of this carceral regime.[10] But what the following pages reveal is that the sticky web of carcerality extends even further, into the everyday lives of those who are purportedly free, wrapping around hospitals, schools, banks, social service agencies, humanitarian organizations, shopping malls, and the digital service economy.[11] Technology is not just a bystander that happens to be at the scene of the crime; it actually aids and abets the process by which carcerality penetrates social life. It does so, in part, because technoscientific approaches seem to "fix" the problem of human bias when it comes to a wide range of activities. But as law profes-

sor Patricia J. Williams insists with respect to color-blind interventions more broadly, "the application of such quick fixes becomes not just a shortcut but a *short-circuiting* of the process."[12] And while there is some hope for broad-based solidarity precisely because of how far-reaching carceral logics are, racialized groups continue to pay a much higher price for this failure to deal squarely with the deep currents of social life.

THE NEW JIM CODE

So how should we understand the duplicity of technological fixes—purported solutions that nevertheless sediment existing hierarchies? First, it is important to reckon with the way that emerging technologies can reinforce interlocking forms of discrimination, especially when we presume they are insulated from human influence. This insidious combination of coded bias and imagined objectivity is what I call the *New Jim Code*—innovation that enables social containment while appearing fairer than discriminatory practices of a previous era. This riff on Michelle Alexander's *The New Jim Crow* considers how the reproduction of racist forms of social control in successive institutional forms (slavery, Jim Crow, ghettoization, mass incarceration), now entails a crucial sociotechnical component that hides not only the nature of domination, but allows it to penetrate every facet of social life.

As I have argued elsewhere, these "postracial upgrades appear necessary and even empowering, which is precisely what makes them so effective at exacerbating inequality. . . . In this way it is a kind of racial minimalism that allows for more and more racist violence to be less and less discernable."[13] Thus, truly transformative abolitionist projects must seek an end to carceriality in *all* its forms, from the state-sanctioned exercise of social control à la Big Brother, to everyday forms of surveillance that people engage in as workers, employers, consumers, and neighbors à la little brother.[14] Taken together, such an approach rests upon an expansive understanding of the "carceral" that attends to the institutional *and* imaginative underpinnings of oppressive systems.

Indeed, abolishing the carceral continuum requires investment in a *continuum* of alternatives to address the many social problems that the prison industry is tasked with managing but, thereby, perpetuates. In the words of Angela Y. Davis, the aim is not "prisonlike substitutes for the prison, such as house arrest safeguarded by electronic surveillance bracelets. Rather, positing decarceration as our overarching strategy, we would try to envision a continuum of alternatives to imprisonment—demilitarization of schools,

revitalization of education at all levels, a health system that provides free physical and mental care to all, and a justice system based on reparation and reconciliation rather than retribution and vengeance."[15] A colossal undertaking indeed! This is why nothing short of the "creation of new institutions that lay claim to space now occupied by the prison" and all of its carceral antennae and appendages can form the basis of genuine social transformation. To that end, this discussion aims to buoy the vital scholarly and activist investment in abolition and transformative justice by offering the first sustained analysis of the carceral dimensions of emerging technologies across a wide range of social arenas.

The central questions animating the text are: Who and what are fixed in place to enable innovation in science and technology? What social groups are classified, corralled, coerced, and capitalized upon so others are free to tinker, experiment, design, and engineer the future? How are novel technologies deployed in carceral approaches to governing life well beyond the domain of policing? This book also asks: To what end do we imagine? How can innovation in terms of our political, cultural, and social norms work toward freedom? How might technoscience be appropriated and reimagined for more liberatory ends? Ultimately, this volume is about what people can do, *are doing* about it. From Frederick Douglass to Dorothy E. Roberts, African diasporic artists to black feminist abolitionists, the following pages also explore visions of fashioning the world in radically different ways.

DISCRIMINATORY DESIGN

In rethinking the relationship between technology and society, a more expansive conceptual tool kit is necessary, one that bridges science and technology studies (STS) and critical race studies, two fields not often put in direct conversation. This hybrid approach *illuminates* not only *how society is impacted by* technological development, as techno-determinists would argue, but how social norms, policies, and institutional frameworks shape a context that make some technologies appear inevitable and others impossible. This process of mutual constitution wherein technoscience and society shape one another is called *coproduction*.[16]

In her book *Dark Matters*, for example, sociologist Simone Browne examines how surveillance technologies coproduce notions of blackness, explaining that "surveillance is nothing new to black folks"; from slave ships and slave patrols to airport security checkpoints and stop-and-frisk policing practices, she points to the "facticity of surveillance in black life."[17] Chal-

lenging a technologically determinist approach, she argues that instead of "seeing surveillance as something inaugurated by new technologies . . . to see it as ongoing is to insist that we factor in how racism and anti-blackness *undergird* and *sustain* the intersecting surveillances of our present order."[18] Antiblack racism, in this context, is not only a by-product, but a *precondition* for the fabrication of such technologies—antiblack imagination put to work.

A coproductionist analysis calls for more than technological or scientific literacy, but a more far-reaching *sociotechnical imaginary* that examines not only how the technical *and* social components of design are intertwined, but also imagines how they might be configured differently.[19] To extricate carceral imaginaries and their attending logics and practices from our institutions, we will also have to free up our own thinking and question many of our starting assumptions, even the idea of "crime" itself.

Take, for instance, a parody project that begins by subverting the antiblack logics embedded in new high-tech approaches to crime prevention. Instead of using predictive policing techniques to forecast street crime, the White Collar Crime Early Warning System flips the script by creating a heat map that flags city blocks where financial crimes are likely to occur.[20] The system brings not only the hidden, but no less deadly, crimes of capitalism into view, but includes an app that alerts users when they enter high-risk areas to encourage "citizen policing and awareness."[21] Taking it one step further, the development team is working on a facial recognition program to flag individuals who are likely perpetrators, and the training set used to design the algorithm includes the profile photos of 7,000 corporate executives downloaded from the popular professional networking site LinkedIn. Not surprisingly, the "average" face of a criminal is white and male. To be sure, creative exercises like this are only comical if we ignore the fact that all of its features are drawn directly from actually existing proposals and practices "in the real world," including the use of facial images to predict criminality.[22]

By deliberately and inventively upsetting the status quo in this manner, analysts can better understand and expose the many forms of discrimination embedded in and enabled by technology. In fact, the late legal scholar Derrick A. Bell encouraged just this—a radical assessment of reality through creative methods and racial reversals, insisting that "[t]o see things as they really are, you must *imagine* them for what they might be."[23]

Discriminatory design, moreover, is a conceptual lens to investigate how social biases get coded, not only in laws and policies, but in many different objects and tools that we use in everyday life. Consider public benches designed with intermittent armrests that make it impossible to lie down. For

the typical passerby, the inconvenience is negligible. But for a person who is homeless, it is another concrete reminder of one's denigrated status as "human refuse," kept out of sight, out of mind through techniques of "invisibilization."[24] Discriminatory design finds expression, too, in the spiked corners of luxury flats in London,[25] single-occupancy benches in Helsinki, and caged public seating in France.[26] In the last case, public criticism was swift and fierce, forcing city officials to remove the benches almost right away, demonstrating how everyday people can and should resist discriminatory designs as antithetical to the common good.

