

CONTENTS

List of Illustrations	xi
Acknowledgments	xiii
1	Introduction: The Promise of Making 1
2	Prototype Citizen: Colonial Durabilities in Technology Innovation 39
3	Inventing Shenzhen: How the Copy Became the Prototype, or: How China Out-Wested the West and Saved Modernity 74
4	Incubating Human Capital: Market Devices of Finance Capitalism 118
5	Seeing Like a Peer: Happiness Labor and the Microworld of Innovation 144
6	China's Entrepreneurial Factory: The Violence of Happiness 172
7	Conclusion: The Nurture of Entrepreneurial Life 213
Notes	225
Bibliography	247
Index	269

1

Introduction

THE PROMISE OF MAKING

Promises . . . point us somewhere, which is the where from which we expect so much. . . . The promise is also an expression of desire; for something to be promising is an indication of something favorable to come.

—SARA AHMED, *THE PROMISE OF HAPPINESS*, PP. 29–30

What is a prototype? The term prototype is typically used in the context of industrial production, design, and engineering; a prototype is built to model or test demand (from investors or users) for an idea or a product. But can we speak of prototyping a city, a region, a nation, or new ways of being? What would these complex prototypes look like, and what would they do? This book tells the story of how prototyping at vast scales came to be viewed as a promising way to intervene in entrenched structures of inequality, exploitation, and injustice—and how this promise became a demand for individual self-upgrade and economic development. As an ethnographer, I spent ten years (2008–2018) following the people who came together around the idea that cities, regions, economies, and even nations and life itself can be prototyped. They argued that if the production of technology was made available to everyone, concrete alternatives to corporatized, exploitative, and politicized technology could be tested. They envisioned that if people became makers of technology, they would own the things they made and could decide for themselves what their technologies—and by extension their social, economic, and political lives—would be like. The prototypes of intervention they made came to be widely known as the “maker movement.”

2 CHAPTER 1

This promise of making—that *every* individual can prototype and thus intervene at scale—was fundamentally exhilarating. It felt empowering to many, like a moral form of hacking; an ethical, democratized technological resistance that was experimenting with how technology can be otherwise. This book unpacks in ethnographic and historical detail how this happened; how “making” became saturated with an *affect of intervention*—a feeling of agency and control, a sense that alternatives to dominant structures at various spatial and temporal scales were possible. This affect of intervention created seemingly shared visions for the future—even when those visions were incompatible and contradictory. Making was taken up simultaneously to articulate a return to “made in America”—as former US president Barack Obama had envisioned it in 2013—and to overcome “made in China” and its associations of China with backwardness, low quality, and fakery. It was taken up by people, institutions, and corporations that we would typically think of as holding sharply opposing views; feminist technology researchers and designers, venture capitalists, educators, major tech corporations from Intel to Tencent, designers, technology activists, major governments with opposing political views, critical scholars of science and technology. The uptake of making was driven simultaneously by desires to relive modernist ideals of technological progress *and* by projects aimed at relocating future making and decolonizing technology and design. It was articulated both in terms of a nostalgic longing for older, “better” times *and* as a toolkit to imagine alternative futures. It became a site to rearticulate the importance of craftsmanship and its associations with individual self-transformation and autonomy. At the same time, it became a resource to envision an alternative designer, engineer, and computing subjectivity that challenged ideals of the autonomous self. The interesting question is not which version is true, but how it was possible for making to be understood through such contradictory terms.

I use the prototype as both an analytical concept and an emic term, i.e., as practiced in technology production and design. As anthropologist Lucy Suchman and colleagues note, the prototype has “particular performative characteristics within the work of new technology design.”¹ It is a material and concrete proposal of alternative ways of thinking about technology and its role in the world, not “simply as a matter of talk, but as a means for trying the proposal out.” In other words, the affective qualities of the prototype lie in its simultaneous functioning as object (a model) and process (testing). The term refers to both the normative modeling—the making concrete, or realizing—of specific ideas *and* the making of an alternative, which carries the potential for contestation and intervention. One of the key promises of the maker movement was that prototyping—the testing and modeling of a technological alternative—was no longer reserved for elites, for scientists, designers, or engineers. Rather, the techniques of “making” from reverse engineering closed systems to building

your own devices and machines with open source hardware platforms and tools would make prototyping (and thus the testing and modeling of alternatives) available to everyone. A flurry of maker and open source hardware prototypes made this promise of making concrete; the “DIY cellphone” showed that *you*—rather than a big corporate player like Apple—can control the design and inner workings of your communication devices;² the hacking of proprietary health devices demonstrated how *you* can regain ownership of your body’s data;³ open source 3D printers made palpable how *you* can mass-produce in your own home.⁴ All of these projects functioned as *prototypes of intervention*. They “demoed” how to see oneself as capable of intervening in technological ownership, industrial production, economies of scale, broken healthcare systems, and of undoing established notions of the good life. They modeled how to see oneself as in control of what technologies—and by extension one’s social, economic, and political life—could look like. They created a feeling of being able to intervene at scale, from the individual body to the nation.

I use the prototype as an analytical concept to attend to a broadening disillusionment with digital technology and the IT industry. This book shows that ideals and practices of making spread in the very moment as the political and economic regime of techno-solutionism, i.e., the construal of complex social and economic inequities as problems that can be solved by technological solutions, began to be more widely critiqued. Making became more prominent during a time when people began reckoning with the tech industry’s complicity in enabling structures and processes of exploitation, racism, sexism, and exclusion. It was a moment of realization that the structures and processes of capitalism had never been “external” to or “above” the workings of technology and design. The historical condition that gave rise to making was marked by a coming to terms with how technology had enabled the entrenchment of what is commonly thought of as key characteristics of neoliberal capitalism: the economization of the environment, of natural resources, and of life itself in the name of progress and development; the demand placed on individuals to self-actualize as economic agents made responsible for their own survival; the displacement of people and animals in the name of national sovereignty, global competitiveness, and security.

Making’s particular local and translocal formations unfolded through a growing distrust of some of the basic assumptions of modernity itself. It emerged through and alongside a (belated) realization by members of tech and design industries and research that the promise of modern, technological progress and techno-solutionism had occluded and thus legitimized the violence and loss caused by capital accumulation and economic development. Advocates of making were less interested in finding a technological fix than in redefining what technology or a technological solution meant in the first place. They were invested in experimenting with alternative ways of conceiving

4 CHAPTER 1

of and producing technology, which ultimately recuperated the promise of happiness⁵ and the good life attached to technological progress, precisely as people realized that these feelings had, in fact, long been unattainable for most.⁶ Making, in other words, was simultaneously an expression and refutation of technological promise.

To make sense of this seeming contradiction, this book offers a genealogical approach that attends to the displacements of technological promise. It examines how technological promise can coexist with the proliferating distrust of its attainability. I show that the endurance of technological promise works through its displacement to sites formerly conceived of as the tech periphery, once portrayed as incapable of innovating and “in need” of technological intervention and economic development. Specifically, my focus is on China and how its image began shifting in the broader tech imagination at the very moment that the promise of making took shape and modernist ideals of technological progress were more broadly challenged.⁷ I show how China, and more specifically the city of Shenzhen in China’s Southeastern province of Guangdong, alongside other regions—including regions in the postcolonies, regions in rural America, former manufacturing cities in Europe and the United States—were rearticulated by a range of actors in the global tech industry, investment, policy, and politics as places where the future was now made, as newly innovative exactly because they were considered to be backward and thus not tainted by capitalism or modernity the same way.⁸ These displacements of technological promise co-produced China as a *prototype nation*.

By *prototype nation*, I mean the stipulation that a nation can function as a prototype—a nation that can serve as the raw material for a new model (for instance, an alternative to established models of modern progress) or can generate demand for a particular kind of future (for instance, a nation’s future freed from past and ongoing colonialism). The idea that a region, even at the scale of the nation, can function as a prototype, as a means of modeling a new way of life for others, and as an archetype that makes certain futures felt, concrete, and “masters the unknowable,” is of course not new; it is historically constituted through projects of modernization, economic development, and colonization.⁹ The European invention of the “nation-state,” the historian Arif Dirlik reminds us, “was the ultimate vehicle of modernity.”¹⁰ The European nation was positioned as the prototype of modern progress and economic development, positing Europe as the archetype and “first” that had let go of feudal pasts and traditions. Other regions were construed as stuck in the past and as “in need” to learn from the Western “model” nations. Postcolonial studies have shown in great depth how the making of the Western nation as *the prototype* of modernization and development was contingent on the invention of “the Third World” as “other”—the discursive construct of a less civilized “other” that legitimized the extraction of resources the West needed for its own project of progress and economic development.¹¹

The colonial project of prototyping a certain way of life (and demanding that others model themselves after that particular image) endures through the ideals and practices of technology innovation. It lives on in the construal of Silicon Valley's methods, instruments, and ideas of technology design and engineering as universally applicable.¹² And it is sustained through projects aimed at replicating Silicon Valley's "regional advantage"¹³ elsewhere—from efforts to build the Silicon Valley of Russia in Skolkovo, a suburb of Moscow, to claims of the emergence of a global creative class.¹⁴ It is most recently reactivated through the displacement of technological promise and the stipulation that "regional advantage" is now located elsewhere (in China, in rural America, in sub-Saharan Africa, etc.), at new frontiers, producing new horizons of possibility and investment opportunities—it is these displacements of technological promise that centrally concern this book.

I offer *displacements of technological promise* to bring into focus the violence and loss that are produced and yet often occluded by the endurance of technological dreams of future making. Weaving together sensibilities from feminist anthropology, critical race studies, and science and technology studies, this ethnography shows that the displacement of technological promise onto what was once imagined as the periphery of technological future making is a discursive move with material consequences, providing legitimacy for the reordering and restructuring of space and people, the flow of investments into certain spaces and technology practices rather than others, the casting of certain people as deserving while continuously keeping others on hold, framed as not (quite) ready, not capable of their own self-investment. Displacements of technological promise are *not* a linear movement of technological ideals and objects from "here" (the so-called developed world) to "there" (the so-called other part of the world). As I will show in this book, they unfold, instead, through circular, recursive moves, the recuperation of certain pasts and the silencing of others. They require labor and active maintenance. They thrive on the inclusion and exclusion of select sites and bodies. Displacement, anthropologist Juno Salazar Parreñas theorizes, is the "slow violence" that "works over multiple scales and beyond the clean boundaries of specific events, places, and bodies affected."¹⁵ The displacements of technological promise I document in this book are not the same and yet are not unlike the slow violence Parreñas observes as materially experienced through eviction, mega-dam construction, and natural resource extraction. My particular focus is on how displacements of technological promise imbued neoliberal projects of regional laboratories, special economic zones, and smart city planning with a renewed promise of happiness, despite their histories of extraction, displacement, and violence.¹⁶ When technological promise is at last granted to places and people that long yearned to be seen as just as innovative and creative as places like Silicon Valley, acts of violence and control in the name of innovation become less noticeable, occluded by the promise of modern technological progress and its

associations with the good life¹⁷—the promise to be at last freed from colonial and racial “othering.”

The idea that China constitutes a place to prototype alternatives to existing models of modern technological progress would have sounded absurd to most people ten years ago, when I started the research that informs this book. This is less so more recently. Western China commentators and news media have variously proliferated a sense that we are witnessing the rise of an emboldened China—one that more forcefully and assertively demands that the world, and the West in particular, ought to take it seriously as an equal (or threatening) player in the global political economy and in technology innovation in particular. Indeed, some speculate that the twenty-first century will be China’s century. This book complicates these narratives of what historian Gabrielle Hecht calls “rupture-talk.”¹⁸ The notion of rupture cannot explain China’s current moment, nor the ideals of the maker movement; indeed, “rupture talk” renders invisible the contingencies between past and present dreams of China as an alternative “model” or *prototype nation*, the rise and spread of the promise of making, and displacements of technological promise.

