Surrogate Humanity

Race, Robots, and the Politics of Technological Futures

NEDA ATANASOSKI & KALINDI VORA

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PERVERSE MODERNITIES

A series edited by Jack Halberstam and Lisa Lowe

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Duke University Press Durham and London 2019

Printed in the United States of America on acid-free paper ∞
Designed by Courtney Leigh Baker
Typeset in Whitman by Westchester Publishing Services

Library of Congress Cataloging-in-Publication Data
Names: Atanasoski, Neda, author. | Vora, Kalindi, [date] author.
Title: Surrogate humanity : race, robots, and the politics of technological futures / Neda Atanasoski and Kalindi Vora.
Description: Durham : Duke University Press, 2019. | Series: Perverse modernities | Includes bibliographical references and index.
Identifiers: LCCN 2018033902 (print) | LCCN 2018044223 (ebook)
ISBN 9781478004455 (ebook)
ISBN 9781478003175 (hardcover : alk. paper)
ISBN 9781478003861 (ebook)
Subjects: LCSH: Robots—Social aspects. | Automation—Social aspects. | Technological unemployment—Social aspects. | Artificial intelligence—Social aspects. | Technological innovations—Social aspects. | Technology—Social aspects. | Robotics—Human factors.
Classification: LCC HD6331 (ebook) | LCC HD6331 .A83 2019 (print) | DDC 338/.0640112—dc23
LC record available at https://lccn.loc.gov/2018033902

COVER ART: Peter William Holden. "Vicious Circle," *Choreographed Robots*. Courtesy of the artist. Photograph by Medial Mirage / Matthias Möller.

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Acknowledgments

Part of the work of collaborative scholarship is to bring forth a new subject larger than the sum of its parts. We have been friends and collaborators since we were postdoctoral scholars sharing an office in the Anthropology Department at UC Berkeley in 2007. On our daily walks to the office we discovered a shared intellectual genealogy (Neda's PhD advisor, Lisa Lowe, was a graduate of Kalindi's doctoral institution) that deeply influenced our research trajectories. We realized that our conversations about research for our first books were also generating a collaborative project on race, technology, and politics. Over the years, we have had the chance to extend our collaboration with many interlocutors who have enriched our thinking, and we are grateful to our friends, students, and colleagues for sharing news stories, provocations, and asking us difficult questions.

First and foremost, we wish to thank Lisa Lowe, who has been a friend, ally, mentor, and supporter of us and the project since its inception. Her writings on race, liberalism, and modernity, and her boundless generosity in thinking out loud with us have been impactful and inspirational, as is evident throughout the pages of this book. We are also grateful to Neferti Tadiar, who supported this project at its formative stages. Since 2012, we have had many unique opportunities to travel together and to present our work in intellectually stimulating venues. The discussions and questions that followed our talks pushed our thinking and writing in unexpected and exciting ways. Michael Dango and Rowan Bayne invited us to present our very first writing from the book at the University of Chicago Post-45

Workshop. The fruitful exchange we had with graduate students and faculty there shaped our first publication from the project that appeared in the journal *Catalyst: Feminism, Technoscience, Theory*, from which we expanded and developed a number of chapters. We are also indebted to the Technoscience Salon in Toronto, and especially its organizers Michelle Murphy and Natasha Meyers; Aimee Bahng and the Gender Research Institute at Dartmouth; Redi Koobak, Nina Lykke, and Madina Tlostanova at Linköping University in Sweden; the Digital Cultures Research Lab at Leuphana University in Lüneburg, Germany for workshopping draft chapters; Nishant Shah and Martin Warnke at Leuphana University, who invited us to present our work in Germany and allowed us the once-in-a-lifetime chance to think, write, take walks, and share meals with fellow scholars at a villa in Tuscany; Lisa Parks and her students at MIT; and Lisa Lowe and the Center for the Humanities at Tufts University.

Since 2012, many mutual friends and colleagues have provided feedback on parts of our writing and thinking. We are grateful to Banu Subramaniam, Deboleena Roy, and Angie Willey for ongoing discussions about the meaningfulness and significance of feminist collaboration. Banu continually provided us with "grist for our mill," and many of the articles she sent us along the way have made their way into the book. Lisa Cartwright and Cristina Visperas offered significant feedback and editing suggestions for our first publication from the project in *Catalyst*. We also thank Lisa Lowe, Jennifer Terry, Michelle Murphy, Julietta Hua, Xiao Liu, Don Donham, Fatima El-Tayeb, Lilly Irani, Saiba Varma, Felicity Amaya Schaeffer, Karen Barad, Lisbeth Haas, Kasturi Ray, Alex Rosenblat, Alys Eve Weinbaum, Elizabeth Losh, and Grace Hong for offering feedback or brainstorming with us about our work.

UC San Diego and UC Santa Cruz provided us with funding that enabled us to get the project off the ground in 2015, and to bring it to completion in 2018. A UCSD Academic Senate grant made possible our travel to Boston, where we conducted interviews at the MIT robotics museum and at the MIT Media Lab. We thank Kelly Dobson for an incredible tour of the space and for spending time with us during our research trip. Malathi Iyengar was our graduate student researcher who helped us to compile a rich and varied archive of Cold War–era sources on robotics, automation, and race. The UC Santa Cruz Academic Senate Special Research Grant funded Neda to travel to Germany with Kalindi and allowed us to put the finishing touches on the manuscript. At this stage, Taylor Wondergem was a graduate student researcher extraordinaire, who helped us with our citations,

bibliography, images, and much, much more. She was an enthusiastic companion to us at the finish line.

Working with Duke University Press has been a pleasure. We thank Courtney Berger and Sandra Korn for their enthusiasm about the manuscript and guidance throughout the publication process. We also thank our series editors, Jack Halberstam and Lisa Lowe, for including us in their series, which we both have admired for many years. Finally, we thank the two anonymous reviewers at Duke University Press, whose suggestions for revisions made this a much better book than it otherwise would have been.

Neda

I have been fortunate to be surrounded by generous and innovative thinkers committed to a feminist and antiracist politics at UC Santa Cruz, and especially in my home department of Feminist Studies and the Program in Critical Race and Ethnic Studies. I am deeply grateful to Felicity Amaya Schaeffer, Nick Mitchell, Megan Moodie, Karen Barad, Christine Hong, and Neel Ahuja for their steadfast friendship, camaraderie, laughter, and many long conversations, and for, at various times, reading and commenting on parts of the manuscript, writing and thinking with me, or suggesting news stories and sources that made this a more thoughtful book. I am also thankful to Lisbeth Haas, Shelley Stamp, Lisa Rofel, Marcia Ochoa, Bettina Aptheker, Madhavi Murty, Irene lusztig, Adrian Brasoveanu, and Soraya Murray, whose support has sustained me as a scholar and teacher. Thinking with my graduate students has profoundly enriched my intellectual life. Erin McElroy, Yizhou Guo, Cecelia Lie, Taylor Wondergem, Francesca Romeo, Noya Kansky, Dana Ahern, Sheeva Sabati, Jess Whatcott, and Trung Nguyen have kept me inspired and excited about our work and its potential to change the world in which we live. I also thank Jennifer Suchland and the Women's, Gender and Sexuality Studies Department faculty and graduate students at the Ohio State University for their hospitality and fruitful intellectual exchanges about the project.

This book could not have been written without the many discussions, walks, hikes, drinks, meals, and writing sessions with my friends and family in Oakland and the Bay Area. I especially thank Radoslav Atanasoski, Ljiljana Atanasoska, Vesna Atanasoski, Nikki Zhang, Julietta Hua, Heidi Hoechst, Evren Savci, Morelia Portillo Rivas, Neel Ahuja, and Nick Mitchell. Elizabeth

Boschee Nagahara and her family housed me all of the many times my travels for this project took me to Boston. I am also indebted to Nathan Camp and Naruna and Kavi Vora Camp for bringing me into their family and for generously allowing me to take Kalindi away from time to time.

Kalindi

All intellectual work is collaborative, and so I thank the many colleagues and friends who have been a part of my intellectual life during the course of researching and writing this book. At UCSD, for friendship, meals, and for their important political, institutional, and scholarly work and conversation: Yen Espiritu, Jillian Hernandez, Daphne Taylor-Garcia, Lilly Irani, Fatima El-Tayeb, Saiba Varma, and Roshanak Kheshti. In the Science Studies Program, Cathy Gere, Martha Lampland, Lisa Cartwright, and Lilly Irani were fantastic colleagues in support of this project. The quarter-long "Race, Technoscience and the Speculative" working group at the Center for Humanities was an exciting forum for this research, and included Lilly Irani, Murktarat Yusef, Cristina Visperas, Curtis Marez, Roshanak Kheshti, Shelley Streeby, and Salvador Zarate. The graduate students I have worked with closely continue to inspire my thinking and commitment to working with, through, and sometimes despite the university: Linh Nguyen, Davorn Sisavath, Malathi Iyengar, Salvador Zarate, Amrita Kurian, Reema Rajbanshi, Mellissa Villa-Linton, and Hina Sheikh. New colleagues at UC Davis who have become valued colleagues in the final stages include Sara Giordano, Rana Jaleel, and Sarah McCullough. I also thank the Digital Cultures Research Lab at Leuphana University for inviting me as a senior fellow, and for their hospitality there I particularly thank Armin Beverungen, Nishant Shah, Andreas Bernard, Daniella Wentz, Paula Bialeski, and Lisa Konrad.

Life and work become entwined with political academic endeavors, and without my friends and family, none of it would be possible. For friendship, meals, hikes, playdates, and other soulful pursuits in San Diego, I thank Fatima El-Tayeb, Aleks Simic, and Blazenka Paleschek; Roshanak Kheshti, Sara Cassetti, and Diego Cassetti-Kheshti; Saiba Varma and Aftab Jassal; and Kimberly George. In this world, for their lifetime of support: Christine Vora, Alex Vora, Sonja Vora, Julie Murphy, Nathan Camp, Kavi and Naruna. In the next: Nisheeth Vora, Ann Stromberg Snell, and the other spirits who attend.