To illustrate how much of public life has been effectively privatized, German artist Fabian Brunsing created a metered bench that requires the user to pay in order for the spikes to retreat into the seat. Brunsing's artwork reminds us that, although discrimination may no longer be expressed in the form of "Whites Only" signs hanging in storefronts or painted on the back of benches as they once were, seemingly neutral "pay to use" policies enforce social boundaries and deepen inequities nonetheless. The metering of public life is evident in education, health care, policing, and more, where public goods that are nominally for everyone are structurally restrictive because historic and ongoing processes of discrimination ensure some people can easily feed the meter while others must contend with the spikes.

Keep in mind that well before eighteen-year-old Michael Brown was murdered by Officer Darren Wilson in the streets of Ferguson, Missouri, the municipality was exacting a pernicious form of economic terrorism by targeting the predominantly black citizenry for fees and fines in the millions of dollars. As one observer put it, "It's easy to see the drama of a fatal police shooting, but harder to understand the complexities of municipal finances that created many thousands of hostile encounters, one of which turned fatal."[27] Like an ordinary park bench enforcing the line between wanted and unwanted, public policies overseeing the most mundane aspects of social life act like so many skewers, violently prodding those who cannot pay up.

This metering of social life is a key feature of the carceral infrastructure that extends well beyond prison bars. It contributed to the tragic death of Sandra Bland, who was charged $5,000 in bail, and thereby skewered by a punitive apparatus, which those with means could have walked away from. According to a federal study, there are over half a million people sitting in city and county jails who have not been convicted of a crime.[28] In 2016 alone there were over eight hundred documented fatalities among those in lockup because they could not post bail[29]—a form of "premature death" that political geographer Ruth Wilson Gilmore defines as a key feature of racist state

violence.[30] And considering that a meter is a measurement tool, whether it is metered benches or metered public policies, the pervasive use of this technology to govern public life signifies a perverse calculus of human worth.

FERGUSON IS THE FUTURE

It started with a captivating image, then a question.

As the rebellion following the murder of eighteen-year-old Michael Brown in Ferguson, Missouri, was under way in the summer of 2015, I came across a photo online (figure 1.1) that arrested my attention. It showed a wall with the words *Ferguson Is the Future* spray-painted on the side.[31] A future, I wondered, of militarized police who terrorize residents using technologies of war *or* a future of courageous communities who demand dignity and justice using technologies of communication? The uncertainty, I think, is what we make of it.

Ultimately, these four words served as a catalyst for a symposium I coorganized with Moya Bailey and Ayana Jamieson, which we called "Ferguson Is the Future: Incubating Alternative Worlds through Arts, Activism, and Scholarship." This book, however, did not grow directly out of that gathering in the conventional way that talks turn into chapters; in fact, only four of the contributors (Benjamin, Gaskins, Nelson, and Roberts) participated in the symposium. Rather, the inspiration came from a less direct source—a question posed to the last panel by my colleague, legal and cultural studies scholar Imani Perry. In characteristic fashion, she pushed the conversation in a direction it had not yet gone:

> The question I have is about technology. . . . I was thinking about technologies like bullets and tanks and the weapons trade as a technology. One of the things that was so remarkable about Ferguson and why it captured the imagination is that people, with their flesh, confronted technologies of domination and stood in front of them. And so the question I have is about the ethical relationship to technology. It can be a tool for incredible imaginative exploration, but it is unquestionably the mechanism of our domination in the current era. And so how do we, particularly given how we are all implicated in technologies of domination . . . how do we all think about how to grapple with our relationship to these tools?[32]

Of all the incredible insights that grew out of "Ferguson Is the Future," this question lingered the longest for me because of the way it forces a clear-eyed view of the life-and-death stakes of technoscience. It does not permit a

FIGURE I.1. "Ferguson Is the Future." Photo by Paul Sableman. Source: Flickr.com. Image reproduced through Creative Commons.

Twitter-friendly, formulaic response, but acts as an ongoing provocation that forces all those who seek to intervene in the deadly status quo to think anew about how to navigate material *and* ethical minefields. *Captivating Technology* offers one way forward—mapping technologies of domination that are often far more elusive than the bullets and teargas that meet protestors on the streets of U.S. cities, while pointing to alternative geographies where the very idea of "what tools are essential" for multispecies flourishing can engender ongoing experimentation and justice-oriented design.

RADIO IMAGINATION

This text engages with a number of foundational thinkers who have worked to develop an ethically grounded and sociologically informed orientation toward science and technology,[33] as well as more recent scholarship that explores how racial logics enter labs, clinics, public policies, pedagogies, and discourses about technoscience.[34] Whereas an overwhelming focus of previous work is on genetics and the life sciences more broadly, a number of scholars have broadened this emphasis to investigate the ways that racial and gender norms and hierarchies impact everything from basic health care to artificial

intelligence.[35] Some of the most exciting developments in this arena go on to articulate ideas for how to construct technoscience differently.[36]

Also crucial for this discussion is scholarship that examines how science and technology operate through, with, and against policing, prisons, and carceral systems.[37] A key feature of this work is the understanding that racialized groups are not only the objects of harm and neglect, but that the meaning and power of racial hierarchies are enacted through technoscientific processes. In a particularly disquieting example, Anne Pollock examines the case of the Scott sisters, whose dual life sentences were commuted by the governor of Mississippi on the condition that Gladys Scott donate a kidney to her ailing sister, Jamie.[38] Pollock shows how "[b]eing eligible to contribute a bodily resource can enact membership in a group, be it family or state. . . . In the United States, prison is not just a metaphor for power and control, but a potent way of organizing bodies in space, and constituting and depriving citizenship." The biomedical fix of organ transplantation is one of many techniques in which the rights, responsibilities, *and* coercive possibilities of political membership get enacted.