This ethnography is attuned to the genealogies of technological promise; it attends to the occluded contingencies of colonial pasts that remoralize “neoliberal exceptions”¹⁹ and the endurance of technological promise in the present. Its analysis folds through recuperations and reappropriations, rather than “tracing” global flows and historical continuity. One of the most pressing tasks today, anthropologist Ann Laura Stoler urges, is to examine how imperial formations are refashioned, “often opaque and oblique,” seemingly indiscernible, and escaping scrutiny.²⁰ This book attends to such “colonial reverberations” in the tech industry and digital technology projects whose promises of participation, peer production, and entrepreneurial agency occlude their historical contingencies.

In the following sections I provide a cursory sketch of the spatial and temporal contingencies of technological promise that this book attends to at length. I turn to 2015, when a high-profile Chinese politician and a well-known figure of the American maker movement each articulated a vision of making that was—without any explicit reference to the other—aligned in seemingly paradoxical ways that would escape our view if we restricted our analysis to the boundary of the nation or to an ahistorical approach.

The Socialist Pitch

The Chinese hackerspace Chaihuo (柴火) is not the kind of place in which one would expect to find the prime minister of China. It is a 15-by-10 square meter room on the second floor of a refurbished factory building located in OCT Loft, a creative industry park in the city of Shenzhen.²¹ Chaihuo is a

community space that provides its members with access to low-cost machines, electronic tools, open source hardware platforms, and educational kits for a small monthly fee (RMB 50²²—at the time, less than USD 10). On the weekends, it frequently hosts educational workshops that are open to the broader public; at these workshops, attendees can learn how to reverse engineer the printed circuit board of an electronics toy or how to use the open source microcontroller platform Arduino to build their own DIY robots. Chaihuo is in many ways a typical hackerspace. On a regular day, one finds its tables covered in electronics tools and components, breadboards, alligator clips, and wires spilling out from work-in-progress prototypes, giving off a vibe of unhinged creativity and messy experimentation. Hackerspaces (or makerspaces as they are also often called) had rapidly proliferated across the world since the 2007/2008 financial crisis, and by 2015, Chaihuo was one of several thousand hackerspaces worldwide. These hackerspaces were not the spaces frequented by the type of “hackers” portrayed in movies—basement apartments littered with Mountain Dew cans where young men illegally accessed information or broke through security barriers. The hacking that took place in Chaihuo and other hackerspaces like it was a project of self-transformation from a passive consumer into a “maker”—an active participant in social, economic, and political processes, made accessible via technological tinkering.

As unlikely as it seems, though, China’s prime minister, Li Keqiang, did indeed visit Chaihuo on an official state visit in January 2015, alongside two other Shenzhen-based businesses: the tech giant Huawei and a renowned investment bank. “Makers,” the prime minister declared during his visit, “show the vitality of entrepreneurship and innovation among the people, and such creativity will serve as a lasting engine of China’s economic growth in the future.”²³ Shortly after the visit, the Chinese state newspaper, *Xinhua News*, publicized the prime minister’s praise of making, and of Chaihuo in particular; it ran an article with the headline 李克强鼓励“创客”小伙伴：众人拾柴火焰高 (Li Keqiang guli “chuangke” xiao huoban: zhongren she chaihuo yangao),²⁴ which loosely translates as “Li Keqiang encourages young ‘makers’: everyone should ascend to excel like Chaihuo.”²⁵ The Chinese government website posted a photo essay of the prime minister surrounded by young Chinese men showing off their latest technological creations; later, the government website asserted that this visit showed that the prime minister himself was a maker at heart, for as a politician, he (like a maker) was approachable and invested in empowering citizens to “make things happen”: 创客李克强：创造一个让人时时感到方便的政府 (Chuangke Li Keqiang: chuangzao yi ge rang ren shishi gandao fangbian de zhengfu).²⁶

Only a couple of months after the prime minister had returned to Beijing, he announced a new national policy that escalated making into a nationwide project. The policy was written around three key terms; “mass makerspace

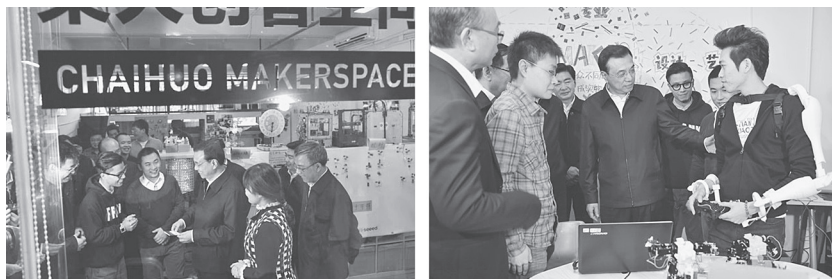


FIGURE 1.1. Photos posted on the official Chinese government website (English.gov.cn/permier/photos) depicting Prime Minister Li Keqiang's visit at Chaihuo makerspace in January 2015.

众创空间 (zhongchuang kongjian),” “mass entrepreneurship 大众创业 (dazhong chuangye),” and “mass innovation 万众创新 (wanzhong chuangxin).”²⁷ These terms framed the policy's key directive, which called upon provincial, municipal, and district level governments to allocate existing resources toward setting up “mass makerspaces” modeled on Chaihuo. The policy was aimed at developing these makerspaces for “the people” in order to help cultivate a “maker spirit” among the masses, a spirit that would in turn help foster an attitude of “self-making” and “self-entrepreneurship.”²⁸ In other words, the policy held up Chaihuo as a model for the nation. About a year later, China allegedly housed the largest number of makerspaces globally—several thousand such spaces were reported to have sprung up across the nation.

At first, the official endorsement of making by the CCP (Chinese Communist Party) might strike you as counterintuitive; why would the CCP, often associated with top-down decision making, authoritarian rule, and harsh limitation of personal freedom, endorse the workings of a small makerspace, associated with prototyping alternatives to entrenched structures of technological control and injustice? You might read the CCP's appropriation of making as yet another example of how the very tactics of grassroots intervention leveled against “the system” turned out to feed and sustain it;²⁹ or as demonstrative of how authoritarian rule allowed for the fast and efficient implementation of new policies, deemed impossible for Western liberal democracies. Perhaps you see it as a success story of a grassroots movement that managed to shape policy making and educational agendas on the national level.

While each of these interpretations gets something right, they each also occlude something; they assume making as a universal project—as standing broadly for what was, however, a very specific, American-centric articulation and manifestation of making that China's maker and open technology advocates felt pressure to take up as a reference and a model for their own work and ideals. When China's prime minister urged citizens to model themselves after Chaihuo makers, he endorsed a particular version of making—the kind that

was marshaled by some of America's most well-known maker and open source hardware advocates and that the Chinese founders and members of Chaihuo had worked hard to be associated with in order to be "seen" and taken seriously as equal and creative partners by their Western counterparts in the maker movement (a theme I unpack at length in chapters 2 and 3). Indeed, it was this dominant articulation of making that centrally shaped its broad uptake across seemingly opposing and contradictory viewpoints (including the endorsements of making by the Chinese government)—a thread that I turn to next.

In 2015, the same year that China's prime minister had visited Chaihuo, the magazine *Pacific Standard* published an article by Dale Dougherty titled "The Future of Work: Join the Maker Movement." In this article, Dougherty, who had founded the San Francisco-based publication house Maker Media (which helped proliferate the ideals of a global maker movement), argued that by becoming "makers of machines," individuals could regain control over their lives and over work amidst the spread of automation and precarious economic conditions:

Losing faith in the utility and even beauty of machines is losing faith in the kind of future we can build. We need more machines and even smarter robots that can do more for us. Even if such machines do eliminate jobs, they also create new opportunities—or at least new problems to solve. . . . If we see ourselves as the makers of machines, we are invested in creating the future, rather than having it imposed on us. The big challenge is how to get more people, not just a few, to take advantage of opportunities to do work that matters to them and makes the world a better place.³⁰

Dougherty's article centered on the story of Lisa Fetterman, a passionate hobbyist cook who, fed up with the steep prices of sous vide cooking machines, took matters into her own hands and produced her own machine: she designed, prototyped, and manufactured it on a mass scale. Along the way, she transformed herself from a maker of food (often feminized labor) into an entrepreneur (often rendered masculine). By doing so, Dougherty argued, she also transformed work itself into something that was no longer drudgery, but desirable and even fun:

Without any prior knowledge in hardware, she [Lisa] and her husband began building a sous vide prototype of their own . . . she moved to China for three months to learn how to do that. That's how her company, Nomiku, was born. Work, she told me, "was once boring but now I really don't feel like I am doing work."³¹

Dougherty's narrative condenses a key promise of the maker movement: self-transformation into an entrepreneurial agent was now democratized, available to everyone. Makers need not be professional engineers, designers, or

computer scientists to build machines and devices, start tech companies, sell products, and shape industries along with the future of work. Makers, instead, could decide for themselves what their technologies looked like. They would no longer have to listen to the state, the corporation, or the university to tell them what the good jobs were, what the good life meant, and the kinds of futures they wanted. Instead, they could prototype their own. Making offered both a sense of control over work—a way to escape what Dougherty saw as the drudgery and feminization of labor—and, more important, a way to intervene in the structures of neoliberal capitalism typically seen as inevitable.³² Dougherty's article was published as debates about the ethics and moral dilemmas of the tech industry were escalating across American news and social media. In 2015, AI, big data, and the Internet of Things were becoming fodder for rhetoric of both promise and fear. Standards like 5G and machine learning approaches in AI were portrayed as both inevitable and necessary, as delivering on several decades of promises about the smart self, the smart city, autonomous transportation, and interconnected living. Yet it was feared that these developments would have drastic, poorly understood impacts on work, from deskilling to outsourcing. They seemed to put at risk jobs that thus far had been protected from labor changes—white-collar jobs such as tech work and creative work.³³

Following the global financial crisis in 2007–2008, such forms of crisis thinking have become pervasive in the United States in particular;³⁴ indeed, our contemporary moment is often articulated as one of permanent crisis characterized by ever-increasing economic uncertainty, political instability, and severe environmental havoc. But projects of “economic development” and modernization (and the resource extraction, displacements of humans and animals, and extinction they have legitimized and demanded) of course had already much earlier outgrown their laboratory Third World.³⁵ The financial crisis made visible the processes of exploitation, the feminization of work,³⁶ and the neoliberal colonization and economization³⁷ of ever-larger swathes of our lives,³⁸ for they began to affect people who had been temporarily (even if precariously so) insulated from them. Workers in tech industries, design consultancies, architecture firms, and computing research labs began to question the promise of modern progress that had sustained their own work.³⁹ The years following the crisis were marked by a reckoning with the complicity of technology, engineering, and design in labor exploitation, resource extraction, economization, and the creation of what critical race scholar Neferti Tadiar calls “surplused populations”—“populations figured as forms of bare life, at-risk populations, warehoused, disposable people, urban excess,”⁴⁰ who serve capital as it moves from one site to another. American news media coverage began warning about the costs of ruthless neoliberal capitalism and the precarious work conditions it created, with pieces such as “Entrepreneurs Are

the New Labor” in *Forbes* in 2012,⁴¹ “The Future of Work and Workers” series run by *Pacific Standard*,⁴² *Fortune*’s 2016 “Even the IMF Admits Neoliberalism Has Failed”⁴³ by Ben Geier, and the 2017 *New Yorker* article “The Gig Economy Celebrates Working Yourself to Death” by Jia Tolentino.⁴⁴ Increasingly, people criticized Silicon Valley as a central culprit in this destabilization. *Wired* magazine, known for its central role in propagating and legitimizing the belief in techno-optimism in the 1990s,⁴⁵ began running articles on the pervasive sexism of the Silicon Valley industry as well as essays calling out the tech industry’s complicity in neoliberal capitalism. These writings signaled the dilemma of a tech industry that found itself confronted with a growing public suspicion that its countercultural ideal of “tearing down hierarchies, undermining the sorts of corporations and governments that had spawned them, and, in the hierarchies’ place, create a peer-to-peer, collaborative society, interlinked by invisible currents of energy and information,”⁴⁶ had benefited only a small minority.