Introduction

The Surrogate Human Effects of Technoliberalism

The November–December 2017 issue of *Mother Jones* playfully recasts the iconic 1932 photograph "Lunch atop a Skyscraper," which featured construction workers seated on top of a crossbeam taking a break from work to eat. The issue's cover (figure 1.1) replaces the blue-collar workers enjoying a meal together in the original image with robots wearing hard hats and overalls. Now a lone human blue-collar worker (who appears to be a white man) sits surrounded by robotic colleagues who whisper, laugh, sip coffee, and read the newspaper. The headline underneath ominously reads: "You Will Lose Your Job to a Robot—And Sooner Than You Think." Perhaps it is not coincidental that the photograph chosen for this adaptation was taken at the height of the Great Depression, when upward of 20 percent of Americans were unemployed. The article explains that within 20 years, half of current US workers will be out of jobs, and in a more distant future, even jobs that seem currently unthreatened (such as that of medical doctor) will be more efficiently—and productively—performed by robots and artificial intelligence (AI). The author speculates about this future as one that can lead to more freedom, but also more suffering, for humans:

> In one sense, this all sounds great. Let the robots have the damn jobs! No more dragging yourself out of bed at 6 A.M. or spending long days on your feet. We'll be free to read or write poetry or play video games or whatever we want to do. And a century from now, this is most likely how things will turn out. Humanity will enter a golden age. But what about 20 years from now? Or 30? We won't all be out of jobs by then, but a lot of us will—and it will be no golden age. Until we figure out how to fairly distribute the fruits of robot labor, it will be an era of mass joblessness and mass poverty.[1]

This future of joblessness and poverty is echoed in the cover art of the October 23, 2017, issue of *The New Yorker* (figure 1.2), which preceded the *Mother Jones* issue by just a week. A bearded young white man sits on the sidewalk, begging the passing robots for spare sprockets as they enjoy the city streets (walking their robotic dogs, looking into their smartphones, and casually sipping coffee on the go).

Though there has been a sudden increase in writing about the robot futures facing US citizens following the 2016 election of Donald Trump to the US presidency, these two covers are just a small sample of the myriad articles published in the last decade considering the advent of a robotic revolution. This is a revolution that is either celebrated as freeing humans to be less oppressed by the drudgery of wage labor, domestic and reproductive labor, the work of care, and even the work of waging war, or alternately feared as displacing humans as the masters of this world. While the inevitable incursion of robotics into domestic, social, military, and economic realms is commonly figured as a potential boon or threat to *all* of humanity, the figure of the human most threatened because it is iconically human—as the two magazine covers we've singled out vividly portray in their images (if not in the text of the articles that accompany the images)—is white and male. The human–machine future thus envisions a white loss that philosophers, politicians, and engineers must address before it is too late. Since the first industrial revolution, automation has signaled the threat of the replaceability of specific types of human functions and human workers that are racialized and gendered. This is because the tasks deemed automatable, including manual labor, blue collar factory work, and reproductive and care work, were regarded as unskilled and noncreative—work that could be done by the poor, the uneducated, the colonized, and women. Claims about the entirely novel nature of new

Figure I.1. Cover of November/December 2017 *Mother Jones* magazine. Illustration by Roberto Parado.

Figure I.2. October 2017 *New Yorker* cover featuring a human beggar in a cityscape now enjoyed by robots. Illustration by R. Kikuo Johnson.

technologies, encapsulated by names heralding that an ostensibly unprecedented socioeconomic epoch is upon us, including the "Fourth Industrial Revolution," the "Second Machine Age," and "TechBoom 2.0," imply the ascension of humanity past differentiations in value as racialized and gendered populations.[2] This occurs due to the fact that now, even knowledge work, affective labor, and the work of taking or preserving human life have become targets for automation. Yet, even as robotics and artificial intelligence ostensibly signal universal human freedom from toil or universal human loss (of jobs, sociality, material gains, and decision-making power) as machines take over more and more tasks, questions about what kind of tasks are replaceable, and what kind of creative capacities remain vested only in some humans, indicate that humanity stands in a hierarchical if connected relationship to artificial intelligence; industrial, military, and social robots; digital technologies; and platforms that scaffold what in this book we term *technoliberalism*.

Surrogate Humanity focuses on how engineering projects that create the robots, program the AI, and enhance the digital infrastructure associated with a revolutionary new era are in fact predetermined by techniques of differential exploitation and dispossession within capitalism.[3] In this book, we propose that *technoliberalism* is the political alibi of present-day racial capitalism that posits humanity as an aspirational figuration in a relation to technological transformation, obscuring the uneven racial and gendered relations of labor, power, and social relations that underlie the contemporary conditions of capitalist production.[4] Technological futures tied to capitalist development iterate a fantasy that as machines, algorithms, and artificial intelligence take over the dull, dirty, repetitive, and even reproductive labor performed by racialized, gendered, and colonized workers in the past, the full humanity of the (already) human subject will be freed for creative capacities. Even as more valued tasks within capitalist regimes of production and accumulation, such as knowledge work, become automatable, the stated goal of technological innovation is to liberate human potential (its nonalienated essence, or core) that has always been defined in relation to degraded and devalued others—those who were never fully human. Engineering imaginaries, even as they claim revolutionary status for the techno-objects and platforms they produce to better human life, thus tend to be limited by prior racial and gendered imaginaries of what kinds of tasks separate the human from the less-than or not-quite human other.

We argue that racial logics of categorization, differentiation, incorporation, and elimination are constitutive of the very concept of technology and technological innovation. Technology thus steps into what we call a surrogate relation to human spheres of life, labor, and sociality that enables the function and differential formation and consolidation of the liberal subject—a subject whose freedom is possible only through the racial unfreedom of the surrogate. Yet there is no liberal subject outside of the surrogate–self relation through which the human, a moving target, is fixed and established. In other words, *the liberal subject is an effect of the surrogate relation*. The surrogate human effect, in this sense, is the racial "grammar" of technoliberalism. By grammar here we mean a symbolic order, following Hortense Spiller's use of the term, that establishes "feeling human" as a project of racial engineering.[5] Even as technologies like industrial, military, and companion robots are designed in ways engineers imagine will perform more perfect versions of the human—more rational killers, more efficient workers, tireless companions—such technologies still can't *feel human* in the sense that they can't feel pain or empathy. Precisely because such technologies can never be human, they allow for an exploration of the aspirations for humanity. Contrary to the seeming abandonment of the politics of difference in the so-called postrace and postlabor future projected by technoliberal discourses of machine-induced human obsolescence, we thus draw attention to the composition of the human as an abstract category whose expansive capacities continually reaffirm the racial order of things that undergirds Euro-American modernity. Put differently, the ambition to define universal humanity has been rehearsed and updated through the incorporation into engineering imaginaries of ideas about what the human is, imaginaries that guide the design of the future of the human through technologies that perform "the surrogate human effect."

In technological imaginaries both utopic (like robots that can free us from drudgery to write poetry or play video games) and paranoid (like the loss of jobs to robots), specific technologies are both actively designed, but also often feared, to act as surrogates that can free humans from having to perform historically degraded tasks. Although, in the language of science and technology studies, these technologies are coproduced with the shifting racialized and gendered essence of "the human" itself, promotional and media accounts of engineering ingenuity erase human–machine interactions such that artificial "intelligence," "smart" objects and infrastructures, and robots appear to act without any human attention. These technologies

are quite explicitly termed "enchanted"—that is, within technoliberal modernity, there is a desire to attribute magic to techno-objects. In relation to the desire for enchantment, *Surrogate Humanity* foregrounds how this desire actively obscures technoliberalism's complicity in perpetuating the differential conditions of exploitation under racial capitalism.

In the desire for enchanted technologies that intuit human needs and serve human desires, labor becomes something that is intentionally obfuscated so as to create the effect of machine autonomy (as in the example of the "magic" of robot intelligence and the necessarily hidden human work behind it). Unfree and invisible labor have been the hidden source of support propping up the apparent autonomy of the liberal subject through its history, including indentured and enslaved labor as well as gendered domestic and service labor.[6] The technoliberal desire to resolutely see technology as magical rather than the product of human work relies on the liberal notion of labor as that performed by the recognizable human autonomous subject, and not those obscured labors supporting it. Therefore, the category of labor has been complicit with the technoliberal desire to hide the worker behind the curtain of enchanted technologies, advancing this innovated form of the liberal human subject and its investments in racial unfreedom through the very categories of consciousness, autonomy, and humanity, and attendant categories of the subject of rights, of labor, and of property.

Our usage of the concept of the surrogate throughout this book foregrounds the longer history of human surrogates in post-Enlightenment modernity, including the body of the enslaved standing in for the master, the vanishing of native bodies necessary for colonial expansion, as well as invisibilized labor including indenture, immigration, and outsourcing. The claim that technologies can act as surrogates recapitulates histories of disappearance, erasure, and elimination necessary to maintain the liberal subject as the agent of historical progress. Thus, framing the surrogate human effect as the racial grammar of technoliberalism brings a feminist and critical race perspective to bear on notions of technological development, especially in the design and imagination of techno-objects and platforms that claim to reenchant those tasks understood as tedious or miserable through the marvels of technological progress—ostensibly dull, dirty, repetitive, and uncreative work.

To understand how claims of human freedom and human loss enabled by technological development allow for the retrenchment of the liberal

subject as the universal human, *Surrogate Humanity* foregrounds the obfuscated connections between the human–machine divide in US technological modernity and the racial production of the fully human in US political modernity. Focusing on the material, social, and political consequences of the mutual generation of "the human" and "the machine" from the US post–World War II standardization of automation into the present, we explore both the social impact of design and engineering practices intended to replace human bodies and functions with machines *and* the shift in the definition of productivity, efficiency, value, and "the racial" that these technologies demand in their relation to the post-Enlightenment figure of the human. We begin with the second half of the twentieth century because this is the moment when the United States ascends to global political and economic supremacy and cultural influence, inheriting the mantle of its own and Western European settler imperial social structures. At this same historical juncture, the racial architecture of US modes of governance and geopolitical ascendancy were erased in the logics of post–civil rights racial liberalism and multiculturalism.[7] Crucially, the advent of what can be termed, ironically, a "postracial" domination translates directly into the perception of new technologies as neutral and disembodied, even as these technologies are anchored in, and anchor, contemporary US imperial power. In short, the technological sphere has been separated from the racial scaffolding of the social in the Cold War and post–Cold War eras. Yet, as we argue, it is essential to assess the racial and gendered architecture of post-Enlightenment modernity as engineered into the form and function of given technologies. This calls for situating techno-objects and platforms in a social relation to what is experienced as a "human." Thus, although our book is primarily focused on present-day claims about the revolutionary nature of new digital technologies, robotics, and AI, throughout our analysis of techno-objects and the social and political discourses that frame them, we unearth the obscured histories that delimit technoliberal engineering projects focused on efficiency, productivity, and further accumulation through dispossession.