In attending to the underside of technoscience, the contributors to this volume remain attuned to the groans of bondage that echo whenever and wherever "liberty rings." Together, our aim is to cultivate what Octavia E. Butler called "the kind of imagination that hears . . . *radio imagination*."[39] Radio imagination, as offered here, serves as a methodological touchstone for ethical engagement with technoscience, where the zeal for making new things is tempered by an ability to listen to the sounds and stories of people and things already made. In the broadest sense, at stake is the category "human" itself[40]—who defines it, inherits it, wields it . . . who rents it, tills it, toils for it . . . who gets expelled from it, buried under it, or drowned as they risk everything to inhabit it?

REVIVING HUMANITY

The rhetoric of human betterment that surrounds technoscience is not only a shiny veneer that hides complexity and camouflages destructive processes. This feel-good grammar also makes it difficult to recognize, much less intervene in, the deadly status quo. Addressing such distortions, including the lack of attention to race in theorizing new technologies, black studies scholar Alexander Weheliye joins a wide range of thinkers who challenge the "liberal humanist figure of Man."[41] His intervention builds on black feminist theorizations of the human, particularly the work of Sylvia Wynter, who

posits different "genres" of humanity that include "full humans, not-quite humans, and nonhumans,"[42] through which racial, gendered, and colonial hierarchies are encoded as natural distinctions. As literary scholar Zakiyyah Jackson aptly explains in her synthesis of an alternative genealogy of posthumanist thought, one that foregrounds Wynter, Frantz Fanon, and Aime Cesaire, "the figure 'man' . . . is a *technology* of slavery and colonialism that imposes its authority over 'the universal' through a racialized deployment of force."[43] And as several of the chapters in this volume make clear, fiction writing and other creative works offer some of the most compelling post-postracial visions for challenging entrenched social hierarchies in a way that do not flatten differences.

In their engagement with speculative fiction writer Octavia E. Butler, scholars Bailey and Jamieson explain how this "work concerns itself with the human problem, with the ways that humans' dual nature as both intelligent and hierarchical beings dooms them/us to destruction in an infinite number of ways."[44] A bleak vision, yes, but only if we decide not to activate a radio imagination that listens for and signals other ways of being human. In short, a black feminist approach to posthumanism and all of its technoscientific promises is not about including the oppressed in the fold of (Western liberal) humanism or about casting out humanism writ large, but about abolishing one particular genre that, by definition, dominates and devours all others. Ultimately, it is an approach to world-building in which myriad life forms can flourish.[45]

If, as argued, the rhetoric of human betterment distorts an understanding of the multifaceted interplay between technology and society, then a thoroughgoing commitment to justice has the potential to clarify and inspire possibilities for designing this relationship anew. Justice, in this sense, is not a static value but an ongoing methodology that can and should be incorporated into design processes. As JafariNaimi and colleagues powerfully contend, "we develop the value *justice* by testing and observing the work that the justice hypothesis does in various situations, and we recognize situations as just or unjust through reference to this learning."[46] As such, a justice-oriented approach to science and technology should not be limited to calls for "inclusion" as a vague multicultural platitude. Nor is it only about ensuring that a wide cross section of humanity can "access" technological goods and services. A fixation with barcodes, after all, has a way of barring more radical possibilities. As just one example of tech growth prompting socioeconomic decline, the rapid development of Silicon Valley has contributed to an alarming homeless rate in East Palo Alto, a predominantly black and Latino area

where more than one-third of schoolchildren now face housing instability.[47] How, then, might we craft a justice-oriented approach to technoscience?[48] It starts with questioning breathless claims of techno-utopianism, rethinking what counts as innovation, remaining alert to the ways that race and other hierarchies of difference get embedded in the creation of new designs, and ultimately refashioning the relationship between technology and society by prioritizing justice and equity.

REFASHIONING RACE AND TECHNOLOGY

As it turns out, the process of refashioning the relationship between race and technology may entail actual fashion. Hyphen-Labs, an international team of women of color working at the intersection of technology, art, science, and futurism,[49] is experimenting with a wide array of subversive designs, including earrings for recording police altercations, and visors and other clothing that prevent facial recognition, all part of their Not Safe as Fuck project. Interestingly, Hyphen-Labs created a neurocosmetology lab that creatively employs "hair braid electrodes to stimulate an increased flow of concentration,"[50] which finds its pedagogical counterpart in the work of researchers at Rensselaer Polytechnic Institute (RPI) led by one of the volume contributors, Ron Eglash, who are developing culturally situated design tools. One of the RPI projects, Cornrow Curves, focuses on "the underlying mathematical and computational thinking involved in cornrow braiding . . . [which] aligns with the mathematician's sense of fractal patterns as iterative scaling, and a computer scientist's sense of algorithm."[51] Cornrow Curves is part of a broader community informatics initiative, which is recasting what counts as technoscience and who we think of as innovators.[52] In the process, the creative, even *beautiful* dimensions of liberatory design abound!

Finally, you the reader are encouraged to explore the edges of your own imagination—the border patrols others have imposed, as well as the monitoring systems you may have installed yourself, including those gatekeepers squatting in the nooks and crannies of your thinking, forcing you down certain pathways and telling you to avoid others. How can we expect to change social structures when we continue to nurture the same habits of mind in our mental structures? Reflecting on mass incarceration and abolition, Angela Y. Davis advises, "*Dangerous limits have been placed on the very possibility of imagining alternatives.* These ideological limits have to be contested. We have to begin to think in different ways. Our future is at stake."[53] Davis reminds us that the carceral imagination limits not only our beings and bodies, but also

the many fixes proposed. *Captivating Technology* aspires to deepen our collective understanding of the significance of imagination, drawing on anthropologist Arjun Appadurai's formulation that imagination is

> no longer mere fantasy (opium for the masses whose real work is elsewhere), no longer simple escape (from a world defined principally by more concrete purposes and structures), no longer elite pastime (thus not relevant to the lives of ordinary people), and no longer mere contemplation (irrelevant for new forms of desire and subjectivity), the imagination has become an organized field of social practices, a form of work (both in the sense of labor and culturally organized practice) and a form of negotiation. . . . The imagination is now central to all forms of agency, is itself a social fact, and is the key component of the new global order.[54]

The task, then, is to challenge not only forms of discriminatory design in our inner and outer lives, but to work with others to imagine and create alternatives to the *techno quo*—business as usual when it comes to technoscience—as part of a larger struggle to materialize collective freedoms and flourishing. If, as emphasized in this book, the carceral imagination captures and contains, then a liberatory imagination opens up possibilities and pathways, creates new templates, and builds on a black radical tradition that has continually developed insights and strategies grounded in justice.

ONWARD!