The idea of a “maker movement”—while couched in a rhetoric of global and universal applicability—came out of this specific moment of techno-crisis thinking that was particularly pronounced in the United States. The idea that if individuals turned themselves into makers of machines, devices, and tools, they could also prototype concrete alternatives to contemporary capitalism and the spread of loss of control, vulnerability, and insecurity, was specific to the American context following the global financial crisis, accompanied by a rising distrust—expressed by Americans themselves—in their own IT industries. While ideals of open source hardware and electronics hacking had been circulating since the mid- to late 1990s, they picked up steam in the years of the financial crisis, 2007–2008. In 2008, the flagship Maker Faire in the Bay Area, an annual gathering of maker and open source hardware enthusiasts, began counting participant numbers over 200,000; during the same year, the number of hackerspaces in existence worldwide rose from less than a hundred to more than a thousand. Many of the key ideals of hacking—the notion that societal structures are technological and as such modifiable via technological tinkering, the idea that tinkering with code could be a form of moral and political intervention⁴⁷—were rearticulated in terms of “making” and thus rendered as available not only to geeks or computer scientists but to everyone. The global spread of hackerspaces and the growth of Maker Faires proliferated the sense of being part of something greater.

It was the writings, educational initiatives, and methodological toolkits promoted by a group of powerful, mostly male actors⁴⁸ associated with networks of tech production and innovation in the United States that attached this affect of intervention to making. They “pitched” making as a democratized approach to technology production and design. This democratization of tech production, they argued, would enable “everyone” (rather than just the elite) to turn themselves into self-defining and entrepreneurial agents of change

who intervened in societal and economic structures not by political action and mobilization, but by technological experimentation. In this vision, makers “take action” by experimenting and tinkering with technological alternatives; they *prototype* alternatives to the status quo rather than demanding change by political activism, critique, social uprising, or protest. In this pitch, they appealed at times explicitly and at other times tacitly to socialist values and ideals. As a telling example, we can turn, for instance, to a quote from the book *Makers: The Next Industrial Revolution* (2012) by Chris Anderson, former editor-in-chief of *Wired* magazine:

the ability—to manufacture “local or global” at will—is a huge advantage. That simple menu option [of a digitized machine like the 3D printer] compresses three centuries of industrial revolution into a single mouse click. If Karl Marx were here today, his jaw would be on the floor. Talk about “controlling the tools of production”: you (you!) can now set factories into motion with a mouse click.⁴⁹

Anderson’s invocation of Karl Marx here exemplifies portrayals of making through images and ideals of political action and mobilization. Not without irony, socialist ideals are reduced to serve the function of a pitch, i.e., the formulation of an idea or project as attractive to potential investors and media by producing an affect of anticipation and by promising intervention at scale. Anderson’s book, like other prominent writings on making from the periodical *Make: magazine* to Neil Gershenfeld’s *Fab* and Mark Hatch’s *The Maker Movement Manifesto*, all “branded” their arguments by invoking socialist imagery, tactics, and language. They claimed that making enabled societal and economic change for “everyone.” They called making a movement, they wrote maker manifestos and maker bills of rights. They articulated making as returning control to “the people” and as democratizing peer production, open sharing, and co-ownership of resources and knowledge. They talked about acquiring “ownership” over the means of production, intervening in corporate control over economic processes, from commodification to finance speculation. Unlike Marx, though, who understood alternatives to capitalism as emerging from class struggle, solidarity movements, and the collectivization of workers, these writings portrayed *individual* self-actualization as desirable. Notably, Anderson describes making’s transformative power as stemming not from a collective “we” but from many individual “you’s.”

These writings and projects construed one of the core techniques of neo-liberal governance—the framing of life itself in economic terms—as desirable and as key to enabling social change. They produced what seems to be an inherent contradiction: a *socialist pitch*. “Pitching” is typically associated with a start-up’s ability to formulate itself as attractive to venture capital, often using a standardized script, for the start-up has to produce a feeling of anticipation

and a promise of scale.⁵⁰ The “socialist pitch” derives its power from this technique of producing an affect of exuberant excitement and buy-in, by drawing specifically on the language and image of change and justice. Pitching works through promise rather than actual change; investors fund ideas and prototypes of intervention rather than finished products. Promises are “expressions of desire,” feminist and critical race scholar Sara Ahmed reminds us. They “point us somewhere, which is the where from which we expect so much . . . for something to be promising is an indication of something favorable to come.” The socialist pitch is aimed not at social justice per se, but at creating a desire for change and a feeling that justice via technological intervention is the only path forward. By the socialist pitch, I do not mean to suggest that the American advocates of the maker movement made a case for building a socialist or communist society. On the contrary, socialist imagery, tactics, and ideals were utilized to make a rhetorical move, to recuperate technological promise and modernist ideals of progress, precisely as people realized that the good life and the modernist dream of technological progress and solutionism had, in fact, long been unattainable for most. Socialist ideals were used to attach an affect of intervention—via making—to self-economization, i.e., the neoliberal demand that one convert the self into human capital, investing in various aspects of one’s own life in order to make the self attractive to the machineries of finance speculation and investment.⁵¹

Processes of economization, i.e., the framing of humans, animals, the environment, and life itself as economic,⁵² are at times simply taken as the consequences of neoliberalism. One of the great myths of the neoliberal ideology is that market capitalism is *laissez-faire*, that economization of life simply happens with no intervention. I use the concept of the *socialist pitch* to show that the economization of life and the creation of human capital had to be actively cultivated.⁵³ I focus on the artifacts, instruments, machines, people, and sites that imbued processes of economization with affect.⁵⁴ In chapter 4, I show the role that incubators and adjacent entrepreneurial training programs (from startup weekends to hackathons and accelerators) play in training people to see themselves as human capital and to channel their commitments to justice and technological alternatives as attractive to finance capital.

The socialist pitch remoralizes economization (of the self, life, the environment, and things) by rendering it as key to an optimistic, interventionist, and future-oriented way of living. The economization of life is portrayed as desirable and as providing individuals with interventionist capacities; *economic life* appears to be *entrepreneurial life*. The socialist pitch thus functions as a *market device of finance capital*. Market devices are typically defined as the technological, discursive, and/or human actors that generate knowledge and practices that create markets and thereby define their means of commercial exchange.⁵⁵ Pricing techniques, accounting methods, monitoring instruments,

trading protocols, benchmarking procedures, and economists all have been shown to function as such devices to create markets.⁵⁶ These market devices operate by translating complex societal and political processes via quantitative measures and simplification into manageable and seemingly controllable entities.⁵⁷ By contrast, market devices of finance capitalism operate through affect and by channeling yearnings and aspirations. They imbue processes of economization with feelings of actionability, intervention, and the promise of happiness.

The broad endorsement of making further legitimized the technique of the socialist pitch that remains pervasive in the tech and creative industries despite a growing suspicion of these industries' promises of better futures and the good life; when users participate in digital platforms such as Amazon, Facebook, or Uber, they are celebrated as entrepreneurial agents of content creation, remix, and even social movements, masking their transformation into co-creators of economic value behind a story of empowerment;⁵⁸ when citizens are celebrated as entrepreneurial change agents, the demand placed on them to construct markets and innovate national economic development appears hopeful;⁵⁹ when educational reform is framed as an entrepreneurial endeavor, the broken promises of the techno-fix are re-invested with renewed optimism and feelings of social change;⁶⁰ and when tech companies propagate the mantra of disruption, acceleration, and breakage, the "people and places broken in the process" are enrolled in an enticing story of market development and progress.⁶¹ All of these are processes of economization that reproduce and often intensify inequities and violence because they work behind the "socialist pitch" of participation, inclusion, and empowerment; they are also a process of depoliticization,⁶² for the subjects interpellated through such participation are positioned in ways that discourage collective agency and resistance.⁶³ People's hopes, dreams, and yearnings for alternatives to regimes of exploitation and disempowerment paradoxically end up further enabling them.

The socialist pitch deployed by prominent maker advocates recuperated certain aspects of earlier revolutionary rhetoric common to innovation discourse.⁶⁴ It can be understood as a rhetoric of techno-optimism haunted by a shift in attitude toward digital technology—increasingly cautious, reflexive, and ambivalent. It was this socialist pitch that engulfed making in a feeling of possibility, an imaginary of action-ability that circulated through various and often even opposing sites and places. And it was this "socialist pitch," the promise of democratized interventionist capacity, that masked the universalizing tendencies of the American maker discourse and practice. Articulated as an extension of earlier Western traditions from the American Internet counterculture to European ideals and practices of craftsmanship to the democratic ideals of post-World War II design—from the experiments at the Bauhaus to Black Mountain College,⁶⁵ making was posited as having arrived

“here” (in the West) first, while then proliferating outward and made specific in local contexts. While making was positioned as intervention into persistent structures of technological elitism and control, the writings on making and open source hardware that proliferated in and beyond the United States largely retained a very old ideal; the West as the emanating center of future making,⁶⁶ following in the footsteps of a long Western lineage of scientific and technological experimentation, hacking, design, and craftsmanship.⁶⁷ What endured, in other words, was an old, and all-too-familiar colonizing narrative, a “universalizing view that promotes a notion of technological and scientific progress” that in its claims to universality masked how it was deeply entwined with specific national, state, and commercial interests.⁶⁸

Let me pause here and return to the region that has come to hold a paradoxical place in this old, new project of future making—Shenzhen. Remember Lisa Fetterman, the hobby cook who made her own sous vide machine? There was an element of Fetterman’s story that one could very easily overlook, and that was, indeed, mentioned only in passing by Dougherty himself. Lisa Fetterman “moved to China” to accomplish her self-transformation from passionate hobby cook to savvy tech entrepreneur and maker of machines. But why would an American entrepreneur have to travel to China to free herself from the drudgery of work? Why did the promise to prototype the future of work in America hinge on China and, more specifically, on Shenzhen, where Fetterman traveled?

Shenzhen has long figured in the Western imagination through the sensational news stories of Foxconn worker suicides and copycat electronics production. It has also long been considered Silicon Valley’s unimaginative counterpart, as the site of mere execution of ideas “created” elsewhere, a place that was backward and lagging behind the “forward-looking” centers of tech innovation. While this image of Shenzhen persists, another narrative of the region emerged around 2010 reformulating the region’s “backwardness” as an opportunity (rather than what held the region back). This happened for two reasons: first, China’s early open source and maker advocates had begun to form as a loose collective between several Chinese cities in 2007, and they had turned toward making as a way to reposition China in the global imagination, shifting it from being seen as a low-quality producer to being an equal partner in hardware innovation (I explore this in detail in chapters 2 and 3). Second, foreign designers, engineers, artists, educators, and entrepreneurs began travel to China (mostly Shenzhen), with numbers peaking in the years of 2013–2016. Among the crowds who came to China were well-known figures of the American maker and open source hardware scene as well as investors, entrepreneurs, designers, scholars, artists, and educators from elite institutions in Silicon Valley, the East Coast of the United States, and various corners of

Europe. Their stories of working with Chinese factories, China's makerspaces, and open source hardware advocates were documented on personal blogs and eventually by an expanding number of Western news media outlets (from *Wired* magazine to *Forbes* and the *Economist*).