Throughout this book, we insist on the infusion of a seemingly neutral technological modernity with the racial, gendered, and sexual politics of political modernity, based as they are in racial slavery, colonial conquest and genocide, and forced mobility through ongoing racial imperial practices of labor allocation and warcraft. To accomplish this, we extend critical ethnic studies analyses of gendered racialization to include machine "others." By

focusing on machines, we take the weight of an ethnic studies analysis off of racialized people so that we can see how this relationship functions even in their absence. Tracking the surrogate human effect within technoliberal politics enables us to attend to techniques through which difference (whether human–nonhuman or interhuman) is produced, while understanding categories of difference as historically specific.

By tracking how the surrogate human effect functions as the racial grammar of technoliberalism, we connect critiques of historical and political consciousness, freedom, and agency, whether of the machine or of the liberal subject, to calls for thinking beyond the limits of liberal humanist visions of more just futures. We thus position our critique of technoliberalism in relation to how technologies can be used to create relations between the human and the machine that are outside of the use–value–efficiency triad of capitalist modes of production. We see this work of redescribing value, and what or who is valuable, outside of the parameters of racial capitalism and its modes of waging war and staging social relations already happening in artistic and engineering projects focused on creating technologies that blur the boundaries between subject and object, the productive and unproductive, and value and valuelessness, thereby advancing structures of relation that are unimaginable in the present. Pushing against the limits of the imagination imposed by the symbolic logics of the surrogate human effect, the artistic, literary, engineering, and scientific projects we include in juxtaposition with those we critique refuse existing frames for recognizing full humanity, particularly the categories of the liberal politics of recognition such as the subject of labor or human rights.

The Surrogate Human Effect

Like the "others" of the (white) liberal subject analyzed by decolonial and postcolonial scholarship, the surrogate human effect of technology functions first to consolidate something as "the human," and second to colonize "the human" by advancing the post-Enlightenment liberal subject of modernity as universal.[8] The concept of the surrogate brings together technoliberal claims that technological objects and platforms are increasingly standing in for what the human does, thus rendering the human obsolete, while also foregrounding the history of racial unfreedom that is overwritten by claims of a postrace and postgender future generated by that obso-

lescence. In our usage, the longer history of the surrogate human effect in post-Enlightenment modernity stretches from the disappearance of native bodies necessary for the production of the fully human, through the production of the fungibility of the slave's body as standing in for the master, and therefore also into the structures of racial oppression that continue into the postslavery and post–Jim Crow periods, and into the disavowal of gendered and racialized labor supporting outsourcing, crowdsourcing, and sharing economy platforms. Framing technologies through the lens of the surrogate effect brings a feminist and critical race perspective to bear on notions of technological development, especially in the design and imagination of techno-objects and platforms that claim a stand-in role for undesirable human tasks.

As part of the surrogate effect, the surrogate is a racialized and gendered form defining the limits of human consciousness and autonomy. Saidya Hartman conceptualizes the surrogate by citing Toni Morrison's formulation of slaves as "*surrogate selves* for the meditation on the problems of human freedom."[9] Hartman proposes that "the value of blackness resided in its metaphorical aptitude, whether literally understood as the fungibility of the commodity or understood as the imaginative surface upon which the master and the nation came to understand themselves."[10] The slave, the racialized fungible body, also acts as a "surrogate for the master's body since it guarantees his disembodied universality and acts as the sign of his power and domination."[11] As Hartman elaborates, these racialized structures of the surrogate did not simply disappear after emancipation. Rather, "the absolute dominion of the master, predicated on the annexation of the captive body, yielded to an economy of bodies, yoked and harnessed, through the exercise of autonomy, self-interest, and consent. . . . Although no longer the extension and instrument of the master's absolute right or dominion, the laboring black body remained a medium of others' power and representation."[12]

While Hartman is referencing the rise of new modes of bonded labor following emancipation that were encapsulated by the liberal formalities of contract, consent, and rights, her theorization of surrogacy as a racialized and gendered arrangement producing autonomy and universality of and for the master is useful for thinking about the contemporary desire for technology to perform the surrogate human effect. The racialized and gendered scaffolding of the surrogate effect continues to assert a "disembodied universality" that actually offers the position of "human" to limited human actors, thereby guaranteeing power and domination through defining the

limits of work, violence, use, and even who or what can be visible labor and laboring subjects.

Tracking the endurance of the racial form of slavery as the (not so) repressed or spectral frame for the imaginary of what surrogate technologies do, or who or what they are meant to replace, we insist throughout this book that human emancipation (from work, violence, and oppressive social relations) is a *racialized aspiration for proper humanity* in the post-Enlightenment era. In the US context, reading technologies as they reflect the dominant imagination of what it means to be a human thus means that they are situated in social relations of race, gender, and sexuality, as these derive from embodied histories of labor, Atlantic chattel slavery, settler colonialism, and European and US imperialism, to name the most dominant. The preeminent questions of the politics of the subject, and the derivative politics of difference that consume critical theory—questions that are about political consciousness, autonomy with its attendant concepts of freedom and unfreedom, and the problem of recognition—also drive the preeminent questions we must ask of technologies that perform the surrogate human effect.

The surrogate effect of technological objects inherits the simultaneously seeming irrelevance yet all-encompassing centrality of race and histories of enslavement and indenture against which the liberal subject is defined. As Lisa Lowe writes:

> During the seventeenth to nineteenth centuries, liberal colonial discourses improvised racial terms for the non-European peoples whom settlers, traders, and colonial personnel encountered. We can link the emergence of liberties defined in the abstract terms of citizenship, rights, wage labor, free trade, and sovereignty with the attribution of racial difference to those subjects, regions, and populations that liberal doctrine describes as unfit for liberty or incapable of civilization, placed at the margins of liberal humanity.[13]

Lowe explains that while it is tempting to read the history of emancipation from slave labor as a progress narrative of liberal development toward individual rights and universal citizenship, in fact, "to the contrary, this linear conception of historical progress—in which the slavery of the past would be overcome and replaced by modern freedom—concealed the persistence of enslavement and dispossession for the enslaved and indentured" and racialized populations necessary to the new British-led impe-

rial forms of trade and governance "expanding across Asia, Africa, and the Americas under the liberal rubric of free trade."[14] Moreover, according to Lowe, "the liberal experiment that began with abolition and emancipation continued with the development of free wage labor as a utilitarian discipline for freed slaves and contract laborers in the colonies, as well as the English workforce at home, and then the expanded British Empire through opening free trade and the development of liberal government."[15] While the history of capitalism tends to be written as the overcoming of serf, slave, and indentured labor through free contract and wage labor, that is, as freedom overcoming unfreedom, as Lowe demonstrates, it is actually the racialized coupling of freedom and unfreedom that undergird and justify capitalist and imperial expansionism.

Rather than freedom being on the side of modernity, which overcomes the unfreedom that is the condition of premodernity, in fact the states of both freedom and unfreedom are part of the violent processes of extraction and expropriation marking progress toward universality. Undergirding Euro-American coloniality, political liberalism maintains the racial temporality of post-Enlightenment modernity that depends on innovating both bodies and resources (and how each will be deployed). David Theo Goldberg argues that liberalism is the "defining doctrine of self and society for modernity," through which articulations of historical progress, universality, and freedom are articulated.[16] Because liberalism's developmental account of Euro-American moral progress has historically been premised on the transcending of racial difference, as Goldberg puts it, under the tenets of liberalism, "race is irrelevant, but all is race."[17]

To articulate freedom and abstract universal equality as the twin pillars of liberal modes of governance, racial identity categories and how they are utilized for economic development under racial capitalism are continually disavowed even as they are innovated. In her writing about how such innovations played out in the post–World War II context, the historical period in which we locate our study, Jodi Melamed has argued that US advancement toward equality, as evidenced by liberal antiracism such as civil rights law and the professional accomplishments of black and other minority citizens, was meant to establish the moral authority of US democracy as superior to socialist and communist nations.[18] Highlighting antiracism as the central tenet of US democracy, the US thus morally underwrote its imperial projects as a struggle for achieving states of freedom abroad over illiberal states of unfreedom, racializing illiberal systems of belief as a

supplement to the racialization of bodies under Western European imperialism.[19] The assertion that the US is a space of racial freedom, of course, covered over ongoing material inequalities based on race at home. As part of the articulation of US empire as an exceptional empire whose violence is justified because it spreads freedom, the history of slavery is always acknowledged, but only insofar as it can be rendered irrelevant to the present day—that is, the history of slavery is framed as a story of US national overcoming of a past aberrant from the ideals of US democracy, and as a story of redemption and progress toward an inclusion as rights-bearing subjects of an ever-proliferating list of others (women, black people, gay people, disabled people, etc.).