The book is organized into three parts, beginning with traditional sites of carcerality "from plantation to prison," followed by more hidden arenas of carceral technoscience "from Facebook to fast fashion," and culminating in a sustained focus on justice-oriented approaches to science and technology "from abolitionists to Afrofuturists." This flow takes the reader from more familiar terrain, cast here in a new light, to less familiar territory, with a focus on continuities and discontinuities with the former. The final part blends the historical, speculative, and biographical to engender new connections that will hopefully inspire justice-oriented experiments in thinking and praxis that even we, the contributors, could not predict.

Part I, "Carceral Techniques from Plantation to Prison," examines the entanglement of succoring *and* suffering, in which forms of supervision and control typically associated with policing and punishment are incorporated in the health management of subordinate populations. Conversely,

techniques of prediction and prevention that animate novel approaches to "precision medicine" are shown to infuse the work of police and prisons. Each chapter grapples with the dialectic between helping and harming and illuminates the spatial logics of racial containment on plantations (Rusert), sanatoriums (Perreira), prisons (Hatch), urban neighborhoods (Miller), and fictional futurescapes (Scannell). Geographic space serves as a seemingly neutral proxy for the control of racialized populations; "places *not* people" are the focus (read: target), we are told. But whether it is the southern plantation, black ghetto, Brazilian favela, South African township, Palestinian territory, Indian slum, or now, algorithmically confirmed "hot spots" of crime and sickness, geographic and racial imaginaries remain deeply intertwined, the former naturalizing the latter, whereby "desirable" and "undesirable" serve as euphemistic codes for valuable and disposable people.

Part II, "Surveillance Systems from Facebook to Fast Fashion," investigates the relationship between surveillance and conceptions of the social good, where the latter encompasses the digital service economy (Poster), financial health (Nopper), child safety (Thakor), and a wide array of workplaces (Van Oort). Subjugation, after all, is hardly ever the explicit objective of science and technology; instead, noble aims such as "health" and "safety" serve as a kind of moral prophylactic for newfangled forms of social control. Each chapter traces how the twin processes of classification and containment extend well beyond the domain of policing, employing novel techniques offered as innovative solutions to entrenched social problems. Each demonstrates how such fixes encode inequity, and in many cases obscure racist logics and assumptions built into their design, ultimately making it more difficult to challenge and demand accountability.

Part III, "Retooling Liberation from Abolitionists to Afrofuturists," examines how those who are "fixed" by science and technology actively appropriate and reimagine technoscience for liberatory ends. While the first two parts of the book also explore different forms of resistance that take shape under oppressive conditions, this section focuses squarely on efforts to retool the relationship between science, technology, and social justice (Eglash, Gaskins, and Roth). This focus is guided by sociologist Alondra Nelson's query, "at what moments and through which tactics did black communities strive to tilt the balance of authority" toward collective freedom and flourishing?[55] Tactics, yes, and also a black radical imagination of the kind historian Robin D. G. Kelley envisions: "We must tap the well of our own collective imaginations, that we do what earlier generations have done: dream. . . . Without new visions we don't know what to build, only what to

knock down. We not only end up confused, rudderless, and cynical but we forget that making a revolution is not a series of clever maneuvers and tactics but a process that can and must transform us."[56] Kelley's appeal, like that of Nelson, Davis, and many others gone before, reminds us that radical imagination is central to refusing discriminatory design and building a just and habitable world.

The last two chapters of this section are interviews conducted by Alondra Nelson and Ruha Benjamin, respectively, with two pioneers in the study of science, technology, and race—Berkeley Professor Emeritus Troy Duster and University of Pennsylvania Professor Dorothy Roberts. In classic sociological fashion, and consistent with Duster's reported fondness for saying "Scratch a theory, you find a biography,"[57] these conversations situate the individual scholar within family, community, and institutions, and trace the links between their early lives and their academic pursuits. From the headline "Black Radical Professor Attacks America" lodged against Duster to Roberts's experience as a young mother at a high-powered law firm in New York, the reader comes to appreciate how the personal is both sociological and political, and how such experiences shaped their intellectual interest in the "preframe" of science and technology.

In mapping how Duster's and Roberts's work disrupts dominant narratives of technoscience, the interviews themselves seek to unsettle a dominant social science tenet that divorces scholars' personal lives from their intellectual pursuits. Instead, a liberatory approach to social studies of science, technology, and race aims to ground knowledge in the social world. "Situating knowledge" is not only about revealing its historical and human contingency, but ultimately aims to make technoscientific accounts of the world *accountable* by excavating who, what, where, when, and why, rather than allowing this social infrastructure to remain invisible.[58] In this way, chapters 13 and 14 offer a model of scholarship that is at once foundational and *aspirational* for a new generation of thinkers who will see in the life stories of Duster and Roberts the symbiosis of everyday struggle and scholarly insight. Ultimately, my hope is for you, the reader, to imagine and craft the worlds you cannot live *without*, just as you dismantle the ones we cannot live *within*.

Notes

1. Pamela Engel, "The City of Camden, New Jersey Is under Intense, Military-Style Surveillance," *Business Insider*, December 30, 2013, accessed January 25, 2018, http://www.businessinsider.com/camden-new-jersey-police-surveillance-2013–12.

2. Julia Angwin, Jeff Larson, Surya Mattu, and Lauren Kirchner, "Machine Bias," *ProPublica*, May 23, 2016, accessed January 25, 2018, https://www.propublica.org/article/machine-bias-risk-assessments-in-criminal-sentencing.

3. Anthony Hatch and Kym Bradley, "Prisons Matter: Psychotropics and the Trope of Silence in Technocorrections," in *Mattering: Feminism, Science, and Materialism*, ed. Victoria Pitts-Taylor, 224–40 (New York: NYU Press, 2016).

4. Leslie Gordon, "New Report Faults California's Electronic Monitoring of Youth," University of California–Berkeley School of Law, May 11, 2017, accessed January 25, 2018, https://www.law.berkeley.edu/article/new-report-faults-californias-electronic-monitoring-youth/; see also Victor M. Rios, *Punished: Policing the Lives of Black and Latino Boys* (New York: NYU Press, 2011), for a qualitative account of the modes of criminalization and resistance that shape the daily lives of Latino and African American boys in California; and Nikki Jones, *Between Good and Ghetto: African American Girls and Inner-City Violence* (New Brunswick, NJ: Rutgers University Press, 2009), for a qualitative account of African American girls and inner-city violence, which opens with an account of the elaborate school-based surveillance that students must undergo, including X-rays, patdowns, and ID checks that extends well past school hours into their everyday lives.

5. This is drawn from Roy's incisive query, "Do we need weapons to fight wars? Or do we need wars to create a market for weapons?" Arundhati Roy, *Capitalism: A Ghost Story* (Chicago: Haymarket, 2014), 43.