Together, these accounts produced an image of Shenzhen as a rising innovation hub, a "Silicon Valley of Hardware," and "Hollywood for Makers." It was in this moment that Shenzhen was enrolled in the socialist pitch advanced by America's maker advocates, investors, and corporate players by attaching an affect of intervention to the city and its wider region. The "travel reports" from (at first largely Western) designers, educators, engineers, artists, maker advocates, and even scholars portrayed Shenzhen as a new frontier and the next "regional advantage"⁶⁹ not unlike what the West Coast had once represented for the early Internet counterculture, a "place where things still get made," as Dougherty himself put it when I interviewed him in 2014 during his first visit to the region. Not uncommon across such accounts were colonial tropes of adventure, frontierism, and of "going back in time." Within the time span of only a couple of years the story of a "new China" was constructed—China as a prototype nation that was promising for the entrepreneurial designer and engineer, exactly because it was construed as "other" than the West, i.e., because it was seen as a site of fakes, copies, violations of IP regulations and copyright law, and lax rules of law and regulations writ large (see chapter 3 for details). Shenzhen was portrayed as an opportunity to go back in time and as the "underbelly" of the glittery world of Silicon Valley tech innovation, i.e., a place where the "cultural hegemony"⁷⁰ of the global Intellectual Property Regime (IPR) and the black-boxing of technology were not (yet) fully accomplished and complete. It was celebrated as a place where one could "see" the inner workings of industrial production: large-scale machineries and the "hands-on" labor on the assembly line were celebrated as providing opportunities for the designer and engineer to move beneath the slick surface of the software interface and re-learn the craft of production. It was framed as Silicon Valley's "other," a new frontier, and a "scaled-up" version of the hackerspace, i.e., a "city-size" laboratory to deliver on the key promises of the maker movement as I described it earlier: to prototype alternatives. Embedding oneself into Shenzhen, so the vision, would provide technology producers, researchers, designers, and activists with the tools necessary to intervene across scales by moving outside the "clean" and "elitist" office spaces of "venture labor"⁷¹ and creative work. Shenzhen was understood as a place where one could travel and "see" scale in action; global supply chains, mass production, the city as special economic zone, international borders, and global ports of trade. One could "see" and thus understand acceleration and economies of scale—one would learn and thus be empowered to intervene in the workings of capitalism.



FIGURE 1.2. Still image—*Wired* UK documentary, 2016: “Shenzhen: The Silicon Valley of Hardware.” From *Wired UK*.

Frontiers, anthropologist Anna Tsing reminds us, “are not just discovered at the edge; they are projects in making geographic and temporal experience.”⁷² Frontiers are places where one goes to see and build the future, and to erase certain pasts.⁷³ China was “(re)made” in the broader tech imagination as a place to dream, to see the future “again,” precisely as that future was being called into question. It was rearticulated as it dawned on many people active in the worlds of (largely Western-centric) technology innovation, research, and design that the dream of modernity to “bring about an end of scarcity, an abundance of goods, permanent employment, prosperity and the fulfillment of personal happiness”⁷⁴—in other words, the dream of “living the good life”⁷⁵—was exclusionary from its inception; it had not been, and would not ever be, attainable for most. It was in this moment that the south of China, and the city of Shenzhen, in particular, came to be seen by many as a paradoxical “laboratory” of exuberant scale, where the master could dwell in the illusion of taming the land just a little bit longer. In Shenzhen, one could relive—even if only temporarily—the modernist promise of progress and control that had once made Europe and America great.

It is this displacement of modern, technological promise onto Shenzhen (via the socialist pitch of entrepreneurial living) that co-produced China as a prototype nation and that explains the Chinese government’s absorption of the ideals of a tiny makerspace in Shenzhen into a nationwide policy and educational initiative—the part of the story with which I began and return to in greater detail in what follows.

Prototype Nation: Histories of the Future

Images of the past help facilitate a vision of a future that harkens back to aspirations from the past.

—JUNO SALAZAR PARREÑAS, *DECOLONIZING EXTINCTION*, P. 58

The displacement of technological promise I have described so far is not a linear move from “here” to “there” (from the West to China) but works through temporal and spatial contingencies. Specifically, the making of Shenzhen as a new “frontier” was co-produced on the one hand by anxieties about the shortcomings of modernist ideals of technological progress (anxieties that registered in the promise of making and a growing suspicion of the tech industry particularly pronounced in the United States and Europe), and on the other hand by long held desires of Chinese people to overcome racialized othering, shaped by the CCP’s own ambitions to integrate citizens into “the dream of regaining China’s stature as an empire” and to “attain material and moral parity with the West,”⁷⁶ a project that has occupied Chinese leaders since China’s partial colonization by Europe in the nineteenth century. In other words, colonial formations of the past govern both of these political projects; the mobilization of insecurity, fear of loss, and crisis in the West, and the channeling of desires for parity and national sovereignty in China. Colonial pasts reverberate both in the contemporary displacement of technological promise (e.g., Shenzhen portrayed as Silicon Valley’s “other” as I described it earlier) *and* in political ambitions to reposition China as a forward-looking, happy, and optimistic nation that reasserts itself globally—a project that has gained force since Xi Jinping became president in 2013.

This book shows that making was appropriated by the CCP to mobilize feelings of optimism and happiness on a mass scale in the very moment that the party feared social and political instability due to China’s first significant economic slowdown since the economic opening reforms in the 1980s. The party feared that the slowing economy—what it has referred to as “China’s New Normal”—would lead to social instability. The CCP had retained its legitimacy in part due to its assertions that it had lifted millions of people out of poverty and it feared that people’s dissatisfaction with the economy could harm the legitimacy of the party state.⁷⁷ The particular version of making that the prime minister endorsed when he visited Chaihuo makerspace in Shenzhen in 2015 was ideal for the CCP in this particular moment; the socialist pitch (as advanced by America’s maker advocates and as I outlined it earlier) had translated economic life into entrepreneurial life, i.e., it had framed processes of self-economization as hopeful and as democratizing technological agency. For the party, this pitch constituted an ideal *technopolitical instrument of affect*, i.e., a tool to frame its own political agendas via a language of technological

promise.⁷⁸ Specifically, it helped position the political demand placed on individuals to self-economize on behalf of the nation (to address “China’s New Normal”) as advancing long-held yearnings of Chinese citizens to be seen as modern innovators. Making, in other words, was ideal for the CCP to portray what was fundamentally a neoliberal strategy—the demand of citizens to self-upgrade into optimistic, economic agents who drove innovation and who built their own jobs rather than relying on the state—as in line with the principles of the communist party and as serving the hopes and dreams of the people.

Just a couple of months after the official endorsement of making by China’s prime minister in 2015, I attended the Pujiang Innovation Forum in Shanghai, where I listened to a keynote by Wan Gang, the then-minister of science and technology, in which he encapsulated the CCP’s utilization of making: “In China’s New Normal, makers, open source and open hardware—as a form of entrepreneurship amongst the people—can help realize China’s innovation strategy. It is the opportunity of the majority, rather than just the privilege of the few, to realize a lifelong dream.” Not unlike the socialist pitch of America’s maker advocates, the Chinese minister of science and technology here deploys socialist language (the majority, the people) to mobilize people to take individual action. Further, the language of entrepreneurial agency and innovation is strategically paired with one of the key (national and global) branding strategies the CCP has deployed under Xi Jinping: the Chinese Dream.⁷⁹

Since he ascended to power, Xi has positioned China as a nation of dreamers, a place of promise and happiness. This includes not only Xi’s notion of the “Chinese Dream,” but also a series of “happiness campaigns,”⁸⁰ and his appropriation of the citizen-driven phrase “positive energy” (*zhengnengliang* 正能量).⁸¹ These constructs indicate a discursive “shift from locating the future outside China (by figuring China as backward and the West as advanced) to see[ing] China itself as the future.”⁸² They are aimed at creating an affective relationship of mutual interest and “positive feeling” between the Chinese party state and citizens. This affective bond is aimed at advancing the nation and at solidifying the party state as *the* political power to support the Chinese nation and its people. The happiness campaigns, anthropologist Jie Yang shows, “encourage people to focus on the self, adjusting oneself to realize one’s self” on behalf of the nation. The pursuit of happiness, in other words, becomes a moral imperative for the “quality” citizen who advances the self to advance the economic future of the nation; as Jie Yang puts it, “how better to legitimate crippling economic restructuring and intensified social stratification than to deploy programs that suggest that these processes are actually an opening that could lead to happiness?”⁸³

Making proved ideal for the CCP to portray this neoliberal ideology of self-care, self-realization, and self-enterprise (in the name of happiness) as advancing people’s own yearnings to be seen as innovative, creative, and modern—a

subjectivity that had long been denied to most of China's citizens, both by their own government and by the West. As I explain in greater detail in chapter 2, the CCP has strategically utilized China's partial colonization by the UK and France during the Opium Wars in the nineteenth century—what the party refers to until today as China's "period of national humiliation"—to invoke in people desires to upgrade into modern, "civilized," and "quality" citizens (and to legitimize a range of governance techniques, including the adoption of "neoliberal exceptions"⁸⁴). The discourse of China's citizen's supposed lack of civility emerged from China's partial colonization and has been variously deployed by China's leaders ever since to argue that "China's humiliating and unequal participation in the globalized historical time of the modern instate system"⁸⁵ (its failure to modernize) was due to the failure of its people to modernize, owing to people's lack of "civility." The cultivation of a "civilized" citizen (a citizen recognized both as uniquely Chinese and as modern by the West) has been at the heart of China's modern nation-building projects ever since, from the late 1920s until today. China's projects of modernization have always struggled with the fact that the very notion of modernity was itself a colonial imposition.⁸⁶ When the CCP came into power, it argued that socialism constituted an ideal approach to establish an alternative modernity to the capitalist West.⁸⁷ "The socialist revolution itself," Dirlik and Meisner explain, "was the product of the deepest urges of a society to gain entry into the stream of history as its subject against forces that denied to it such entry."⁸⁸ The cultural revolution did not reject development; it sought to restructure the idea of development by politicizing it.⁸⁹ Modernity, in other words, was to be achieved not through economic expansion but by cultivating revolutionary subjects via social struggle and mass mobilization.⁹⁰

Following Mao Zedong's death, the CCP positioned China's economic opening reforms in the 1980s as necessary to address China's failure to modernize during the previous decades. Political leaders at that time (Deng Xiaoping being the most prominent) argued that this was to be accomplished by transforming revolutionary subjects into citizens of "quality" (素质 *suzhi*), invested in their own economic development for the purposes of furthering the nation. The notion of quality (*suzhi*) was deployed to attribute China's failure to modernize under Mao Zedong—once again—to the "low quality" of its people. The economic reform period was characterized by a turn away from politicization to economization. Modernity was no longer portrayed as arising from ideology but a pragmatic, fact-based approach—an attempt "to seek truth from facts" and a "socialism with Chinese characteristics" as Deng Xiaoping put it in the 1980s. The reform era was a "pragmatic adjustment of revolution," i.e., socialist progress and social change had to "follow the demands of economic development."⁹¹ The party portrayed self-transformation of citizens into "economic subjects" as key to this adjustment. In other words, the political aspiration to return China

to its “rightful place” and guarantee sovereignty from Western hegemony that had guided postcolonial governance was now to be accomplished via what during the cultural revolution had been punishable by death: self-investment, entrepreneurial activity, privatization of state-owned land and resources.