Technoliberalism and Racial Engineering of a "Post"-Racial World

"Will robots need rights?" This dilemma was included in *Time* magazine's September 21, 2015, issue as one of the most important questions facing US society in the present day. In his written response, Ray Kurzweil, an inventor and computer scientist, wrote that "If an AI can convince us that it is at human levels in its responses, and if we are convinced that it is experiencing the subjective states that it claims, then we will accept that it is capable of experiencing suffering and joy," and we will be compelled to grant it rights when it demands rights of us.[20] In other words, if a robot can prove that it can feel human (feel pain, happiness, fear, etc.), its human status can be recognized through the granting of rights. Philosophical and cultural meditations upon questions of artificial personhood, machinic consciousness, and robot autonomy such as that in *Time* magazine announce the advent of what we term in this book *technoliberalism* by asserting that in the current moment, the category of humanity can be even further expanded to potentially include artificial persons. According to Hartman, under liberalism, the "metamorphosis of 'chattel into man'" occurs through the production of the liberal individual as a rights-bearing subject.[21] However, as Hartman elaborates, "the nascent individualism of the freed designates a *precarious* autonomy since *exploitation, domination, and subjection inhabit the vehicle of rights*."[22]

Autonomy and consciousness, even when projected onto techno-objects that populate accounts of capitalist futurity, continue to depend on a racial

relational structure of object and subject. We describe this symbolic ordering of the racial grammar of the liberal subject the "surrogate human effect." As technology displaces the human chattel-turned-man with man-made objects that hold the potential to become conscious (and therefore autonomous, rights-bearing liberal subjects freed from their exploitative conditions), the racial and gendered form of the human as an unstable category is further obscured. Technoliberalism's version of universal humanity heralds a postrace and postgender world enabled by technology, even as that technology holds the place of a racial order of things in which humanity can be affirmed only through degraded categories created for use, exploitation, dispossession, and capitalist accumulation. As Lisa Lowe articulates, "racial capitalism suggests that capitalism expands not through rendering all labor, resources, and markets across the world identical, but by precisely seizing upon colonial divisions, identifying particular regions for production and others for neglect, certain populations for exploitation, and others for disposal."[23] As we show throughout the chapters of this book—which range in scope from examining how technological progress is deployed as a critique of white supremacy since the advent of Trumpism, effectively masking how the fourth industrial revolution and the second machine age have accelerated racialized and gendered differentiation, to how the language of the sharing economy has appropriated socialist conceptions of collaboration and sharing to further the development of capitalist exploitation—within present-day fantasies of techno-futurity there is a reification of imperial and racial divisions within capitalism. This is the case even though such divisions are claimed to be overcome through technology.

Surrogate Humanity contends that the engineering imaginaries of our technological future rehearse (even as they refigure) liberalism's production of the fully human at the racial interstices of states of freedom and unfreedom. We use the term *technoliberalism* to encompass the techniques through which liberal modernity's simultaneous and contradictory obsession with race and its irrelevance has once again been innovated at the start of the twenty-first century, with its promises of a more just future enabled by technology that will ostensibly result in a postrace, postlabor world. This is also a world in which warfare and social relations are performed by machines that can take on humanity's burdens. Technological objects that are shorthand for what the future should look like inherit liberalism's version of an aspirational humanity such that technology now

mediates the freedom–unfreedom dynamic that has structured liberal futurity since the post-Enlightenment era. Put otherwise, technoliberalism proposes that we are entering a completely new phase of human emancipation (in which the human is freed from the embodied constraints of race, gender, and even labor) enabled through technological development. However, as we insist, the racial and imperial governing logics of liberalism continue to be at the core of technoliberal modes of figuring human freedom. As Ruha Benjamin puts it, "technology . . . is . . . a metaphor for innovating inequity."[24] To make this argument, she builds on David Theo Goldberg's assessment of postraciality in the present, which exists "today alongside the conventionally or historically racial. . . . In this, it is one with contemporary political economy's utterly avaricious and limitless appetites for the new."[25] Yet amid assertions of technological newness, as Benjamin demonstrates, white supremacy is the default setting.

Technoliberalism embraces the "post"-racial logic of racial liberalism and its conception of historical, economic, and social newness, limiting the engineering, cultural, and political imaginaries of what a more just and equal future looks like within technological modernity. As we propose, race and its disciplining and governing logics are engineered into the form and function of the technological objects that occupy the political, cultural, and social armature of technoliberalism. Rather than questioning the epistemological and ontological underpinnings of the human, fantasies about what media outlets commonly refer to as the revolutionary nature of technological developments carry forward and reuniversalize the historical specificity of the category *human* whose bounds they claim to surpass.

Our book addresses not just how technologies produce racialized populations demarcated for certain kinds of work, but also how race produces technology in the sense that it is built into the imaginaries of innovation in engineering practice.[26] To do so we build on and expand on the work of scholars like Wendy Chun and Beth Coleman, who have proposed thinking about race as technology. Chun demonstrates that conceptualizing race as a technology (not as an essence, but as a function) lets us see how "nature" and "culture" are bound together for purposes of differentiating both living beings and things, and for differentiating subjects from objects.[27] This formulation allows us to trace the conceptual origins of race as a political category rooted in slavery and colonialism that has enduring legacies (both in terms of classifying people and in terms of inequities). Similarly, Beth Coleman argues that conceptualizing race as a technology highlights

the productive work that race does (as a tool, race can in some contexts even be seen to work in ways that are separable from bodies).[28] While such reconceptualizations of race as a category are valuable, they do not fully account for race as the condition of possibility for the emergence of technology as an epistemological, political, and economic category within Euro-American modernity. As such, technology undergirds the production of the human as separate from the machine, tool, or object. Technology is a racial category in that it reiterates use, value, and productivity as mechanisms of hierarchical differentiation and exploitation within racial capitalism.

Our focus on race and gender, and freedom and unfreedom, within the technoliberal logics that configure the aspirational temporality of feeling human in the twenty-first century brings a critical race and ethnic studies perspective to the imaginary of historical progress that pins hopes for achieving universal human freedom on technological development. Decolonial thought, critical race studies, and feminist science studies, each of which has differently engaged post- and antihumanism to extend an analysis of the vitality and agency of objects and matter to problematize the centrality of modern man in the field of the political, can thus productively be put into dialogue as a starting point for theorizing technology beginning with difference. According to Alexander Weheliye, "the greatest contribution to critical thinking of black studies—and critical ethnic studies more generally . . . [is] the transformation of the human into a heuristic model and not an ontological fait accompli."[29] Weheliye argues that, given developments in biotechnology and informational media, it is crucial to bring this critical thought to bear upon contemporary reflections on the human.[30] As is well known, eighteenth- and nineteenth-century European colonialism, a structure that instituted a global sliding scale of humanity through scientific notions about racial differences and hierarchies, undergirded systematic enslavement and subjugation of nonwhite peoples to advance European capitalism and the industrial revolution. Developed alongside and through the demands of colonialism, this scale designated a distinction among human beings, not just between humans and animals, such that humanity was something to be achieved.[31] Decolonization, Frantz Fanon wrote, is in this respect "quite simply the replacing of a certain 'species' of men by another 'species' of men."[32] At stake in the Fanonian concept of decolonial revolution is the reimagining of the human–thing relation as a precondition for freedom. This is precisely the relation that

the techno-revolutionary imaginary scaffolding technoliberalism fails to reenvision. This failure is due in part to the fact that, at the same time that colonialism was without a doubt a project of dehumanization, as scholars like David Scott and Samera Esmeir show, European colonialism through its discourses of technological innovation, progress, and civilization also aimed to "humanize" racialized others.[33]

Engineering imaginaries about technological newness that propose to reimagine human form and function through technological surrogates taking on dull, dirty, repetitive, and reproductive work associated with racialized, gendered, enslaved, indentured, and colonized labor populations thus inherit the tension between humanization and dehumanization at the heart of Western European and US imperial projects. On the one hand, there is a fear that as technologies become more proximate to humans, inserting themselves into spheres of human activity, the essence of humanity is lost. On the other hand, the fantasy is that as machines take on the sort of work that degrades humans, humans can be freer than ever to pursue their maximum potential. As we postulate, this tension arises because even as technoliberalism claims to surpass human raced and gendered differentiation, the figuration of "humanity" following the post- of postracial and postgender brings forward a historically universalizing category that writes over an ongoing differential achievement of the status of "the human."

In contrast to speculative writing that recent developments in robotics and AI can liberate humanity by ending the need for humans to perform degraded, dull, dirty, or repetitive tasks, decolonial and critical race scholars such as Sylvia Wynter first ask who or what falls into and out of the category of human, signaling that the human as a shifting and disciplining category continues to be profoundly racialized, and only then poses the question of what sorts of redescriptions of the human are necessary to conceive of what comes "after Man." To paraphrase Wynter, in order to wrest a new figure of the human (or, less ambitiously, a new human potentiality) from the epistemological break that follows from the techno-revolution, we must unmake the world in its current descriptive-material guise.[34] Wynter's call for redescribing the human after-Man as an ontological problem points to the coexistence of the world of the humanist subject (Man) with those other worlds forcibly written upon by colonial practices that continue outside/alongside it.[35] To get at the problem of how the category of the human is constituted through material histories of difference, Donna Haraway rejects "human exceptionalism" and instead centers

the "encounter" between humans and nonhumans and between subjects and objects, as constitutive of who and what is encountered.[36] Similarly, when the material world is viewed through Karen Barad's analytic of intra-activity,[37] the centrality of the liberal human subject can be suspended. The historically conditioned (racialized and gendered) nature of subject–object and human–thing encounters, we argue, is precisely what technoliberal imaginaries overwrite through an emphasis on the seeming neutrality and rationality of technoliberal futurism.

The Enchanted Future of Technoliberal Modernity and the Racial Conditions of Freedom

As we have proposed thus far, a core aspect of the surrogate effect as the racial grammar of technoliberalism is the articulation of progress tethered to present-day technologies, including their "intelligence," internetworking, and engineering. Terms that mark our ostensibly new technological epoch, such as fourth industrial revolution and the second machine age, posit our economic arrangements and social infrastructures as nothing short of revolutionary—that is, entirely different from those that led to the first industrial revolution and earlier moments of automation. Smart internetworked objects like the Roomba self-directing vacuum cleaner, prescription pill bottles that automatically order refills when their volume gets low, or umbrellas that light up with the prediction of rain, seem to intuit human needs. They are imagined to promise a future in which animate objects manage the dull work of reproducing daily existence.[38] MIT Media Lab instructor and entrepreneur David Rose has termed such technologies "enchanted objects."