6. Wacquant elaborates on "the insatiable craving for bureaucratic innovations and technological gadgets: crime-watch groups and 'guarantors of place'; partnerships between police and other public services (schools, hospitals, social workers, the national tax office, etc.); video surveillance cameras and computerized mapping of offenses; compulsory drug testing, 'Tazers' and 'flash-ball' guns; fast-track judicial processing and the extension of the prerogatives of probation and parole officers; criminal profiling, satellite-aided electronic monitoring, and generalized finger-printing; enlargement and technological modernization of carceral facilities; multiplication of specialized detention centers (for foreigners waiting to be expelled, recidivist minors, women and the sick, convicts serving community sentences, etc.)." Loïc Wacquant, *Punishing the Poor: The Neoliberal Government of Social Insecurity* (Durham, NC: Duke University Press, 2009), 2.

7. As Virginia Eubanks writes, "technologies of poverty management are not neutral. They are shaped by our nation's fear of economic insecurity and hatred of the poor." Virginia Eubanks, *Automated Inequality: How High-Tech Tools Profile, Police, and Punish the Poor* (New York: St. Martin's, 2018), 9.

8. Carla Shedd, "Countering the Carceral Continuum: The Legacy of Mass Incarceration," *Criminology and Public Policy* 10, no. 3 (2011): 865–971; Carla Shedd, *Unequal City: Race, Schools, and Perceptions of Injustice* (New York: Russell Sage Foundation, 2015); see also Katherine Beckett and Naomi Murakawa, "Mapping the Shadow Carceral State: Toward an Institutionally Capacious Approach to Punishment," *Theoretical Criminology* 16, no. 2 (2012): 221–44.

9. Eric Stanley and Nat Smith, *Captive Genders: Trans Embodiment and the Prison Industrial Complex* (Oakland, CA: AK Press, 2015), 12.

10. For a discussion of the combination of "coercion and care" that characterizes what they call "carceral citizenship," see Reuben Jonathan Miller and Forrest Stuart, "Carceral Citizenship: Race, Rights and Responsibility in the Age of Mass Supervision," *Theoretical Criminology* 21, no. 4 (2017): 532–48; see also Bruce Western, *Punishment and Inequality in America* (New York: Russell Sage Foundation, 2006).

11. As political theorist Dilts cautions, "by focusing narrowly (on prisons, police, the death penalty, etc.) we also run the risk of abolishing institutions and practices but allowing their functions to thrive in a new and more deeply entrenched form." Andrew Dilts, "To Build a World That Is Otherwise: Andrew Dilts on Abolition," *Abolition Journal*, July 2, 2015, accessed January 25, 2018, https://abolitionjournal.org/andrew-dilts-abolition-statement/. For an examination of felon disenfranchisement as a "productive failure," see also Andrew Dilts, *Punishment and Inclusion: Race, Membership, and the Limits of American Liberalism* (New York: Fordham University Press, 2014); Andrew Dilts and Perry Zurn, eds., *Active Intolerance: Michel Foucault, the Prisons Information Group, and the Future of Abolition* (New York: Palgrave Macmillan, 2015). For a discussion of how surveillance technologies turn "public agencies like schools and social service offices into prisons," see Eubanks, *Automated Inequality*, 10; see also Cathy O'Neill, *Weapons of Mass Destruction: How Big Data Increases Inequality and Threatens Democracy* (New York: Broadway, 2017).

12. Patricia J. Williams, *Seeing a Color-Blind Future: The Paradox of Race* (New York: Noonday, 1998), 4, emphasis added.

13. For an elaboration of the New Jim Code, see Ruha Benjamin, *Race after Technology* (Cambridge: Polity, 2019). See Michelle Alexander, *The New Jim Crow: Mass Incarceration in the Age of Colorblindness* (New York: New Press, 2012).

14. Ruha Benjamin, "Innovating Inequity: If Race Is a Technology, Postracialism Is the Genius Bar," *Ethnic and Racial Studies* 39, no. 13 (2016): 1–8.

15. Miriam Schulman, "Little Brother Is Watching You," *Business and Society Review* 100–101, no. 1 (1998): 65–69.

16. Angela Y. Davis, *Are Prisons Obsolete?* (New York: Seven Stories, 2011), 107.

17. Coproduction, according to Jasanoff, "stresses the constant intertwining of the cognitive, the material, the social, and the normative," and "is not about ideas alone; it is equally about concrete, physical things." Sheila Jasanoff, *States of Knowledge: The Co-Production of Science and the Social Order* (New York: Routledge, 2004), 6. See also Jenny Reardon, *Race to the Finish: Identity and Governance in an Age of Genomics* (Princeton, NJ: Princeton University Press, 2002).

18. Simone Browne, *Dark Matters: On the Surveillance of Blackness* (Durham, NC: Duke University Press, 2015), 7.

19. Browne, *Dark Matters*, 8–9; emphasis added.

20. This focus builds upon Jasanoff and Kim's notion of "sociotechnical imaginaries," collective imaginations of the future that "encode not only visions of what is at-

tainable through science and technology, but also of how life ought, or ought not, to be lived; in this respect they express a society's shared understandings of good and evil" (4). As Jasanoff and Kim rightly note, competing imaginaries can coexist. In racialized societies, the hopes and capacities of some are routinely discredited in popular representations of progress or completely written out of futuristic visions, a kind of temporal penitentiary that locks the oppressed in a dystopic present. But, as the volume makes clear, counter-imaginaries persist and proliferate despite the odds. Sheila Jasanoff and Sang-Hyun Kim, *Dreamscapes of Modernity: Sociotechnical Imaginaries and the Fabrication of Power* (Chicago: University of Chicago Press, 2015).

21. Brian Clifton, Sam Lavigne, Francis Tseng, "The White Collar Crime Risk Zones," *The New Inquiry Magazine* 59, https://whitecollar.thenewinquiry.com.

22. See the white paper by Brian Clifton, Sam Levigne, and Francis Tseng, https://whitecollar.thenewinquiry.com/static/whitepaper.pdf

23. X. Wu and X. Zhang, "Automated Inference on Criminality Using Face Images," *AI Technology and Industry Review*, November 24, 2017, https://medium.com/syncedreview/automated-inference-on-criminality-using-face-images-aec51c312cdo.

24. Emphasis added; Derrick A. Bell, "Who's Afraid of Critical Race Theory?" *University of Illinois Law Review* 1995: 893.