How did the CCP get people to perform this drastic self-transformation from revolutionary subjects into economic agents? How did it convince people to give up socialist support structures such as the “iron rice bowl” (the guarantee of life-long employment) and the danwei system (the “work unit,” i.e., work-based communes that provided living space, meals, medical care, socialization, and ideological indoctrination, all in one small geographic area)? To “reform” its people, the CCP established so-called Special Economic Zones (SEZ), i.e., spatially bounded zones in which economization, privatization, and foreign direct investment were encouraged, while they remained at first still prohibited (or at least not enabled) in the rest of the country. In 1979, Deng Xiaoping declared Shenzhen a SEZ (alongside Zhuhai, Shantou, and Xiamen)—a laboratory to “feel out” how far away from socialist structures and values China could move without changing its essential character.⁹² Crucially, this “laboratory” model induced desires in citizens for economic and social upgrading. Political scientist Mary Gallagher, for instance, shows that the 1980s’ “dual track” system of the special economic zones that allowed for socialist models and organizations to coexist alongside the new experiments with capitalist markets created competition over FDI (foreign direct investment) between regions and cities.⁹³ It led to a race to implement more flexible labor policies, to create a mobile workforce, and to grant autonomy to enterprises. By “allowing some to get rich faster,” as Deng Xiaoping had famously put it, the government induced desires to self-transform and embrace values such as autonomy, self-reliance, and economic initiative.⁹⁴ Economic reform was pushed ahead, while resistance was reduced—a “contagious capitalism.”⁹⁵

During the 1990s and 2000s, the CCP stimulated economic growth by expanding the technique of the SEZ rapidly throughout the rest of China (a well-known example is the SEZ of the Pudong New Area and the Lujiazui Finance and Trade Zone established in Shanghai in 1993). When China joined the WTO (World Trade Organization) in 2001, municipal- and provincial-level governments competed over receiving designations such as “creative city” or “city of design,” which in turn would funnel resources from the central government in Beijing into their districts and provinces. Shanghai and Shenzhen, for instance, were among the first to turn old city neighborhoods into creative industry clusters and build high-tech innovation parks. These parks, zones, and refashioned neighborhoods (and the high-tech businesses and educational initiatives they attracted) were aimed, broadly construed, at cultivating citizens as “creative talent” (*rencai*).⁹⁶ The build-up of China’s creative industry was motivated by the political ambition to mass produce “prototypic liberal subjects,”⁹⁷ people

trained to model the social transformation desired by the CCP and “rebrand” the nation in both the national and global imagination as a creative producer.⁹⁸

The official uptake of making by the CCP in 2015 has to be understood as prefigured by these various political projects that strategically invoke China’s “humiliating” history of colonization, aimed at inducing desires in Chinese citizens to self-transform and self-upgrade on behalf of the nation. China as a prototype nation, as a nation that is newly emboldened and asserts itself as an alternative model of future making, is co-produced by these long-held aspirations to achieve parity with the West and the party’s claims that to achieve a sovereign, modern Chinese nation necessitates a particular kind of citizen. When the prime minister of China visited the makerspace Chaihuo in 2015, the young Chinese men he met (and whom he framed as model makers for the nation) had already received international recognition and were regarded as legitimately creative in the Western tech scene. In the official state media’s news coverage that followed his visit, the prime minister was depicted side-by-side Eric Pan and Kevin Lau, both active members of China’s maker scene since the beginning. Pan had co-founded Seeed Studio, an open source hardware company that had been key to reformulating Shenzhen’s image from a site of low-quality and copycat production into a legitimate partner in open source hardware and tech innovation. In 2010, Pan and Lau had founded Chaihuo—the organization that was key to hosting China’s early featured Maker Faires (2014–2015), which drew hundreds of thousands of people, many from abroad. Both Seeed Studio and Chaihuo had become well-known entities in the international maker and open source hardware scene, celebrated by many prominent American maker advocates as advancing their ideals of playful experimentation and grassroots innovation in China, despite early Western accusations that China’s version of open source hardware was copying them (see details in chapters 2 and 3). These Chinese men already had, in other words, transformed themselves into the kind of globally recognized, techno-optimistic, happy citizen subjects that the CCP is aiming to cultivate.

When China’s prime minister endorsed Chaihuo, the aim was to induce desires in other Chinese to self-transform in the image of the model makers the prime minister celebrated—or, as state media had put it: “Li Keqiang encourages young ‘makers’: everyone should ascend to excel like Chaihuo.” Modeling yourself after Chaihuo, in other words, promised Chinese people they would redeem themselves as creative producers on an international stage; if young Chinese managed to “excel” like Chaihuo, they would receive Western recognition and would be granted (by both the West and the Chinese government) the status of modern and happy world-class Chinese citizens. By transforming themselves into model makers, they would prototype at scale: lift up the nation and its image on both a national and global stage. This call for self-upgrade on a mass scale was aimed specifically at the marginalized and displaced in China’s



FIGURE 1.3. Venue of the “2016 National Innovation and Entrepreneurship Week” (2016 年全国大众创业万众创新活动周), also often promoted simply as “Maker Week” (创客周) in Shenzhen. Banners at the venue and throughout the city promoted (in both English and Chinese) Shenzhen as “City of Makers” (与深圳同创造) and called upon citizens to “promote the development of New Economy & Cultivate New Growth Dynamics” (发展新经济, 培育新动能), to “Make Innovation and Entrepreneurship Sweep across China” (创新创业, 创响中国), and conjure an “Era of Innovation. For Dreams of Entrepreneurship” (创新时代, 创业梦想). Large screens showed videos of Prime Minister Li Keqiang among crowds of passionate makers at the event. Photograph by the author.

younger generation, for employment rates among China’s college students were low and upgrades in the manufacturing industry (like those carried out as a result of the “Made in China 2025” initiative) had begun to drastically shift the conditions of employment for a generation of young migrant workers,⁹⁹ whom the government called upon to return to the countryside and become entrepreneurs, starting businesses—ideally high-tech businesses—of their own. This cultivation of Chinese citizens as human capital was crucial at the moment as the party’s leadership was focused on creating a positive image of China abroad to create buy-in for one of its major, transnational infrastructure projects, the Belt and Road initiative (BRI).

Shortly after president Xi Jinping ascended to power, he initiated two major infrastructure projects, in part aimed at addressing China’s New Normal through industrial upgrade: the BRI and the “Made in China 2025” initiative. The “Made in China 2025” initiative funded (to the tune of 2 Bio Chinese Renminbi) the upgrade of China’s old industries into intelligent/smart manufacturing zones, and the BRI aimed at moving China’s capacities in industrial

production, real estate, and infrastructure development (train, roads, cities) into other regions in Asia, Europe, and Africa through a global trade and infrastructure route. Important for both of these projects was the cultivation of “human capital”—people who saw themselves as an instrument in advancing both China’s image and its material infrastructures nationally and abroad. Making was ideal for the government purposes to induce in people desires to self-upgrade and build what the CCP referred to as China’s “indigenous innovation economy” that would cement China’s leadership in global supply chain markets, geopolitics, and the tech industry.

The CCP’s invocations of China’s colonial past *and* the colonial tropes of othering that wove through the displacement of technological promise onto Shenzhen co-produced “slow violence.”¹⁰⁰ They occluded the violence of proliferating precarious conditions of life by harnessing individual dreams of modern belonging and yearnings for alternative ways of being. The promise to be granted the label of creative, modern producer led many of the people I met during my research in China to tolerate orientalist discourse and racism deployed (predominantly) by various Western actors *and* the precarious life their government demanded of them. My point is this: Technology research and design—especially in light of the recent and growing interest in ethics and politics of computing and design amid rising concerns over big data and AI¹⁰¹—must reckon with the violence that displacements of technological promise occlude and thus legitimize; violence in the form of racism, sexism, classism, and exploitation masked behind the promise of democratized tech innovation.¹⁰² Just as colonial tropes of the frontier and of “othering” endure in a range of well-known technology practices and sites from Silicon Valley’s exceptionalism and universalizing discourse and methods¹⁰³ to technology research programs such as ICT4D (Information and Communication Technology for Development) and UbiComp (Ubiquitous Computing),¹⁰⁴ so are the recent displacements of technological promise onto what was formerly dubbed the “tech periphery” (from “smart zones” and “opportunity zones” in rural America to endorsements of certain regions and cities in the Global South as authentic maker cities and emerging hubs of innovation) marked by what Ann Laura Stoler calls “duress,” i.e., the “enduring fissures” and the durable marks of colonial pasts.¹⁰⁵ Communication scholar Fan Yang urges us to understand such processes of colonization not strictly in terms of occupation of territories and the displacement of sovereignty. China, she argues, is not exempt from the conditions of American “coloniality” simply because it was never colonized by the United States. “Coloniality,” she shows, is “a cultural logic that continues to exert influence through “imperialism without colonies.”¹⁰⁶ Imperial formations and coloniality endure in technology production and design methods, including those celebrated as enabling inclusive and diverse futures such as making and its associated values of open technology and peer production.

The appropriation of making by the CCP was aimed at instilling in people desires to advance the party's ambitions to reassert China as a prototype nation, one that modeled for the world an alternative to the West, a China-specific approach to modernization and economic development—an “indigenous innovation” economy. While some of the people I met in my research expressed suspicion of the government's infatuation with making and open technology, many argued that the party was indeed supporting one of the key goals of China's maker advocates: to reposition China and its people as an equal partner in global tech innovation networks. There was a growing sense that China might in fact be the frontier, the place where the future was being made. And the party's espousal of these values only increased the people's affective connection to these goals. Because making was associated with play, experimentation, and tinkering—qualities that many Chinese I interviewed over the years insisted were Western, and more specifically American—they did not see the CCP's appropriations of making as part of the state's tactics of hegemony, for it functioned not by coercion but by promising happiness via self-transformation.

Differential Yearnings: The Labor of Promise and Future Making

Yearning is the word that best describes a common psychological state shared by many of us, cutting across boundaries of race, class, gender, and sexual practice. Specifically, in relation to the postmodernist deconstruction of “master” narratives, the yearning that wells in the hearts and minds of those whom such narratives have silenced is the longing for critical voice.

—BELL HOOKS, *YEARNING*, P. 27

What sustained these displacements of technological promise—of frontiers, of happiness, of future making—that came with no guarantees, one that might be deferred or withdrawn without notice? Who were the people who enabled others to live renewed technological promise, and what were the histories and stories of the places where they lived? This book tells their stories alongside those of the people who formulated and implemented the promise of making; it focuses on the sites and bodies that labored to sustain others' lives of technological promise. It was their labor, precarious and often hidden through gendered and racialized exclusions, that provided the necessary conditions to sustain the promise of technological progress, techno-optimism, and future making.

During fieldwork in 2013, I lived for several months in a modern high-rise building in Shahe, one of the city districts in Shenzhen. My apartment was right above the subway stop for “Window of the World,” a forty-eight-hectare

theme park with a 1/3 scale reproduction of the Eiffel Tower, which can be seen from across the district. The theme park was built in 1994 as a “world culture primer for China’s political elite,” who were eager to position Shenzhen as a “civilizational front line in the nation’s efforts to ‘join tracks’ with the rest of the world.” The name of the theme park referred to the SEZ itself, which China’s political leaders at the time had called a “Window of the World.” This move framed the SEZ (in the words of Jonathan Bach) as a “spatial threshold,” which “mediates between China’s economic space and that of other countries” and “through which one can look both in and out.”¹⁰⁷ The theme park was built two years after Deng’s famous return to the city in 1992, when he dubbed Shenzhen as a success and held it up as a model for the nation. The rhetoric of the “Shenzhen miracle,” propagated by state media at that time, “concealed the precariousness and liminality that characterized and continues to define migrant workers’ conditions,” the historian Eric Florence reminds us. The people who were made responsible for remodeling themselves to follow Shenzhen’s success “were the workers who came from rural hinterlands.”¹⁰⁸ They bore the responsibility and precarity that came with the new lifestyle of the SEZ—what then-president Jiang Zemin in the 1990s referred to as the “Shenzhen spirit.” This phrase describing the early SEZ was deployed to encourage the cultivation of a new kind of ideal subject, “a person able to transform her/himself and the socialist world,” who would (like the SEZ) model the transition from socialism to capitalist expansion and economic development—a person who would live by the neoliberal doctrine, “decide for oneself, strengthen oneself, be autonomous, compete, take risks, and face danger.” The construction of this model worker was key to the party-state’s ability to “adapt its system of signs and symbols of socialism to the conditions of global capitalism,” and to position Shenzhen as the passageway, the window into the world of global capitalism. The language framing Shenzhen as a laboratory and a window, which “emphasized the state’s agency in ‘opening’ (a window) and ‘conducting experiments,’”¹⁰⁹ is cemented into the day-to-day urban structures of China’s contemporary middle class in the Window of the World theme park, which is now a tourist attraction, a site of leisure and consumption. The theme park materializes a vision of the SEZ not as an incubator for a range of ideas but as an example of successful party policy that set China on the path to the future.¹¹⁰

While I lived by the Window of the World theme park, the park was less of an attraction than the glittery shopping mall adjacent to it. With its myriad of restaurants, its large grocery store selling European brands and expensive, carefully wrapped fruits and vegetables, its international fashion labels, its Starbucks and Apple store, the mall extends into contemporary China the SEZ’s technique of instilling desires for personal upgrade, autonomy, and self-actualization. The mall is the place where China’s upper middle class consumes and plays, where those with sufficient *suzhi* (quality) feel like modern citizens enjoying the pleasures of their high-tech, modernist city. The thirty-six-story

apartment building in which I lived was only steps away from the mall. My building, which was also home to the Chinese middle class who shopped at the mall, was taller than the replica Eiffel Tower across the street. Looking out from my apartment on the twenty-third floor, I saw high-rise buildings like mine stretching as far as I could see, an ocean sea of glittering lights amidst grey concrete.