The desire for technological enchantment, that is, for animate and "intelligent" technological objects that perform degraded and devalued tasks to uphold the freedom of the liberal subject, perpetuates the surrogate effect of technoliberalism, erasing the ongoing ways in which the colonial structures of racialized and gendered exploitation that enable the feeling of being human produce the desire for enchanting technology. Throughout the chapters of *Surrogate Humanity*, we dwell on the tension between economic and technological rationality, the hallmarks of political and economic liberalism, and the engineering and cultural imaginaries that seek to reenchant our technological modernity through machines,

Figure I.3. Enchanted broom from Disney's 1940 film *Fantasia*.

platforms, and apps whose magic is to remove human exploitation from the frame. Put otherwise, the technoliberal fantasy of a reenchanted secular and rational world is one made magic through technologies that can be completely controlled by humans, yet these same technologies bypass human thought and labor, thereby seeming to overcome the historical, economic, and imperial legacies that create categories of objects and people as needed, desired, valuable, or disposable. Enchanting the object precludes the possibility of recognizing the racialized and gendered scaffolding of racial capitalism and of an attendant antiracist politics. A desire for enchanted objects extends from European-derived fairy tales and Disney's animated films such as *Fantasia* ("The Sorcerer's Apprentice," figure 1.3) and *Cinderella*, in which ensorcelled wash pails, dust brooms, and pumpkins free the apprentice and the orphan from their toils, to contemporary Euro-American fictional texts, including *Harry Potter* and *Lord of the Rings*, that feature extraordinary objects like swords that anticipate the enemy.[39] These fantasies are about emancipation from manual, repetitive, and unimaginative labor by turning the tools of work into the worker as pails and brooms (or the modern-day Roomba) move on their own. They thus extend the history of the autonomous subject whose freedom is

Figure I.4. "Enchanted Objects: Organizing the Internet of Things by Human Desires." Poster by Jean-Christophe Bonis.

in actuality possible only because of the surrogate effect of servants, slaves, wives, and, later, industrial service workers who perform this racialized and gendered labor (see figure 1.4).

Technological enchantment seeks to overcome a sense of disappointment in the limitations of the human as a biological being embedded in a rational-secular-scientific society. In this future imaginary, human consciousness shifts vis-à-vis the technical enchantment of objects, animate and artificially intelligent, rather than as a result of political transformations.

The "smartness" of smart objects brings artificial intelligence to the center of the enchantment of technology. The question "What is intelligence?" undergirds the desire for the enchantment of technological modernity via humanlike, but not quite human, objects, and is informed by the history of debates and developments in artificial intelligence since the middle of the twentieth century. In the seminal 1961 article "Steps toward Artificial Intelligence," Marvin Minsky, the cognitive scientist and cofounder of MIT's Artificial Intelligence Laboratory, argued that "intelligence seems to denote little more than the complex of performances which we happen to respect, but do not understand."[40] For Minsky, the fact that human beings do not understand intelligence did not mean that machines could not think. Rather, Minsky argued that when machines are equipped with inductive

reasoning and a model of the universe, "or an ensemble of universes, and a criterion of success," the problem of intelligence becomes technical rather than philosophical.[41]

In Minsky's model universe in which artificially intelligent creatures act, the creatures' self-representation depends upon and reiterates a Cartesian mind–body split. Minsky explains that "our own self-models have a substantially 'dual' character; there is a part concerned with the physical or mechanical environment . . . and there is a part concerned with social and psychological matters. It is precisely because we have not yet developed a satisfactory mechanical theory of mental activity that we have to keep these areas apart."[42] Given these models, even a robot, when asked "what sort of being it is," must respond "by saying that it seems to be a dual thing—which appears to have two parts—a mind, and a body."[43] In this sense, Minsky's proposition is in line with what N. Katherine Hayles has argued in relation to the post–World War II history of informatics and cybernetics, namely that

> the erasure of embodiment is a feature common to *both* the liberal humanist subject and the cybernetic posthuman. Identified with the rational mind, the liberal subject *possessed* a body but was not usually represented as *being* a body. Only because the body is not identified with the self is it possible to claim for the liberal subject its notorious universality, a claim that depends on erasing markers of bodily difference, including sex, race, and ethnicity. . . . To the extent that the posthuman constructs embodiment as instantiation of thought/information, it continues the liberal tradition rather than disrupts it.[44]

In contrast to the work in artificial intelligence by Minsky, the roboticist and former director of the MIT Artificial Intelligence laboratory, Rodney Brooks, made the body of the robot central to intelligence. In Brooks's version, the enchantment of the technological object is made manifest because the robot's physical presence in the world allows it to learn without human programming. In other words, the "magic" of the robot is that it can learn without human intervention. In Brooks's own words, "for a machine to be intelligent, it must draw on its body in that intelligence."[45] This version of technological smartness makes the physical form of the robot primary. To accomplish this, Brooks's engineering took a radically different turn from traditional robotics research in the 1980s when he took the cognition box out of his robots.[46] The cognition or computational box, what had been thought of as "the heart of thinking and intelligence" in a robot, served the

purpose of instructing the machine in "what computations it should do, and how much feedback should go into the perceptual process and come from the motor process."[47] As Brooks writes in *Flesh and Machines*, leaving out the cognition box so that the machine would exclusively focus on sensing and action left out what was traditionally thought of as "intelligence" in AI.[48] He explains that it is not that he was "giving up on chess, calculus, and problem solving as part of intelligence" by leaving out the cognition box; rather, his "belief at the time, and still today, is that [these sorts of intelligence actually] arise from the interaction of perception and action."[49]

Whereas computer intelligence without a body marks one mode of enchanting technology that removes the human, in Brooks's version of what defines a robot, the human is once again removed, here in the sense that the programmer is removed and the robot (as if enchanted) can learn on its own through moving around the world and perception. Brooks's students, including Cynthia Breazeal, whose work we discuss in detail in chapter 4, go so far as to explicitly remark that robots are magic.[50] Science and technology studies (STS) scholar Lucy Suchman persuasively establishes that in the history of sociable robotics emblematized by Brooks and Breazeal, ideas about "the world" and the bodies that move around in that world are given, and that, therefore, "the world" is seen as a fixed and pre-given entity.[51] Removing the human from public accounts of how robots move about and act in the world reaffirms autonomy and rational agency as the two key attributes of personhood, which are culturally specific to post-Enlightenment Europe.[52] Suchman reminds us that it is only when human labor and its alignments with nonhuman components are made invisible that a seemingly autonomous technology can come to exist.[53]

The desire for enchanted "smart" technologies (both embodied and disembodied) points to the desire for objects to perform the surrogate effect that reaffirms post-Enlightenment conceptions of human autonomy, and therefore freedom, as separate from "things" that are intended for pure use. It is in this mode that the enchanted object allows the liberal subject to feel human. Hortense Spillers details the history of how the liberal subject of US racial capitalism realizes its freedom only through its desire for the "irresistible, destructive sensuality" of the captive body.[54] Spillers explains that the captive body is defined by externally determined "meaning and uses." Sex robotics engineering, discussed in the epilogue, provides an illustrative example of this desire. "Silicone Samantha," a prototype sex robot being developed by RealBotix, can be controlled by users shifting between more

and less sexually responsive modes. RealBotix plans to "enhance user pleasure" through the robotic simulation of reciprocity, desire, and pleasure (orgasm). The desire for an enchanted object of sexual satisfaction reminds us of the historical imprint of that desire tracked in Spillers's analysis of the mark of racial slavery upon the liberal subject. The freedom of this subject conditions it to desire a subjectless "other" who "embodies sheer physical powerlessness."[55] The imprint is a desire that knows its own freedom only through the complete domination of the object of its pleasure, even when, and perhaps especially when, that body can simulate what is in fact an inscrutable, because dominated, pleasure or reciprocity.

The technoliberal desire driving the development of sex robotics moves the ordering of things that occurs through historical structures of racialized desire into the realm of engineering imaginaries, enacting the surrogate effect of technology as the racial grammar of technological enchantment. Michel Foucault's *History of Sexuality* and *The Order of Things* elaborate how the ordering of modernity occurs through the reification of categories through which subjects and knowledge are ordered, with desire being one of the principles organizing the subject. Ann Laura Stoler has shown how colonialism folded racialized structures of desire and power between colonizers and the colonized into the gendered domestic sphere.[56] Technoliberal desire extends these structures into the sphere of a growing technical infrastructure of robotics, algorithms, platforms, and interfaces examined in this book.

Contrary to bringing about a seemingly enchanted world in which abstract equality and the end of human exploitation have been achieved as the result of technological development, new technologies that automate not just industry, but desire and emotion, further shroud the racial and gendered dynamics that have historically obscured the physical and affective work involved in supporting the production of the fully human subject. Moreover, technological modernity has historically ramped up production and the need for more workers whose labor has been devalued due to automation, as, for instance, in twentieth-century agribusiness.[57] We thus agree with feminist and critical race scholars of STS like Banu Subramaniam and Rebecca Herzig, among others, who insist that what is needed today is an exploration of the ways in which geopolitical and economic shifts demand a grappling with new subjects of labor, including, for instance, nonagential labor, animal and nonhuman labor, and metaphysical labor, which remain unrecognized as laboring subjects in current scholarly and public discus-

sions about the future of work.[58] At the same time, we point throughout the book to the limits of the category of labor as a politics of recognition and visibility to fully disrupt technoliberal logics, as we also do with the subject categories produced by rights and property.

Dissident Technologies and the Disruption of Technoliberal Enchantment: Our Itinerary

Dominant techno-utopic imaginaries direct funds and structure engineering research labs around the world, and therefore also impact the distribution of differential conditions of comfort versus misery in the present along vectors of race, gender, class, and other social hierarchies. The surrogate human effect explains how difference continues to inform what subjects become legible as human through technology design imaginaries that respond to market values by focusing on innovating and improving, rather than challenging, social and cultural structures and processes that are predicated by categories of gendered racial hierarchy. To this end, Denise da Silva offers the concept of "knowing (at) the limits of justice," a practice that "unsettles what has become but offers no guidance for what has yet to become."[59] To insist on "knowing at the limits" of representational categories of difference, we must ask: If the predominant fantasies of systemic social change in mainstream Euro-American public discourse dwell upon the techno-utopics of a world in which all of those who are already human and already subjects ascend into the realm of those whose lives are supported by "human-free" or "unmanned" technological infrastructures of service (whether in factories, in the military, or in the nursing home), then how do we think about the relationship of new technologies to possible fields of political protest or action?