25. See Wacquant: "Here penalization serves as a technique for the invisibilization of the social 'problems' that the state, as the bureaucratic lever of the collective will, no longer can or cares to treat at its roots, and the prison operates as a judicial garbage disposal into which the human refuse of the market society are thrown." Wacquant, *Punishing the Poor*, xxii.

26. Heather Saul, "Homeless Spikes outside London Flats Spark Outrage on Twitter," *The Independent*, June 7, 2014, accessed January 25, 2018, http://www.independent.co.uk/news/uk/home-news/homelessness-spikes-outside-london-flats-spark-outrage-on-twitter-9506390.html.

27. Henry Samuel, "French City Installs Anti-Homeless Cages around Benches," *The Telegraph*, December 26, 2014, accessed January 25, 2018, http://www.telegraph.co.uk/news/worldnews/europe/france/11314081/French-city-installs-anti-homeless-cages-around-benches.html.

28. Walter Johnson, "Ferguson's Fortune 500 Company," *The Atlantic*, April 26, 2015, accessed January 25, 2018, https://www.theatlantic.com/politics/archive/2015/04/fergusons-fortune-500-company/390492.

29. Todd D. Minton and Zhen Zheng, "Jail Inmates at Midyear 2014," U.S. Department of Justice, June 2015, accessed January 25, 2018, https://www.bjs.gov/content/pub/pdf/jim14.pdf.

30. Nick Wing, "Our Bail System Is Leaving Innocent People to Die in Jail Because They're Poor," Justice Policy Institute, July 14, 2016, accessed January 25, 2018, http://www.justicepolicy.org/news/10585; see also Dean A. Dabney, Joshua Page, and Volkan Topalli, "American Bail and the Tinting of Criminal Justice," *The Howard Journal of Crime and Justice* 56, no. 4 (2017): 397–418.

31. According to Gilmore, "Racism, specifically, is the state-sanctioned or extralegal production and exploitation of group-differentiated vulnerability to premature death." Ruth Wilson Gilmore, *Golden Gulag: Prisons, Surplus, Crises, and Opposition in Globalizing California* (Berkeley: University of California Press, 2007), 28.

32. "Black to the Future," video archive, accessed at https://blacktothefuture.princeton.edu/video/. Imani Perry's question at 1 hr 27 m 29 sec.

33. Troy Duster, 1970. *The Legislation of Morality: Law, Drugs, and Moral Judgement* (New York: Free Press, 1970); Troy Duster, *Backdoor to Eugenics*, 2nd ed. (New York: Routledge, 2003); Troy Duster, "Race and Reification in Science," *Science* 307, no. 5712 (2005): 1050–51; Troy Duster, "The Combustible Intersection: Genomics, Forensics, and Race," in *Race after the Internet*, edited by Lisa Nakamura and Peter Chow-White, 310–27 (New York: Routledge, 2012); Evelynn M. Hammonds, "New Technologies of Race," in *Processed Lives: Gender and Technology in Everyday Life*, edited by Melodie Calvery and Jennifer Terry, 74–85 (New York: Routledge, 1997); Dorothy Roberts, *Killing the Black Body: Race, Reproduction, and the Meaning of Liberty* (New York: Vintage, 1999); Dorothy Roberts, *Fatal Invention: How Science, Politics and Big Business Re-Create Race in the 21st Century* (New York: New Press, 2011).

34. Susan E. Bell and Anne E. Figert, *Reimagining (Bio)Medicalization, Pharmaceuticals, and Genetics: Old Critiques and New Engagements* (New York: Routledge, 2015); Catherine Bliss, *Race Decoded: The Genomic Fight for Social Justice* (Palo Alto, CA: Stanford University Press, 2012); Lundy Braun, *Breathing Race into the Machine: The Surprising Career of the Spirometer from Plantation to Genetics* (Minneapolis: University of Minnesota Press, 2014); Khiara M. Bridges, Terence Keel, and Osagie K. Obasogie, "Introduction: Critical Race Theory and the Health Sciences," *American Journal of Law and Medicine* 43 (2017): 179–82; Melissa Creary, "Biocultural Citizenship and Embodying Exceptionalism: Biopolitics for Sickle Cell Disease in Brazil," *Social Science and Medicine* 199 (2017): 123–31; Nadia A. El-Haj, "The Genetic Reinscription of Race," *Annual Review of Anthropology* 36 (2017): 283–300; Steven Epstein, *Inclusion: The Politics of Difference in Medical Research* (Chicago: University of Chicago Press, 2007); Joan H. Fujimura and Ramya Rajagopalan, "Different Differences: The Use of 'Genetic Ancestry' versus Race in Biomedical Human Genetic Research," *Social Studies of Science* 41, no. 1 (2010): 5–30; Duana Fullwiley, "The Biologistical Construction of Race: 'Admixture' Technology and the New Genetic Medicine," *Social Studies of Science* 38, no. 5 (2008): 695–735; Jonathan Kahn, *Race in a Bottle: The Story of BiDil and Racialized Medicine in a Post-Genomic Age* (New York: Columbia University Press, 2014); Michael J. Montoya, "Bioethnic Conscription: Genes, Race, and Mexicana/o Ethnicity in Diabetes Research," *Cultural Anthropology* 22, no. 1 (2007): 94–128; Ann Morning, *The Nature of Race: How Scientists Think and Teach and Human Difference* (Berkeley: University of California Press, 2011); Alondra Nelson, *Social Life of DNA: Race, Reparations, and Reconciliation after the Genome* (New York: Beacon Press, 2016); Aaron Panofsky, *Misbehaving Science: Controversy and the Development of Behavior Genetics* (Chicago: University of Chicago Press, 2014); Reardon, *Race to the Finish*; Sarah S. Richardson and Hallam Stevens, *Postgenomics: Perspectives on Biology*

after the Genome (Durham, NC: Duke University Press, 2015); Ernesto Schwartz-Marin and Peter Wade, "Explaining the Visible and the Invisible: Public Knowledge of Genetics, Ancestry, Physical Appearance, and Race in Colombia," *Social Studies of Science* 45, no. 6 (2015): 886–906; Kim TallBear, *Native American DNA: Tribal Belonging and the False Promise of Genetic Science* (Minneapolis: University of Minnesota Press, 2013); Charis Thompson, *Making Parents: The Ontological Choreography of Reproductive Technologies* (Cambridge, MA: MIT Press, 2007); Peter Wade, Carlos López Beltrán, Eduardo Restrepo, and Ricardo Ventura Santos, *Mestizo Genomics: Race Mixture, Nation, and Science in Latin America* (Durham, NC: Duke University Press, 2014); Johnny Eric Williams, *Decoding Racial Ideology in Genomics* (Lanham, MD: Lexington Books, 2016).