This Bladerunner-like image fuels the postmodern sci-fi fantasies of Shenzhen that are invoked in the foreign travel reports depicting Shenzhen as a new technological frontier. But if one reoriented the gaze, away from the seductive draw of the glittering high-rise scape, another life world came into view; my building was located on the edge of Baishizhou, one of Shenzhen's few remaining urban villages. While the theme park, the mall, and my apartment building all contributed to the imaginary of Shenzhen as an "ideal modernist city" with no history, "a clean state, a tabula rasa,"¹¹¹ the "architectural form" of the urban village materially encodes the city's "rural history," its stubborn past. As anthropologist Mary Ann O'Donnell has painstakingly documented for more than a decade, Shenzhen's urban villages like Baishizhou played a central role in the making of the high-tech modern city, "provid[ing] the physical infrastructure that has sustained the city's extensive grey economy, including piecemeal manufacturing, spas and massage parlors and cheap consumer goods."¹¹² These villages—and their informal economies, based on what O'Donnell, Wong, and Bach (2017) call "illicit experimentation"—were the bedrock of the city's boom, providing affordable housing for the low-income migrants that helped build Shenzhen's economy. In 2007, Shenzhen's urban villages were slated to undergo renewal. Powerful, partially state-owned real estate firms benefited from erasing old neighborhoods and rebuilding them as more lucrative, upscale structures, from condominiums to office spaces and malls—like my apartment building and the mall beside it. These "renewal" projects treat urban villages as cankers—the city's past, its rural history, bursting through the image of the clean, modern, upscale city. As O'Donnell argues, the developers deny the villages' urban status, thereby legitimizing their erasure—and that of a particular past. While the glittering mall and the high-rise apartment complex represent the modernist fantasy of "a rationally ordered society where nature and society fit into precise categories and interact productively according to an unerring logic,"¹¹³ Baishizhou represents its opposite: the narrowly built houses, the tangled electric wires that span its alleys, the small manufacturing shops around the corner of a wet market, make up a rich urban sociality, but officials see it as mud on the hem of the controllable, clean, logically ordered modern city.

I spent much of my time in Shenzhen in 2013 in Baishizhou. The urban village offered a different pace, moments of pause that sustained the projects of acceleration that I had come to study. As an ethnographer, I had joined a start-up team that had been admitted to a Shenzhen-based hardware incubator,



FIGURE 1.4. Street in Baishizhou—urban village, Shenzhen, 2013. Photograph by the author.

funded by a venture capital firm with deep roots in Silicon Valley whose Irish offices were strategically located for tax purposes. This three-month intensive training program invested in open source hardware and maker ideas that promised to scale, working with teams to bring their ideas to the prototype and pitching stage in an “accelerated” fashion (this notion of “acceleration” is an ethnographic thread that I explore in greater detail in chapters 4 and 5). This particular program invested in promising hardware products: data-driven smart systems, Internet of Things, smart objects, wearable technologies, and so on. In the evenings and on weekends, the start-up teams would often gather in urban village neighborhoods, for in the villages, people found a refuge from the demands to scale up and speed up. We ventured into these neighborhoods for fun and leisure, to eat at open-air bbq restaurants where locals played games and drank beer, sometimes staying late into the night. The villages not only offered space for play, they also provided access to affordable services, from mail delivery to electronics repair, laundry services, barber shops, wet markets, and clothing. Many of the team members of start-ups admitted to the incubator program lived on shoestring budgets, and the urban villages provided a crucial infrastructure to sustain the daily needs of team members under the precarious conditions of “venture labor”¹⁴ at the incubator. In other words, the urban village’s informal social, economic, and technological infrastructures (built, in part, by waves of migrants) enabled others to live out the promise of prototyping at scale.

In the offices of the incubator itself, a support network in many ways adjacent to that of the urban village made the work of the start-up teams and incubator staff possible—it kept afloat those entrepreneurial workers who were performing the desired work of technological promise, those who, under precarious conditions, worked to transform themselves and their economic and social positions into human capital on behalf of the investor. The incubator had hired two Chinese staff, women in their early twenties, whose key task was to help guide the start-up teams through the emotional ups-and-downs of their entrepreneurial labor in Shenzhen. As the European director of the incubator put it on the first day of the program, when “shit” was broken, it was their job to “fix” it and “to make our lives better.” They were to stay in the background, to take care of the program’s day-to-day functioning, and to ensure the start-ups’ emotional well-being. As I elaborate in much greater detail in chapter 5, these two women were hired to perform what I call *happiness labor*—the work that goes into producing a feeling of optimism and cheerful delight, the affect that underpins entrepreneurial living. It is not unlike what Arlie Hochschild has described as “emotional labor,” but it is more specific: it is the particular kind of labor relied on by a range of new organizational models in tech production, including but not limited to incubators, coworking spaces, makerspaces, and open innovation labs. This happiness labor is crucial to making bearable

(and thereby sustaining) the precarious conditions of “venture labor”;¹¹⁵ this labor allows the entrepreneur to feel positive about technology despite his realization that for many, the self-investment on which he is gambling will not pay off.¹¹⁶

These differing sites and temporal scales—from contemporary happiness labor in pristine tech programs to the histories of urban villages and migrant labor that prefigure it—produce differential yearnings for alternatives, yearnings that feed the machineries of finance speculation and the displacement of technological promise. Each of these sites variously creates the foundations and possibilities for dreaming and prototyping at scale. The incubator, like many similar programs I encountered over my years of research, functioned like an educational boot camp. Its key aim was to train people to “pitch” or “dramatize” their dreams “in order to attract the capital they need to operate and expand.” Anna Tsing puts it this way: “In speculative enterprises, profit must be imagined before it can be extracted, the possibility of economic performance must be conjured like a spirit to draw an audience of potential investors. The more spectacular the conjuring, the more possible an investment frenzy.”¹¹⁷ The start-up teams, the happiness workers, and the migrant workers who built Shenzhen, despite their drastically different positions in society, are all reduced through the logics of finance capital to their roles in the production of dreams. Some people dream; some people support those who dream. They have differential yearnings rooted in their respective positionalities and lives, but to investors they all look the same; they are relevant only if their dreams can scale; only the dreams that are dramatized or spectacularized are eligible for investment.

Some of these dreamers are held up as “models” to induce desires in others, and others are made invisible. The question of who is seen as offering technological promise and happiness and who gets to experience the affect of entrepreneurial living is highly gendered and racialized. During my time in the aforementioned incubator program, only one female entrepreneur was admitted, and only a few Asian men. As the start-up culture taught us, white boys pitch better. The (primarily white) start-up teams were future makers, people who lived the socialist pitch, people who were ascribed the capacity to make a difference, to intervene. They were charismatic figures, and many happiness workers and small entrepreneurs in the hinterlands dreamed of being in their shoes. Some yearnings are enrolled to enable other yearnings, some people’s precarity sustains yet other precarious conditions of work.

It might be tempting to imagine the emergence of a unified, unmarked precariat that forms across these different subject positions. This book takes a difference approach. It brings together differential yearnings for alternatives, not to flatten them, but on the contrary to highlight how some people’s dreams of social justice and change can actively weaken other people.¹¹⁸ I show how

(continued...)

INDEX

Note: Page numbers in italic type indicate illustrations.

- aaajiao, 48, 53, 66
accelerator programs, 13, 119, 120, 154, 156, 195
Acer, 197
Adams, Christopher, 59
affect: CCP's use of, 18–19, 203; of change, 170; for Chinese technological innovation, 62; of citizens for China, 19, 25, 140; for counterculture, 42, 68–69, 73, 223; for economization, 13, 18–19, 228n54; for experimentation, 84; for finance capitalism, 134; governance through, 84; linked to prototypes, 2; neoliberalism's use of, 129; openness and participation as ideals productive of, 43, 228n54; for self-economization, 73; for Shenzhen, 106; between start-up and factory, 160–61; as tool of market devices, 14
affect of intervention, 2, 11, 13, 43, 57, 137, 215, 216
agency. *See* affect of intervention; intervention; resistance
Ahmed, Sara, 1, 13, 70, 153, 174–75, 203, 213, 223, 225n5
AI. *See* artificial intelligence
alternatives: to conventional ways of living, 1–2, 6, 11, 22, 25, 46, 48–49, 53, 56–57, 70–72, 76–77, 147; technology as means of discovering/exploring, 1–4, 12, 217–19; yearnings for, 14, 24, 30–31, 37, 83, 90, 134, 147, 151, 158, 213, 215, 221, 223
Altman, Mitch, 67–69, 69
Amazon, 14, 146, 150, 167
American Tax Cuts and Job Act, 215
Amrute, Sareeta, 231n118, 231n119
Anagnost, Ann, 46, 233n17
Anderson, Chris, 12, 119, 122, 124, 154
anticipation, 12, 129, 133
Apple, 85, 93–95, 108, 113, 149, 172, 178, 197
apprenticeship model, 190, 194
Arduino, 7, 53, 66, 67, 91, 95–96, 106–12, 116, 178, 238n93
Arduino SRL, 109
Ars Electronica, 60, 62
art education, 49
artificial intelligence (AI), 10, 191, 222
Asian tiger economies, 81
Association for Computing Machinery, 219
Athisaari, Marko, 60
aura, 113, 115
Autodesk, 137–38
automation machinery, 187
autonomous Marxism, 146, 149, 241n11
autonomy, 9–12, 46
AVIC, 183
Bach, Jonathan, 26, 27
backwardness: China associated with, 2, 4, 19, 37, 41, 63, 76–78, 86–88, 122, 137, 148, 150–51, 158, 214; migrant workers associated with, 150; opportunity associated with, 4, 37, 76–77, 116, 139, 148; Shenzhen associated with, 4, 15, 116, 139
Baishizhou, China, 27, 28
Banzi, Massimo, 107–11, 107, 178
BarCamps, 41, 44, 65–66, 124
Barragan, Hernando, 112
Bauhaus, 14, 108–9
Baym, Nancy, 61, 161
Beijing Maker Carnival, 67, 71, 72
Bell, Genevieve, 157
Belt and Road initiative (BRI), 23–24, 175–76, 220
Benjamin, Ruha, 226n17
Benjamin, Walter, 113, 115
Benkler, Yochai, 60
Berkman Klein Center, 46, 59, 62
Berlant, Lauren, 80, 226n17
Bhabha, Homi, 70