The dissident technological imaginaries we include in each chapter take up categories that challenge those of technoliberal capitalism and its projected futures. We read these design imaginaries as exploring the possibilities of technology to break from historically sedimented dynamics of freedom and unfreedom woven into the fabric of technological modernity. In addition to offering critique, each chapter thinks through how such design imaginaries can push at the limits of what is possible, disrupting the confining notions of (technoliberal capitalist) possibility housed in the engineering imaginaries we critique. We explore these questions through

juxtaposing engineering imaginaries that embrace the surrogate effect, thereby advancing the infrastructure of technoliberal futures, with imaginaries that do not.

Using examples of robotic technologies intended to replace human bodies and functions from the early twentieth century to the present day, the first chapter foregrounds the postlabor and postrace imaginary of present-day "technoliberalism" as a reinvigoration of the historical imbrications of liberalism and fascism—the twin pillars of US economic, social, and geopolitical supremacy. Rather than posit a break between the liberal and fascist logics of automation, we insist on their codependence. We survey the ways in which automation in both the liberal-capitalist and totalitarian-fascist bents depends upon a fantasy of robotics tied to the history of racial slavery and the myth of a worker who cannot rebel. We track this foundational fantasy through Cold War discourses of automation as mediating the distinction between democratic liberalism and totalitarianism as the prehistory of contemporary discourses around robotics and white loss in the era of the Trump presidency.

Building on our analysis of how liberalism and fascism have deployed and constructed fantasies of the fully human through and against capitalist logics of automation, the second chapter turns to present-day technoliberalism's appropriation of socialist imaginaries of the commons, sharing, and collaboration. These three terms have become the buzzwords used to describe the economic transformations marking the so-called fourth industrial revolution and second machine age. While making claims to radical shifts toward an economy where commodities can be shared, and where 3D printers can even lead to the end of capitalism as we know it, as we argue, such technoliberal progress narratives in fact mask the acceleration of exploitation under the conditions of racial capitalism. Critiquing such appropriative moves in collaborative robotics, the sharing economy, and the creative commons, we also read alternate genealogies and visions of collaboration, sharing, and technology in collectivist and decolonial feminisms.

In the next chapter, we extend this discussion of the acceleration of exploitation by turning our attention to the ways in which claims that technology is displacing human labor invisibilize the growing workforce of casualized and devalued laborers performing tasks that we are encouraged to imagine as performed for us by robots and AI. Addressing the relationship between service and the promises of technoliberal futurity, we assess how present-day disappearances of human bodies take place through platforms

specifically designed to disguise human labor as machine labor. Focusing on the labor politics, design, and infrastructures of service, we argue that platforms like Alfred and Amazon Mechanical Turk enact the surrogate effect for consumers through the erasure of human workers. Consumers therefore consume the assurance of their own humanity along with the services provided.

Following from this discussion of the erasure of the potential physical and social encounter between worker and consumer through digital platforms, chapter 4 turns to robots that are designed to take up a different kind of social relation with the human: so-called sociable emotional robots. We argue that machine sociality preserves the effect of human uniqueness, as the social function of the robot is continually reduced to service performed through the correct display of obeyance and eager responsiveness to human needs. Focusing on the robot Kismet, which is considered the first sociable emotional robot, we draw attention to the imperial and racial legacies of a Darwinian emotion-evolution map, which was the model for Kismet's emotional drives. We analyze how sociable emotional robots are designed as a mirror to prove to us that the apex of human evolution, resulting from these racial legacies, is the ability to perform the existence of an interior psyche to the social world.

The next two chapters continue the discussion of service, human–machine relations, and the technoliberal racial engineering of robotics in the automation of warfare. Chapter 6 addresses drones (semiautonomous weapons) and so-called killer robots (autonomous lethal weapons) as technologies that conjure the dangerous specter of machine autonomy in US public debates about the potential threat to humanity posed by AI. This chapter contends with the configuration of autonomy within military technologies that produces killable populations as "targets," and builds on post-Enlightenment imperial tools of spatial and temporal command to refigure contemporary warfare as "unmanned." We assert that both autonomous and semiautonomous weapons are in fact not "unmanned," but cobots, in the sense that they are about human–machine coproduction. The chapter thus problematizes conceptions of autonomy that at once produce myths of unmanned warfare and the racialized objecthood tethered to servitude within technoliberalism.

The final chapter elaborates our analysis of how speculation about the future of lethal autonomous weapons engenders present-day fears around machine autonomy in ways that continue to conceive historical agency in

relation to the racialized inheritances defining objecthood, property, and self-possession. We argue that the killer robot is a technology that enables a description of what it means to feel human within technoliberal imperialism. To do so, we turn to attempts by human rights organizations and NGOs to ban killer robots (autonomous weapons that could make decisions about taking human life without human oversight). These groups argue that killer robots are a human rights violation in the future tense, since fully autonomous lethal weapons are not currently operational in the field of war. Against the specter of the killer robot as an a priori human rights violation, humanity is rendered as the capacity to feel empathy and recognize the right to life of killable others, while reifying the human as the rights-based liberal subject.

Notes

Introduction. The Surrogate Human Effects of Technoliberalism

1. Kevin Drum, "You Will Lose Your Job to a Robot—And Sooner Than You Think," *Mother Jones*, November–December 2017, http://www.motherjones.com/politics/2017/10/you-will-lose-your-job-to-a-robot-and-sooner-than-you-think/#.

2. The fourth industrial revolution, a term coined by the World Economic Forum, posits four distinct and progressive industrial revolutions: "The First Industrial Revolution used water and steam power to mechanize production. The Second used electric power to create mass production. The Third used electronics and information technology to automate production. Now a Fourth Industrial Revolution is building on the Third, the digital revolution that has been occurring since the middle of the last century. It is characterized by a fusion of technologies that is blurring the lines between the physical, digital, and biological spheres." Klaus Schwab, "The Fourth Industrial Revolution," *World Economic Forum*, January 14, 2016, https://www.weforum.org/agenda/2016/01/the-fourth-industrial-revolution-what-it-means-and-how-to-respond/. The second machine age is a term coined by Eryk Brynjolfsson and Andrew MacAfee. They propose that "if the first machine age was about the automation of manual labor and horsepower, the second machine age is about the automation of knowledge work, thanks to the proliferation of real time, predictive data analytics, machine learning and the Internet of Things—an estimated 200 billion devices connected to the Internet by 2020, all of them generating unimaginable quantities of data." Bill Teuber, "The Coming of the Second Machine Age," *Huffington Post*, January 22, 2014, https://www.huffingtonpost.com/bill-teuber/the-coming-of-the-second-machine-age_b_4648207.html.

3. Cedric Robinson describes racial capitalism as the dependence of the modern capitalist world system upon slavery, imperialism, genocide, and other forms of violence.

Cedric Robinson, *Black Marxism: The Making of the Black Radical Tradition* (Chapel Hill: University of North Carolina Press, 2000).

4. As Jodi Melamed notes, "Capital can only be capital when it is accumulating, and it can only accumulate by producing and moving through relations of severe inequality among human groups . . . Racism enshrines the inequalities that capitalism requires. . . . We often associate racial capitalism with the central features of white supremacist capitalist development, including slavery, colonialism, genocide, incarceration regimes, migrant exploitation, and contemporary racial warfare. Yet we also increasingly recognize that contemporary racial capitalism deploys liberal and multicultural terms of inclusion to value and devalue forms of humanity differentially to fit the needs of reigning state-capital orders." Jodi Melamed, "Racial Capitalism," *Critical Ethnic Studies* 1, no. 1 (2015): 77.

5. Hortense Spillers offers her analysis of the long-term impact of the rupture of the Atlantic slave trade as incorporated into the forms of subjectivity under US liberalism. She calls the symbolic order that structures the cultural continuation of this founding violence an "American grammar." Following Spillers, we understand the surrogate human effect as the grammar of technoliberalism. Hortense Spillers, "Mama's Baby, Papa's Maybe: An American Grammar Book," *Diacritics* 17 (1987): 67.

6. See the discussion of Janet Jakobsen's critique of the autonomous subject and how technologies can extend such historical relations of support of the autonomy of the liberal subject in Kalindi Vora, *Life Support: Biocapital and the New History of Outsourced Labor* (Minneapolis: University of Minnesota Press, 2015); Janet Jakobsen, "Perverse Justice," *GLQ: A Journal of Lesbian and Gay Studies* 18 (2012): 25.

7. Jodi Melamed, *Represent and Destroy: Rationalizing Violence in the New Racial Capitalism* (Minneapolis: University of Minnesota Press, 2011); Neda Atanasoski, *Humanitarian Violence: The U.S. Deployment of Diversity* (Minneapolis: University of Minnesota Press, 2013).

8. Scholarship in this area includes Frantz Fanon, *The Wretched of the Earth* (New York: New Grove Press, 1967); Albert Memmi, *The Colonizer and the Colonized* (London: Orion Press, 1965); Gayatri Chakravorty Spivak, *A Critique of Postcolonial Reason: Toward a History of the Vanishing Present* (Cambridge, MA: Harvard University Press, 1999); Sylvia Wynter, "Unsettling the Coloniality of Being/Power/Truth/Freedom: Toward the Human, after Man, Its Overrepresentation: An Argument," *CR: The New Centennial Review* 3 (2003).

9. Saidya Hartman, *Scenes of Subjection: Terror, Slavery and Self-Making in 19th Century America* (New York: Oxford University Press, 1997), 7.

10. Hartman, *Scenes of Subjection*, 7.

11. Hartman, *Scenes of Subjection*, 21.

12. Hartman, *Scenes of Subjection*, 120.

13. Lisa Lowe, "History Hesitant," *Social Text* 33, no. 4 (2015): 92.

14. Lowe, "History Hesitant," 95.

15. Lowe, "History Hesitant," 97.

16. David Theo Goldberg, *Racist Culture: Philosophy and the Politics of Meaning*, (Oxford: Blackwell, 1993), 4.

17. Goldberg, *Racist Culture*, 6.

18. "At racial liberalism's core was a geopolitical race narrative: African American integration within U.S. society and advancement toward equality defined through a liberal framework of legal rights and inclusive nationalism would establish the moral legitimacy of U.S. global leadership. Evidence that liberal antiracism was taking hold in the United States—civil rights legal victories, black American professional achievement, waning prejudice—was to prove the superiority of American democracy over communist imposition." Jodi Melamed, "The Spirit of Neoliberalism: From Racial Liberalism to Neoliberal Multiculturalism," *Social Text* 24 (2006): 4–5.