35. Geoffrey C. Bowker and Susan Leigh Star, *Sorting Things Out: Classification and Its Consequences* (Cambridge, MA: MIT Press, 2000); Wendy H. K. Chun, "Race and/as Technology or How to Do Things with Race," in *Race After the Internet*, edited by Lisa Nakamura and Peter Chow-White, 38–69 (New York: Routledge, 2011); Adele Clarke, Laura Mamo, Jennifer Ruth Fosket, Jennifer R. Fishman, and Janet K. Shim, *Biomedicalization: Technoscience, Health, and Illness in the U.S.* (Durham, NC: Duke University Press, 2010); Beth Coleman, "Race as Technology," *Camera Obscura* 24, no. 1 (2009): 177–207; Marie Hicks, *Programmed Inequality: How Britain Discarded Women Technologists and Lost Its Edge in Computing* (Cambridge, MA: MIT Press, 2017); David S. Jones and Ian Whitmarsh, eds., *What's the Use of Race? Modern Governance and the Biology of Difference* (Cambridge, MA: MIT Press, 2010); Lisa Nakamura, *Cybertypes: Race, Ethnicity, and Identity on the Internet* (New York: Routledge, 2002); Lisa Nakamura, *Digitizing Race* (Minneapolis: University of Minnesota Press, 2008); Safiya Umoja Noble, *Algorithms of Oppression: How Search Engines Reinforce Racism* (New York: NYU Press, 2018); Frank Pasquale, *The Black Box Society: The Secret Algorithms That Control Money and Information* (Cambridge, MA: Harvard University Press, 2014); Anne Pollock, *Medicating Race: Heart Disease and Durable Preoccupations with Difference* (Durham, NC: Duke University Press, 2012); Janet K. Shim, *Heart-Sick: The Politics of Risk, Inequality, and Heart Disease* (New York: NYU Press, 2014); Keith Wailoo, Alondra Nelson, and Catherine Lee, *Genetics and the Unsettled Past: The Collision of DNA, Race, and History* (New Brunswick, NJ: Rutgers University Press, 2012).

36. For example, Philip and colleagues describe *postcolonial computing* as "a bag of tools that affords us contingent tactics for continual, careful, collective, and always partial reinscriptions of a cultural–technical situation in which we all find ourselves." Kavita Philip, Lilly Irani, and Paul Dourish, "Postcolonial Computing: A Tactical Survey," *Science, Technology, and Human Values* 37, no. 1 (2012): 3. See also André Brock, "From the Blackhand Side: Twitter as a Cultural Conversation," *Journal of Broadcasting and Electronic Media* 56, no. 4 (2012): 529–49, and André Brock, Lynette Kvasny, and Kayla Hales, "Cultural Appropriations of Technical Capital: Black Women, Weblogs, and the Digital Divide," *Information, Communication, and Society* 13, no. 7 (2010): 1040–59, on "cultural appropriations of technical capital"; Ron Eglash, Jennifer L. Croissant, Giovanna Di Chiro, and Rayvon Fouché, *Appropriating Technology: Vernacular Science*

and Social Power (Minneapolis: University of Minnesota Press, 2004), on "appropriating technology"; Rayvon Fouché, "Say It Loud, I'm Black and I'm Proud: African Americans, American Artifactual Culture, and Black Vernacular Technological Creativity," *American Quarterly* 58, no. 3 (2013): 639–61, on "black vernacular technological creativity"; Alondra Nelson, Thuy Linh N. Tu, and Alicia Hedlam Hines, eds., *Technicolor: Race, Technology, and Everyday Life* (New York: NYU Press, 2001), and Laura Mamo and Jennifer Fishman, "Why Justice? Introduction to the Special Issue on Entanglements of Science, Ethics, and Justice," *Science, Technology, and Human Values* 38, no. 2 (2013): 159–75, on "justice and STS"; Banu Subramaniam, *Ghost Stories for Darwin: The Science of Variation and the Politics of Diversity* (Chicago: University of Illinois Press, 2014), on feminist approaches to the life sciences; Miriam E. Sweeney and André Brock, "Critical Informatics: New Methods and Practices," *Proceedings of the Association for Information Science and Technology* 51, no. 1 (2014): 1–8, on "critical informatics," among others. Ron Eglash, et al., *Appropriating Technology*.

37. danah boyd and Kate Crawford, "Critical Questions for Big Data: Provocations for a Cultural, Technological, and Scholarly Phenomenon," *Information, Communication and Society* 15, no. 5 (2012): 662–79; Sarah Brayne, "Surveillance and System Avoidance: Criminal Justice Contact and Institutional Attachment," *American Sociological Review* 79, no. 3: 367–91 (2014); Sarah Brayne, "Big Data Surveillance: The Case of Policing," *American Sociological Review* 82, no. 5 (2017): 997–1008; Andrew Guthrie Ferguson, *The Rise of Big Data Policing: Surveillance, Race, and the Future of Law Enforcement* (New York: NYU Press, 2017); Keith Guzik, "Discrimination by Design: Predictive Data Mining as Security Practice in the United States' 'War on Terrorism,'" *Surveillance and Society* 7, no. 1 (2009): 1–17; Bernard E. Harcourt, *Against Prediction: Profiling, Policing, and Punishing in an Actuarial Age* (Chicago: Chicago University Press, 2006); Richard Hindmarsh and Barbara Prainsack, eds., *Genetic Suspects: Global Governance of Forensic DNA Profiling and Databasing* (Cambridge: Cambridge University Press, 2010); Anthony Hatch and Kym Bradley, "Prisons Matter: Psychotropics and the Trope of Silence in Technocorrections," in *Mattering: Feminism, Science, and Materialism*, ed. Victoria Pitts-Taylor, 224–40 (New York: NYU Press, 2016); Elizabeth E. Joh, "The New Surveillance Discretion: Automated Suspicion, Big Data, and Policing," *Harvard Law and Policy Review* 10, no. 1 (2016): 15–42; Shiloh Krupar and Nadine Ehlers, "'When Treating Patients Like Criminals Makes Sense': Medical Hot Spotting, Race, and Debt," in *Subprime Health: The American Health-Care System and Race-Based Medicine*, ed. Nadine Ehlers and Leslie Hinkson, 31–54 (Minnesota: University of Minnesota Press, 2017); David Lyon, ed., *Surveillance as Social Sorting: Privacy, Risk, and Digital Discrimination* (New York: Routledge 2003); Peter K. Manning, *The Technology of Policing: Crime Mapping, Information Technology, and the Rationality of Crime Control* (New York: NYU Press, 2011); Gary T. Marx, *Windows into the Soul: Surveillance and Society in an Age of High Technology* (Chicago: University of Chicago Press, 2016); Amade M'Charek, "Beyond Fact or Fiction: On the Materiality of Race in Practice," *Cultural Anthropology* 28, no. 3 (2013): 420–42; Anne Pollock, "On the Suspended Sentences of the Scott Sisters: Mass Incarceration, Kidney

Donation, and the Biopolitics of Race in the United States," *Science, Technology, and Human Values* 40, no. 2 (2015): 250–71; Latanya Sweeney, "Discrimination in Online Ad Delivery," *Queue* 11, no. 3 (2013): 10–29; Tufeki Zeynup, *Twitter and Teargas: The Power and Fragility of Networked Protest* (New Haven, CT: Yale University Press, 2017).