270 INDEX

- Bi-City Biennale of Urbanism\Architecture (UABB), 79, 102–5, 103, 104, 185
- Bill of Materials, 94
- black box of technology, 34, 81, 96, 160
- bootstrapping, 141, 173
- Booz & Company, 102
- Bouman, Ole, 105–6
- BRCK, 81
- BRI. *See* Belt and Road initiative
- Brown, John Seely, 101
- Brown, Tim, *Change by Design*, 53
- Brown, Wendy, 120, 145
- Buddha phone, 178, 198–200, 200
- Buechley, Leah, 227n48
- BYD, 172
- CAFA. *See* Central Academy of Fine Arts
- Callon, Michel, 132, 228n56
- capitalism: alternatives to, 11–12, 20, 83, 88, 117, 169, 221–23, 245n18; Chinese adoption of, 83–84, 139–40, 234n47, 237n68; contagious, 21, 83, 180; exclusions practiced by, 214; exploitative nature of, 3, 10–11, 221; finance capitalism, 129–37; intervention in/resistance to, 3, 10, 83, 86, 169–71; tech industry complicit with, 3, 10–11, 75, 80–81, 89, 214
- CCP. *See* Chinese Communist Party
- CEC, 183
- censorship. *See* Internet censorship
- Central Academy of Fine Arts (CAFA), 49
- Chaihuo, 6–9, 8, 22, 91, 226n25
- change makers, 122, 130–31, 135–36, 149, 153, 176, 190, 218
- chanyelian. *See* supply chains
- Chen, Ting, 182, 243n10
- Chen Xu, 48, 50, 53, 66, 72
- Chiang Kai-shek, 232n13
- Chicago IIT Institute of Design, 91
- China: as alternative model of living, 56–57, 76–77; backwardness ascribed to, 2, 4, 19, 37, 63, 76–78, 86–88, 122, 137, 148, 150–51, 158, 214; colonialism experienced by, 20, 22, 40, 70–71, 215, 224; disillusionment with, 201–2; dual system of economic development in, 21–22, 83–84, 180–81; as entrepreneurial factory, 172–212; gendering of, 148; international status of, 18–23, 25, 40, 56, 90, 173–74, 189, 224 (*see also* redemption of *this entry*); low reputation of technology in, 2, 4, 37, 41, 55–56, 76, 189; making in, 4, 6, 15, 16–25, 64–72, 86–93, 220; national branding strategy of, 19, 22, 40, 47, 54, 229n79; racialization of, 148; redemption of, 47, 55–57, 61, 64, 66, 70, 89–90, 92, 96, 100–101, 173–74, 181; scholarship on, 35–36, 231n123; as technological/economic frontier, 17, 25, 76, 99, 102, 113–17, 125; US relations with, 77, 116, 231n123, 235n9, 235n10; the West's relationship to, 16, 18–22, 25, 36–37, 41. *See also* Chinese Communist Party
- Chinaduos, 107–8, 111, 178
- China Merchants, 181–83, 185, 243n10
- China Youthology, 62–63
- Chinese Communist Party (CCP): affect for, 203; making promoted by, 7–9, 15, 17–19, 21, 24–25, 37, 41, 42–43, 68–69, 90, 92–93, 175, 177, 189, 202–3, 214, 232n7; self-economization promoted by, 18–19, 21–22, 63
- Chinese Dream (zhongguo meng), 19, 175, 201, 207, 224, 229n79
- Chinese Internet Research community, 59, 60, 62
- The Chinese Recipe* (documentary), 153
- chuangke (makers), 71–72, 162
- Chumby, 97
- Chumley, Lily, 49
- Chun, Wendy, 229n63
- chuqu. *See* going out
- citizens: alternative conceptions of, 48–49; CCP vision of, 18–24, 36, 40, 43, 44, 46–47, 49, 140; empowerment of, 7, 49, 58; feminization of, 47; as human capital, 23, 24, 47; Internet-enabled (netizens), 58; prototypes of, 36, 43, 49, 66; quality of, 19–20, 26, 36, 41, 44, 46, 49, 140, 175. *See also* self
- civility/civilized (wenming), 20, 44, 46–47, 49, 70–71, 195, 232n13
- clones, 107, 111, 238n93. *See also* shanzhai
- CNC, 161–63, 163
- Coca Cola, 63
- Cohn, Marisa, 231n119
- Cold War, 222
- Coleman, Gabriella, 59, 234n70
- colonialism: cultural logic of, 24; experienced by China, 20, 22, 40, 70–71, 215, 224; persistence of, 24, 39, 43, 76–78, 99, 174, 224, 230n106; as prototyping, 4–5; tech industry and, 5, 24, 76–77, 99, 104, 147, 157–58, 217; technological promise as tool of, 78, 222
- Confucianism, 56, 90
- contagious capitalism, 21, 83, 180
- contagious happiness, 174, 181

- copycat. *See* shanzhai
- copyright: alternatives to, 59, 61, 234n48; criticisms of, 60, 62, 98–99; standards of, 48; violations of, 16, 85. *See also* intellectual property
- Cormier, Brendan, 102–3
- counterculture: affect for, 42, 68–69, 73, 223; Chinese Internet-based, 59, 63, 167; co-optation of, 136; ideals/heroic figures of, 11, 38, 63, 223; maker movement's association with, 8, 16, 41, 42, 150, 223; masculinity associated with, 167; as mask for exploitative practices, 151; Western technological, 14, 16, 35, 72, 232n9
- counterfeits, 107–8, 111. *See also* shanzhai
- coworking spaces, 32, 36, 39, 41–44, 46, 48, 120, 185, 215. *See also* XinDanWei
- Created in China, 189
- creative cities, 21, 40, 73
- creative class, 5, 73, 80, 146, 222
- Creative Commons, 44, 46, 57, 59, 60, 62, 98, 217, 234n48
- creative industry (zhongguo chuangyi chanye), 14, 21, 40, 47
- creativity (chuangyi): approaches to cultivating, 48–49; aspirations for, 19, 22, 24, 43–44; associated with maker movement, 91–92; as Chinese characteristic, 22, 50–51, 62–63, 68, 72, 87, 195; Chinese thought lacking in, 43, 65–66, 91–92, 125, 195; economic role of, 7, 40, 54, 61; evaluation of “copies” based on, 112–13; labor performed in support of, 31
- critique of critique, 217–18, 244n10
- Cross, Jamie, 84
- crowdfunding, 125, 134–35, 240n42
- Cuartiellas, David, 109
- Daily Mail* (newspaper), 203
- danwei (work unit), 21, 52–53
- DARPA. *See* Defense Advanced Research Projects Agency
- Darwin, Charles, 130
- datong (Great Harmony), 56
- Davis, Jerry, 132
- Defense Advanced Research Projects Agency (DARPA), 68, 112, 221
- democratization, of technological innovation and production, 1–3, 8–12, 14, 18, 24, 36, 42, 67, 70, 95–96, 119, 122–23, 143, 146, 156, 181, 214, 219, 221
- Deng Xiaoping, 20, 21, 26, 83, 139–40, 181
- depoliticization: consonant with CCP rule, 73; democratization of technology as means of, 143; economization resulting in, 14, 228n62; maker movement resulting in, 42; masked by feeling of intervention, 73; socialist pitch resulting in, 42; technocratic approaches resulting in, 229n63; as trade-off for personal/social gains, 73
- de-shanzhai (qushanzhaihua), 191–201
- design education, 49
- design houses, 94
- Design Justice Zine, 238n89
- Design Society, Shenzhen, 105–6
- desire/yearning: for alternatives, 14, 24, 30–31, 37, 83, 90, 134, 147, 151, 158, 213, 215, 221, 223; conflicts in, 30–31, 151, 216; for justice/social change, 13, 30, 57, 59, 64, 69, 73, 79, 89–90, 93, 129, 151, 215; linked to Shenzhen, 30; market devices' channeling of, 14, 37; neoliberalism and, 150; for new form of citizenship, 48–49; of the oppressed, 25; promises as expressions of, 13; for self-transformation, 26–31
- developmentalist economies, 82
- DFRobot, 64
- Diaz, Thomas, 185
- Didi Chuxing, 201
- digital labor platforms, 202
- Dirlik, Arif, 4, 20, 74, 78, 90, 117, 236n15
- Disney, 197
- displacements of technological promise: characteristics of, 5, 214; and citizen empowerment, 58; goal of, 5–6; historical constitution of, 117, 213, 225n8; in micro-world of incubators, 242n41; othering linked to, 79; Shenzhen as site of, 4, 16–18, 77, 116–17; sites of, 4, 5, 24; slow violence of, 24, 38, 174, 202–3, 219–20; US example of, 215; violence occluded by, 24, 73, 202
- DIY approach: Chinese embrace of, 41, 48–49; to self-fashioning, 48; vibe of, 179–80, 185
- DIY cellphone, 3
- DIY robots, 7
- DJI, 103
- Doctorow, Cory, 59–60
- dot-com era, 123, 141, 227n39
- Dougherty, Dale, 9–10, 15, 16, 92, 165–66
- Dourish, Paul, 157
- Drucker, Peter, 54
- D-School, Stanford University, 194, 196, 200
- Dunbar-Hester, Christina, 158, 227n48
- Easterling, Keller, 84
- economies of scale, 93–95, 138
- Economist* (magazine), 16, 81

272 INDEX

- economization of life: affect for, 13, 18–19, 228n54; alleged inevitability of, 117, 221–22; defined, 226n37; happiness promised in, 14; historical origins and constitution of, 147, 215–16, 226n38, 228n53; individuation and depoliticization as corollaries of, 228n62; labor required for supporting, 146–47; market devices and, 132; neoliberalism characterized by, 3, 10, 227n38; socialist pitch as paradoxical means of, 13–15. *See also* self-economization
- Edwards, Paul, 155
- Eglash, Ron, 158
- Elyachar, Julia, 225n8
- emotional labor, 29, 144, 145
- empowerment: of citizens, 7, 49, 58; making as means to, 2, 14, 42–43, 46, 48, 218; for social change, 46, 48; socialist pitch's promise of, 14, 42, 123; technology as means to, 219; unintended results of supposed, 14, 31; as Western ideal, 43
- Engelbart, Douglas, 219
- Ensmenger, Nathan, 131
- entrepreneurial factory: China as, 172–212; happiness labor and, 147–51, 161, 170
- entrepreneurship: academic programs in, 35; cultivation and maintenance of, 29, 31, 32, 144–45, 148, 215; fun and pleasure of, 89, 130–31, 141, 144–45, 148–49; geeks' embrace of, 131, 139; gendered nature of, 30; human capital and, 120; making as means to, 9–12, 123; mass, 8; national economic gains ascribed to, 119; responsibilities to China involved in, 173–74, 203; self-transformation associated with, 9, 15; socialist pitch for, 13–15, 17–19, 49, 143, 170, 213, 216–18, 223; traditional workers' aspirations for, 149, 150, 227n50; training in incubators for, 13, 30–31, 37, 119–20, 156
- Epstein, Jeffrey, 216–17, 239n108
- Escobar, Arturo, 78, 218
- ethics: of free culture, 98; of hacking, 96, 98, 116; of making, 2; of open source, 89, 95–96, 110–13, 115, 200; of shanzhai, 86, 89, 95–96, 103–4, 112; of tech design/production, 10, 24, 37, 75–77, 239n108
- Ethiopia, 172–73
- experimentation: continuous, 75; creative and pleasurable character of, 7, 22, 25, 72, 92, 120; intervention (social and technical) through, 12, 41–43, 72–73, 146, 181, 214, 216, 218–19; in Shenzhen, 27, 84, 86, 102, 105; Western lineage of, 15, 92. *See also* tinkering
- exploitation: in Chinese factories, 146, 150–51; critiques of, 1, 3, 10–11, 75, 88–89, 105–6; of happiness labor, 31, 37, 149–50, 153, 167; high-tech forms of, 150, 167, 202; occluded by technological promise, 14, 24, 32, 61, 73, 79–80, 84, 129, 140–41, 147, 148; occluded in tech industry by traditional forms of, 146, 150–51; in tech industry, 31, 37, 88–89, 105–6, 123, 140–41, 145–46, 148–49, 169–70
- fab labs, 186–87, 189, 192, 218
- Facebook, 14, 146, 150, 239n107
- factory tours, 160–63, 167–69
- factory work, 149
- fakes. *See* counterfeits; shanzhai
- Farrow, Ronan, 216
- FDI. *See* foreign direct investment
- Feher, Michel, 118, 122, 132, 134, 137
- feminist scholarship, 2, 5, 13, 32, 34–36, 36, 61, 73, 115–16, 138, 150, 158–59, 169–70, 175, 221
- feminization of labor, 10, 76, 80, 131, 147, 158–59, 202, 218, 223, 226n36
- Feng, Shirley, 188–89
- Fetterman, Lisa, 9, 15
- finance capitalism: conception of the self in, 122, 129–37; and human capital, 120–22, 133–34, 146–47; market devices of, 14, 37, 132–37; neoliberal, 132–37, 145, 146; resistance in the age of, 83
- financial crisis (2007–2008), 7, 10–11, 37, 75, 77, 80, 82, 122
- Fine, Gary Allan, 242n41
- Fischer-Schreiber, Ingrid, 33–34, 201
- Fisher, Anna Watkins, 170
- 5G, 10
- Florence, Eric, 26, 140
- Forbes* (magazine), 16
- Forbes China, 92
- foreign direct investment (FDI), 21, 83, 93–94
- foreign-invested enterprises (FIEs), 83
- Fortune* (magazine), 11
- Foucault, Michel, 47, 128, 231n123
- Foxconn, 15, 94–95, 150, 162
- France, 20
- free culture movement, 36, 41–42, 58–61, 72, 77, 98–99, 108, 112, 217, 232n12. *See also* open source technology
- Fried, Limor, 227n48
- Frog, 46