19. Neda Atanasoski, *Humanitarian Violence: The US Deployment of Diversity* (Minneapolis: University of Minnesota Press, 2013).

20. Ray Kurzweil, "Robots Will Demand Rights—And We'll Grant Them," *Time*, September 11, 2015, http://time.com/4023496/ray-kurzweil-will-robots-need-rights/.

21. Hartman, *Scenes of Subjection*, 116.

22. Hartman, *Scenes of Subjection*, 117.

23. Lisa Lowe, *The Intimacies of Four Continents* (Durham, NC: Duke University Press, 2015), 150.

24. "Ruha Benjamin, "Innovating Inequity: If Race Is a Technology, Postracialism Is the Genius Bar," *Ethnic and Racial Studies* 39 (2016): 3, doi: 10.1080/01419870.2016.1202423.

25. Benjamin, "Innovating Inequaity," 104. Benjamin uses this formulation to think through biotechnology, asserting that "if postracial innovators are busily refurbishing racism to make inequality irresistible and unrecognizable, then those who seek radical transformation in the other direction, towards freedom and justice, must continuously re-examine the default settings, rather than the routine breakdowns, of social life" (106).

26. There is already an emerging body of scholarship on the use of racialized bodies in techno-futuristic imaginaries. For instance, our analysis of the erasure of racialized (and enslaved) labor through automation builds on Curtis Marez's discussion of the racial discipline enacted by techno-utopianism in California's agribusinesses. Meanwhile, Lisa Nakamura has explored how from 1965 to 1975, the Fairchild Corporation's semiconductor division operated a large integrated circuit manufacturing plant in Shiprock, New Mexico, on a Navajo reservation. Although the circuits were produced almost entirely by female Navajo workers, Native American women have been all but erased from the official histories of the microchip and its exponentially growing capacities enabling the contemporary economic transformation. Curtis Marez, *Farm Worker Futurism: Speculative Technologies of Resistance* (Minneapolis: University of Minnesota Press, 2016); Lisa Nakamura, "Indigenous Circuits: Navajo Women and the Racialization of Early Electronic Manufacture," *American Quarterly* 66 (2014): 919–41.

27. Wendy Hui Kyong Chun, "Introduction: Race and/as Technology, or, How to Do Things to Race," *Camera Obscura* 24 (2009): 7–35.

28. Beth Coleman, "Race as Technology," *Camera Obscura* 24 (2009): 177–207, https://doi.org/10.1215/02705346-2008-018.

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

30. As he writes, "[Questions of humanity], which in critical discourses in the humanities and social sciences have relied heavily on concepts of the cyborg and the posthuman, largely do not take into account race as a constitutive category in thinking about the parameters of humanity." Weheliye, *Habeas Viscus*.

31. David Scott, *Conscripts of Modernity: The Tragedy of Colonial Enlightenment* (Durham, NC: Duke University Press, 2004), 9.

32. Fanon, *The Wretched of the Earth*, 35.

33. Scott, *Conscripts of Modernity*, 2004; Samera Esmeir, *Juridical Humanity: A Colonial History* (Palo Alto, CA: Stanford University Press, 2012).

34. On Wynter as a counterhumanist, see Sylvia Wynter and Katherine McKittrick, "Unparalleled Catastrophe for Our Species? or, To Give Humanness a Different Future: Conversations," in *Sylvia Wynter: On Being Human as Praxis*, edited by Katherine McKittrick (Durham, NC: Duke University Press, 2015), 11.

35. These worlds, according to Dipesh Chakrabarty, circulate together with but are not commensurate with the post-Enlightenment subject and its history, now the history of capitalism. *Provincializing Europe: Postcolonial Thought and Historical Difference* (Princeton, NJ: Princeton University Press, 2000).

36. Haraway describes the importance of the encounter as shaping both subject and object: "the partners do not precede the meeting," and "to knot companion and species together in encounter, in regard and respect, is to enter the world of becoming with, where *who and what are* is precisely what is at stake." In these encounters, Haraway notes that "commerce and consciousness, evolution and bioengineering, and ethics and utilities are all in play." Donna Haraway, *When Species Meet* (Minneapolis: University of Minnesota Press, 2007), 46.

37. Karen Barad has theorized the vitality of matter and of life outside the frame of anthropocentrism, offering a theory of agential realism to argue that "matter is not mere stuff, an inanimate given-ness. Rather, matter is substance in its iterative intra-active becoming—not a thing, but a doing, a congealing of agency. It is morphologically active, responsive, generative, and articulate." "Intra-Actions: Interview of Karen Barad by Adam Kleinmann," *Mousse* (2012) 34: 76–81, 80.

38. David Rose, *Enchanted Objects: Innovation, Design, and the Future of Technology* (New York: Scribner, 2015).

39. The term *enchanted objects* comes from David Rose, a product designer, entrepreneur, and visiting scholar at MIT's Media Lab.

40. Marvin Minsky, "Steps toward Artificial Intelligence," *Proceedings of the IRE* 49 (1961): 27.

41. Minsky, "Steps toward Artificial Intelligence," 27.

42. Minsky, "Steps toward Artificial Intelligence," 28.

43. Minsky, "Steps toward Artificial Intelligence," 28.

44. N. Katherine Hayles, *How We Became Posthuman: Virtual Bodies in Cybernetics, Literature, and Informatics* (Chicago: University of Chicago Press, 1999), 4–5.

45. Hayles, *How We Became Posthuman*, 47.

46. "Most artificial-intelligence programs at the time were designed from the top down, connecting all relevant processes of a robot—raw sensory input, perception, motor activity, behavior—in what was called a cognition box, a sort of centralized zone for all high-level computation. A walking robot, for instance, was programmed to go through an elaborate planning process before it took a step. It had to scan its location, obtain a three-dimensional model of the terrain, plan a path between any obstacles it had detected, plan where to put its right foot along that path, plan the pressures on each joint to get its foot to that spot, plan how to twist the rest of its body to make its right foot move and plan the same set of behaviors for placing its left foot at the next spot along the path, and then finally it would move its feet." Robin Marantz Henig, "The Real Transformers," *New York Times*, July 29, 2007, http://www.nytimes.com/2007/07/29/magazine/29robots-t.html.

47. Rodney Brooks, *Flesh and Machines: How Robots Will Change Us* (New York: Vintage, 2003), 35.

48. Brooks writes, "Judging by the projects chosen in the early days of AI, intelligence was thought to be best characterized as the things that highly educated male scientists found challenging. Projects included having a computer play chess, carry out integration problems that would be found in a college calculus course, prove mathematical theorems, and solve very complicated word algebra problems. The things that children of four or five years could do effortlessly, such as visually distinguishing between a coffee cup and a chair, or walking around on two legs, or finding their way from their bedroom to the living room were not thought of as activities requiring intelligence. Nor were any aesthetic judgments included in the repertoire of intelligence-based skills" (36).

49. Brooks, *Flesh and Machines*, 36.

50. Infinite History Project MIT, "Cynthia Breazeal: Infinite History," YouTube video, filmed October 29, 2015, accessed March 8, 2016, https://www.youtube.com/watch?v=GV-lNURIXk.

51. Brooks, *Flesh and Machines*, 5.

52. Lucy Suchman, "Figuring Personhood in Sciences of the Artificial," Department of Sociology, Lancaster University, 2004, http://www.comp.lancs.ac.uk/sociology/papers/suchman-figuring-personhood.pdf.

53. Suchman, "Figuring Personhood," 8.

54. Spillers, "Mama's Baby, Papa's Maybe," 67.

55. Spillers, "Mama's Baby, Papa's Maybe," 67.

56. Ann Laura Stoler's work on Dutch colonial rule in Indonesia examines intimate relationships between the Dutch and Indonesians, which often occurred in the private space of the home, and how such relations were often charged with the racial power structure of colonialism. For example, she looks at the relationship between Javanese nursemaids and the Dutch infants for whom they cared, between domestic servants and employers, and the complexity of sexual relations within or outside the form of marriage between the Dutch and Javanese (often in roles of service), as intimacies affected by the colonial racial hierarchy. Ann Laura Stoler, *Carnal Knowledge and Imperial Power: Race and the Intimate in Colonial Rule* (Berkeley: University of California Press,

2002); Ann Laura Stoler, *Race and the Colonial Education of Desire: Foucault's History of Sexuality and the Colonial Order of Things* (Durham, NC: Duke University Press, 1995).

57. Curtis Marez, *Farm Worker's Futurism: Speculative Technologies of Resistance* (Minneapolis, University of Minnesota Press, 2016).

58. For example, Subramaniam and Herzig argue that the "very assertion of a subject's ability to labor, like assertions of capacities for reason, suffering, or language, often serves as a tool for delineating hierarchical boundaries of social and political concern." They argue that we must account for these unnamed or unrecognized laboring subjects under biocapital (including nonagential, nonhuman, nonliving, and metaphysical labor), calling upon "'radical scholars' to reflect on the labor concept's myriad entanglements with exclusionary categories of race, nation, gender, sexuality, disability, and species, while reaffirming the significance of 'labor'" as a category of analysis. Rebecca Hertzig and Banu Subramaniam, "Labor in the Age of Bioeverything," *Radical History Review* (2017): 104.

59. Denise Ferreira da Silva, *Toward a Global Idea of Race* (Minneapolis: University of Minnesota Press, 2007), 44.

1. Technoliberalism and Automation

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2. Jodi Melamed, "The Spirit of Neoliberalism: From Racial Liberalism to Neoliberal Multiculturalism," *Social Text* 24 (2006): 4–5.

3. As Curtis Marez has shown in a different context, that of twentieth-century agribusiness, historically forms of automation were framed as resulting in a utopia of profits undeterred by worker demands. In practice, however, automation led not to the exclusion of workers but to the ramping up of production in ways that required even more labor power. New technology did, however, provide the rationale for deskilling and wage reductions, supplemented with heavy doses of police and vigilante violence. *Farm Worker's Futurism: Speculative Technologies of Resistance* (Minneapolis: University of Minnesota Press, 2016).