38. Pollock, "On the Suspended Sentences of the Scott Sisters," 15–16.

39. Moya Bailey and Ayana A. H. Jamieson, "Palimpsests in the Life and Work of Octavia E. Butler," *Palimpsest: A Journal on Women, Gender, and the Black International* 6, no. 2 (2017): xi, emphasis added.

40. Many STS scholars have theorized the way that machines and other nonhumans exercise different forms of agency, narrating the blurred boundary between organisms and machines, showing how "myth and tool mutually constitute each other," and calling for a multispecies approach to justice. Chen's idea of animacy is to "theorize current anxieties around the production of humanness in contemporary times. . . . Animacy activates new theoretical formulations that trouble and undo stubborn binary systems of difference, including dynamism/stasis, life/death, subject/object, speech/non-speech, human/animal, natural body/cyborg." Mel Chen, *Animacies: Biopolitics, Racial Mattering, and Queer Affect* (Durham, NC: Duke University Press, 2012), 3. Relatedly, Haraway describes technologies as "frozen moments" that allow us to observe otherwise "fluid social interactions" at work. These "formalizations" are also instruments to enforce meaning, especially, I would add, racialized meanings that construct—not just reflect—the social world (302). Donna Haraway, *Simians, Cyborgs and Women: The Reinvention of Nature* (New York: Routledge, 1991), 302. See also Bruno Latour, "On Recalling ANT," *Sociological Review* 47, no. S1 (1999): 15–25; Eben Kirsky, ed., *The Multispecies Salon* (Durham, NC: Duke University Press, 2014); Donna Haraway, *Staying with the Trouble: Making Kin in the Chthulucene* (Durham, NC: Duke University Press, 2016).

41. Alexander Weheliye, *Habeas Viscus: Racializing Asssemblages, Biopolitics, and Black Feminist Theories of the Human* (Durham, NC: Duke University Press, 2014), 8.

42. Weheliye, *Habeas Viscus*, 3.

43. Zakiyyah Iman Jackson, "Animal: New Directions in the Theorization of Race and Posthumanism," *Feminist Studies* 39, no. 3 (2013): 640, emphasis added. See also Saidiya V. Hartman, *Scenes of Subjection: Terror, Slavery, and Self-Making in Nineteenth-Century America* (New York: Oxford University Press, 1997); Katherine McKittrick, ed., *Sylvia Wynter: On Being Human as Praxis* (Durham, NC: Duke University Press, 2014); Christina Sharpe, *In the Wake: On Blackness and Being* (Durham, NC: Duke University Press, 2016).

44. Bailey and Jamieson, "Palimpsests in the Life and Work of Octavia E. Butler," vi.

45. And for Wynter, the stakes are high: "all our present struggles with respect to race, class, gender, sexual orientation, ethnicity, struggles over the environment, global warming, severe climate change, the sharply unequal distribution of the earth resources . . . —these are all differing facets of the central ethnoclass Man vs Human struggle" (cf. Weheliye, *Habeas Viscus*, 29).

46. Nassim JafariNaimi, Lisa Nathan, and Ian Hargraves, "Values as Hypotheses: Design, Inquiry, and the Service of Values," *Design Issues* 31, no. 4 (2015): 38. See also

Nassim JafariNaimi, "Our Bodies in the Trolley's Path, or Why Self-driving Cars Must *Not* Be Programmed to Kill," *Science, Technology, and Human Values*, accessed January 25, 2018, http://journals.sagepub.com/doi/pdf/10.1177/0162243917718942.

47. Alistair Gee, "More Than One-Third of Schoolchildren Are Homeless in Shadow of Silicon Valley," *The Guardian*, December 28, 2016, accessed January 25, 2018, https://www.theguardian.com/society/2016/dec/28/silicon-valley-homeless-east-palo-alto-california-schools.

48. As Atanasoski and Vora posit, the aim is to track "how historical forms of domination and power, encompassing but not limited to social categories and hierarchies of difference, get built into seemingly non-human objects and the infrastructures that link them, thus sanitizing digital media [and a variety of other] technologies as human-free." Neda Atanasoski and Kalindi Vora. "Surrogate Humanity: Posthuman Networks and the (Racialized) Obsolescence of Labor," *Catalyst: Feminism, Theory, Technoscience* 1, no. 1 (2015): 5.

49. See Hyphen-Labs, http://www.hyphen-labs.com/index.html.

50. Jessica Charlesworth, "Primer 2017: A Speculative Futures Conference." *Core77*, March 21, 2017, accessed January 25, 2018, http://www.core77.com/posts/63489/Primer-2017-A-Speculative-Futures-Conference.

51. Michael Lachney, "Culturally Responsive Computing as Brokerage: Toward Asset Building with Education-Based Social Movements," *Learning, Media, and Technology* 42, no. 4 (2016): 7.

52. For Ron Eglash's "Community Informatics" projects, see http://homepages.rpi.edu/~eglash/eglash.dir/ci.htm.

53. Angela Y. Davis, *The Meaning of Freedom: And Other Difficult Dialogues* (San Francisco: City Lights, 2012), 30.

54. Arjun Appadurai, *Modernity at Large: Cultural Dimensions of Globalization* (Minneapolis: University of Minnesota Press, 1996), 31.

55. Alondra Nelson, *Body and Soul: The Black Panther Party and the Fight against Medical Discrimination* (Minneapolis: University of Minneapolis Press, 2013), xii.

56. Robin D. G. Kelley, *Freedom Dreams: The Black Radical Imagination* (Boston: Beacon Press, 2003), xii; my emphasis.

57. American Sociologist Association. On Demand Content. http://www.asanet.org/about-asa/asa-story/asa-history/past-asa-officers/past-asa-presidents/troy-duster.

58. See Donna Haraway, "Situated Knowledges: The Science Question in Feminism and the Privilege of Partial Perspective," *Feminist Studies* 14, no. 3 (1988): 575–99.