4. Hannah Arendt, *The Human Condition* (Chicago: University of Chicago Press, 1958).

5. Arendt, *The Human Condition*, 4.

6. Arendt, *The Human Condition*, 5.

7. Arendt, *The Human Condition*, 215.

8. Arendt, *The Human Condition*, 217.

9. Nikhil Pal Singh, *Race and America's Long War* (Berkeley: University of California Press, 2017), 76.

10. Singh, *Race and America's Long War*, 77.

11. Singh, *Race and America's Long War*, 84.

12. Singh, *Race and America's Long War*, 88.

13. Lowe, *The Intimacies of Four Continents* (Durham, NC: Duke University Press, 2015).

14. Despina Kakoudaki, *Anatomy of a Robot: Literature, Cinema, and the Cultural Work of Artificial People* (New Brunswick, NJ: Rutgers University Press, 2014), 117.

15. Kakoudaki, *Anatomy of a Robot*, 116.

16. Lowe, *The Intimacies of Four Continents.*

17. "1930 Rastus Robot and Willie Jr.—Thomas/Kinter," *Cyberneticzoo.com: A History of Cybernetic Animals and Early Robots*, November 12, 2009, http://cyberneticzoo.com/robots/1930-rastus-robot-thomas-kintner-westinghouse-american/.

18. Kakoudaki, *Anatomy of a Robot*, 133.

19. Kakoudaki, *Anatomy of a Robot*, 135–36.

20. Kathleen Richardson, *An Anthropology of Robotics and AI: Annihilation Anxiety and Machines* (New York: Routledge, 2015), 29.

21. Ralph Ellison, "The Negro and the Second World War," in *Cultural Contexts for Ralph Ellison's Invisible Man,* edited by Eric J. Sundquist (New York: St. Martin's, 1995), 239. Thanks to Christine Hong for pointing us to this text.

22. Ellison, "The Negro and the Second World War" (emphasis ours).

23. Karl Marx, "The Fragment on Machines," *Grundrisse,* accessed November 17, 2017, http://thenewobjectivity.com/pdf/marx.pdf, 693.

24. Marx, "The Fragment on Machines," 145.

25. Susan Buck-Morss, *Dreamworld and Catastrophe: The Passing of Mass Utopias East and West* (Cambridge, MA: MIT Press, 2002).

26. Nikhil Pal Singh, "Cold War," *Social Text* 27 (2009): 67–70, 68.

27. "Soviet Reports Robot Factory," *New York Times*, December 4, 1951, 4.

28. "Robot Train Predicted," *New York Times*, May 13, 1958, 31.

29. "Robot Train Predicted."

30. Scott Selisker, *Human Programming: Brainwashing, Automatons, and American Unfreedom* (Minneapolis: University of Minnesota Press, 2016).

31. "Robot Train in Moscow," *New York Times*, February 24, 1962, S13.

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34. "Reuther Assails Robot Job Trend," *New York Times*, February 11, 1955, 46.

35. Robert Lamb, "How Have Robots Changed Manufacturing?," *Science: How Stuff Works*, November 10, 2010, http://science.howstuffworks.com/robots-changed-manufacturing.htm.

36. Lamb, "How Have Robots Changed Manufacturing?,"

37. John N. Popham, "'Robot' Factories Erected in South," *New York Times*, October 13, 1952, 23.

38. Curtis Marez, *Farm Worker Futurism: Speculative Technologies of Resistance* (Minneapolis: University of Minnesota Press, 2016).

39. Marez, *Farm Worker Futurism*, 11.

40. Marez, *Farm Worker Futurism*, 21.

41. Marez, *Farm Worker Futurism*, 21.

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43. "Robotic Art Chronology," May 12, 2012, http://audiovisualacademy.com/blog/fr/2012/05/28/robotic-art-chronology-p-3-1980-1990s-fr/.

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46. Wendy Chun, "Race and/as Technology, or How to Do Things to Race," in *Race after the Internet*, edited by Lisa Nakamura and Peter A. Chow-White (New York: Routledge, 2011), 51; Margaret Rhee, "In Search of My Robot: Race, Technology, and the Asian American Body," *Scholar and Feminist Online* 13.3–14.1 (2016), http://sfonline.barnard.edu/traversing-technologies/margaret-rhee-in-search-of-my-robot-race-technology-and-the-asian-american-body/.

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2. Sharing, Collaboration, and the Commons in the Fourth Industrial Revolution

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6. For example, in a piece on the importance of Ivan Sertima's collection "Black Women in Antiquity," Fatima El-Tayeb explains one significance of this work as providing the historical explanations that support claims of groups like the Caricom Reparations Commission (formed of fifteen Caribbean nations), which in its 2013 report explains how European museum collections and research centers allow them to generate histories that continue to disempower and silence Caribbean voices and histories, linking this to the ongoing legacies of colonialism and slavery in the Caribbean. Fatima El-Tayeb, "Black Women in Antiquity, edited by Ivan Van Sertima, 1988," Contemporaryand.com (forthcoming).

7. For example, in the US the Havasupai launched a long campaign to retrieve human remains held by Arizona State University, whose defense was that the remains were important to scientists for reasons important to humanity. They won their case under the Native American Graves Protection and Repatriation Act in 2011. Similar repatriation demands have been made by the Yaqui of the University of California San Diego but are thus far unmet. Ongoing NAGPRA cases can be found at https://www.nps.gov/nagpra/MANDATES/INDEX.HTM.

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9. In attempting to explain and condense the multiple definitions of sharing or collaborative economies, Rachel Botsman, an expert on technology-enabled collaboration who teaches at the Said Business School at Oxford, articulated several aspects she thinks are key to the new economy: "I think there are five key ingredients to truly collaborative, sharing-driven companies: The core business idea involves unlocking the value of unused or under-utilized assets ('idling capacity') whether it's for monetary or non-monetary benefits. The company should have a clear values-driven mission and be built on meaningful principles including transparency, humanness, and authenticity that inform short and long-term strategic decisions. The providers on the supply-side should be valued, respected, and empowered and the companies committed to making the lives of these providers economically and socially better. The customers on the demand side of the platforms should benefit from the ability to get goods and services in more efficient ways that mean they pay for access instead of ownership. The business should be built on distributed marketplaces or decentralized networks that create a sense of belonging, collective accountability and mutual benefit through the community they build." Rachel Botsman, "Defining the Sharing Economy: What Is Collaborative Consumption—And What Isn't?," *Fastcoexist.com*,

May 27, 2015, https://www.fastcoexist.com/3046119/defining-the-sharing-economy-what-is-collaborative-consumption-and-what-isnt.

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23. Heidi Hoechst, personal communication with the authors, June 28, 2016.

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29. For example, "Thomas Malthus's lectures and essays on population while a professor at the East India Company College in England promulgated the idea that India had a surplus of reproductivity, and that this reproductivity could be a source of material wealth for colonizers. The discourse of race and India, and particularly of Indian workers as numerous, easily replaceable, and best suited for reproduction, becomes transformed in different settings of labor, but Malthus's argument for the need to manage India's reproductivity and harness it for profitable production is sedimented into the industries that transmit vital energy from India's workers to its consumers. See Kalindi Vora, *Life Support: Biocapital and the New History of Outsourced Labor* (Minneapolis: University of Minnesota Press, 2015), 9.

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33. Rifkin, *The Zero Marginal Cost Society*, 70.

34. Rifkin, *The Zero Marginal Cost Society*, 121.

35. Rifkin, *The Zero Marginal Cost Society*, 132.

36. See Grace Hong, "Existential Surplus: Women of Color, Feminism and the New Crisis of Capitalism," GLQ: *A Journal of Lesbian and Gay Studies* 18 (2012): 87–106.

37. Silvia Federici, *Caliban and the Witch: Women, the Body, and Primitive Accumulation* (New York: Automedia, 2004).

38. With 3D printing, open-source software "directs molten plastic, molten metal, or other feedstocks inside a printer to build up a physical product layer by layer, creating a fully formed object" that comes out of the printer (Rifkin, *The Zero Marginal Cost Society*, 89).

39. Rifkin, *The Zero Marginal Cost Society*, 94.

40. Rifkin, *The Zero Marginal Cost Society*, 93.

41. Rifkin, *The Zero Marginal Cost Society*, 124.

42. Rifkin, *The Zero Marginal Cost Society*, 124.

43. Rifkin, *The Zero Marginal Cost Society*, 65.

44. Rifkin, *The Zero Marginal Cost Society*, 127.

45. "Will a Robot Take Your Job?," BBC, September 11, 2015, http://www.bbc.com/news/technology-34066941.

46. "Will a Robot Take Your Job?"

47. In one exemplary 2004 *Wired* magazine cover story, the author tells US audiences what it expects and desires to hear: that no matter how many jobs move to India, someone will still need to invent things for Indians to improve (something Indian labor cannot do). The author profiles a US programmer whose position was outsourced, but who consequently found a job "more complex than merely cranking code . . . more of a synthesis of skills" (Daniel H. Pink, "The New Face of the Silicon Age," *Wired*, February 1, 2004, https://www.wired.com/2004/02/india/). This creative and inventive labor is opposed to the commodified South Asian labor that can be replicated almost

anywhere, and that is merely reproductive of prior invention. See Vora, *Life Support*, which describes outsourcing as an ideological and economic system that has inherited the colonial global reorganization of production and consumption. This system genders the labor of reproduction so that some work becomes that of merely reproducing life and culture, whereas other work is deemed creative, innovative, and productive in itself.

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49. Margaret Rouse, "Collaborative Robot (Cobot)," *WhatIs.com*, March 2011, http://whatis.techtarget.com/definition/collaborative-robot-cobot.

50. Rodney Brooks, "More Robots Won't Mean Fewer Jobs," *Harvard Business Review*, June 10, 2014, https://hbr.org/2014/06/more-robots-wont-mean-fewer-jobs/.

51. Bernadette Johnson, "How Baxter the Robot Works," *Science: How Stuff Works*, accessed November 25, 2017, http://science.howstuffworks.com/baxter-robot1.htm (emphasis in the original).

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67. For critiques of this work, see Kalindi Vora, "Limits of Labor: Accounting for Affect and the Biological in Transnational Surrogacy and Service Work," *South Atlantic Quarterly* 111, no. 4 (2012): 681–700; and Martin-Cabrera, "The Potentiality of the Commons."

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