- Fuchs, Christian, 148
Fudan University, 55, 62
fun: entrepreneurial life as, 89, 130–31, 141, 144–45, 148–49; making associated with, 52, 70, 91–92, 120, 131, 195; provided by happiness labor, 144–45, 148–49; self-economization as, 73; work as, 9. *See also* happiness
Futian district, Shenzhen, 176, 181–82, 185
future making, 2, 5, 15, 22, 25, 47, 73, 76, 80, 82, 101, 116, 123–24, 129, 134, 150, 154, 188, 213, 224
- Galileo (open source board), 109
Gallagher, Mary, 21, 83–84, 180
geeks, 11, 51, 126, 130–31, 133, 136, 139, 140, 155–58, 227n47
Geier, Ben, 11
gender: in citizen-state relationship, 47; exploitation and inequality based on, 79, 146, 165–66; male dominance of tech industry, 11, 30, 37, 116, 145, 154–56, 158–60, 166–67, 196, 231n116; women in tech industry, 30, 50, 154, 227n48. *See also* feminization of labor; masculinity; sexism
Genuino, 107, 107, 109–11
Gershenfeld, Neil, 12, 185–87, 186, 189
Ghana, 224
Giddens, Anthony, 62
Girl 2.0, 50
Glorious China (huihuang zhongguo), 201
going out (chuqu), 173–76, 189, 200
gongban (public board), 94–97, 95, 197–98
gongkai (open), 97–98
gongmo (public shell/exterior), 197–98
Google, 46, 65–66, 73, 148–49, 185, 194, 200
governance: affect as tool for, 84; Chinese techniques of, 20, 71, 226n19, 229n77, 233n17; in finance capitalism, 241n8; neoliberal techniques of, 12, 61, 71, 140, 175, 220, 225n7, 225n10, 226n19, 227n38; postcolonial, 21
grassroots innovation, 22, 41–42, 85, 101, 191
grassroots interventions, 8, 34, 86, 203
gray markets, 83, 176, 179
Greenspan, Anna, 81
- Hackaday (blog), 111–12
hackathons, 13, 41, 44, 79, 119, 120, 124, 218
hackers (heike), 71
hackerspaces. *See* maker/hackerspaces
hacking: authenticity associated with, 160, 167; ethics of, 96, 98, 116; principles of, 11; promise of, 122, 135–36; shanzhai as, 86–93, 95–96; subjectivity associated with, 131. *See also* making/maker movement
Haier, 197
Haiven, Max, 245n18
Hall, Gary, 128
happiness: China's promotion of, 18–19, 22, 43, 106, 174–76, 181, 201, 203; of maker lifestyle, 18, 69–73, 92, 106; personal, 17, 47, 77, 84; self-investment as means to, 153; social construction of, 225n5; technology as means to, 78. *See also* fun; optimism; promise of happiness
happiness campaigns, 19
happiness labor: aspirations of women performing, 149–50, 152–54; defined, 29–30, 145, 148; exploitation of, 31, 37, 149–50, 153, 167; in incubators, 144–71, 242n37; peer status of, 164; as relational labor, 161–64
happiness/optimism: China's projection and cultivation of, 19; cruelty of, 226n17
Haraway, Donna, 35, 244n10
Hardware Innovation Workshop, 108
harmony (hexie), 57
Harvey, David, 236n32, 236n40
Hatch, Mark, 12
HCI. *See* human-computer interaction
Hecht, Gabrielle, 6, 228n56, 229n78
Heilmann, Sebastian, 229n77
Herrmann, Ned, 131–32
Herrmann Test, 131–33
hexie. *See* harmony; rivercrab
Hexie Clock, 57–59, 58
higher education: alternative tech education in, 119, 128, 218; criticisms of, 119, 127–28, 217–18; precarity of employment in, 127–28, 240n26; and the socialist pitch, 129
Ho, Jack, 54–55
Hochschild, Arlie, 29, 144, 145, 161
homo oeconomicus, 118, 120
Hong Kong, 81, 93, 140, 182, 196, 220
hooks, bell, 25
Hsieh Min Lin, 66
Huang, Betsy, 236n15
Huang, Bunnie, 96–100, 123
Huaqiang, 180, 183, 191
Huaqiangbei: description of, 176–77; electronics markets of, 97, 126, 142, 152–53, 176–80, 177, 183, 188; photographs of, 138, 177, 204–12; renovation of, 177–80, 183, 190, 206, 209–12; shanzhai associated with, 190–94; Shenzhen wan compared to, 190, 200

274 INDEX

- Huawei, 7, 116, 197
Hu Jintao, 40, 57, 232n2
human capital: youth as, 63
human capital (rencai): art and design education for cultivating, 49; Chinese citizens as, 23, 24, 47; construction/development of, 120–22, 133–34, 146–47, 173; life transformed into, 226n38; neoliberalism and, 120, 129, 201; self-assessment of, 131–33; self-transformation into, 13, 37
human-computer interaction (HCI), 34, 73, 129, 218
- IDEO, 46, 50, 101–2
idioculture, 242n41
Igoe, Tom, 109, 186
incubators: admittance criteria for, 130; democratization of technological innovation and design in, 42–43; as entrepreneurial training grounds, 13, 30–31, 37, 119–20, 156; maintenance of, 29, 31, 32, 144–71, 148; as microworlds, 154–55; in opportunity zones, 215; participants' experiences in, 27, 29–33, 125–29, 145; and pitches, 126, 135, 145–46; in Shenzhen, 126–27, 185; university-sponsored, 35, 218
Indiegogo, 125, 134
indigenous innovation, 24, 25, 40–42, 232n2
individuality: Bauhaus ideal of, 108; in creation/innovation, as Western/liberal value, 47, 79, 98–99, 104, 112–13, 115; as novel Chinese value, 48–49, 52, 58, 62. *See also* self
industrial upgrade, 23, 187–89
inequality: blindness to, in tech industry, 129, 140, 147, 158–59, 166, 169–70, 222; gender and racial, in tech industry, 146, 165–66; intervention in, 1, 165
inevitability: of human capital development, 37, 134, 136–37; illusion of, 147, 215, 220–23; of neoliberalism, 10, 31, 37, 128, 216, 220, 221; socialist pitch's projection of, 129, 134; of technological upgrade, 80–81, 187, 193, 222
informal economies, 27, 29, 193
Information and Communication Technology for Development (ICT4D), 24
innovation. *See* creativity; technological
Institute for the Future (ITF), 195–96
Intel, 63, 94, 99–100, 109, 125, 194, 198, 200
intellectual property (IP): alternatives to, 73, 77; Chinese embrace of, 179, 193; criticisms of, 60, 62, 98–99; standards of, 48; violations of, 16, 85. *See also* copyright
Intellectual Property Regime (IPR), 16, 46, 98, 112
Internet censorship, 57–59, 63, 165, 234n47
Internet of Things (IoT), 10, 97, 135, 158, 162, 191, 222
intervention: into capitalism, 3, 10, 169–71; in copyright issues, 59; depoliticization masked by feeling of, 73; in inequality, 1, 165; promised by market devices, 133; promised by the socialist pitch, 12, 42, 59, 64, 128–29; social and technical, through making, 1–4, 9–14, 42, 46, 57, 191–92, 232n9. *See also* affect of intervention; prototypes of intervention; resistance
investors, attraction of, 12, 30, 33, 132, 134–36
IoT. *See* Internet of Things
IP. *See* intellectual property
iPad, 172
iPhones, 149
IPR. *See* Intellectual Property Regime
Ito, Joi, 59, 61, 74–75, 96–97, 216–17, 235n4, 244n9
Ivrea, 110
- Jackson, Steve, 81
Jameson, Fredric, 245n18
Japan, 75, 82, 235n10
Jeffery, Lyn, 85–86, 185, 195
Jiang Zemin, 26
Jobs, Steve, 34, 70, 156
Johnson, Chalmers, 82
Jones, Andrew, 46
justice. *See* social change/social justice
- Kang Youwei, 56
Kely, Christopher, 227n47
Kenya, 81
Kickstarter, 125, 134, 135, 240n42
Knowledge Innovation Centers (KICs), 55
Kokas, Aynne, 229n79
Kreiss, Daniel, 225n10
Kulasooriya, Duleesha, 185
- labor: feminization of, 10, 76, 80, 131, 147, 158–59, 202, 218, 223, 226n36; flexible/creative, 29–31, 80, 131, 148–49, 202; gendered divisions of, 159; precarity of, 26, 29–31, 75–76, 80, 131, 140–41, 148–49,

- 202, 227n39; relational, 61. *See also* happiness labor; migrant workers; venture labor
- laissez-faire, 120
- Latour, Bruno, 128, 218
- Lau, Kevin, 22
- Lee, Ching Kwan, 150
- Lee, Leo, *Shanghai Modern*, 54–55
- Lei Jun, 113, 114
- Lessig, Lawrence, 59, 61, 98–99, 112, 217
- Li, David, 64–66, 71, 86–90, 95–96, 100, 186, 186, 194–96
- Liang, Lawrence, 112
- licensing, non-copyright, 59, 234n48
- Li Keqiang, 7, 8, 22, 23, 226n25
- Liu Shifa, 40
- Liu Yan, 43, 48, 49–51, 54, 55–56, 63, 66, 72, 87
- Lorde, Audre, 143
- Lyotard, Jean-François, 82
- machine learning, 10
- Made in China 2025, 23–24, 176, 189
- Make*: (magazine), 166, 168, 170
- Makeblock, 103
- Make Media* (periodical), 12
- Makerbot, 112, 122, 136, 142, 221
- Maker Carnivals, 124–25
- Maker Faires, 11, 22, 68, 91–92, 106–7, 109, 115, 125, 126, 165, 166, 168, 174, 176, 180–85, 184, 190
- maker/hackerspaces: as alternative career path, 120, 122; descriptions of, 6–8, 202–3; maintenance of, 29, 32; mass, 7–8; origin and proliferation of, 7, 11, 41, 66, 68, 90, 124–25; precarity of, 31; promise of, 7–8, 16–17, 35, 36, 42–43, 67–68, 90, 122, 125, 218; self-transformation into, 191; Shenzhen and, 16–17, 76, 125, 180; university-sponsored, 35. *See also* coworking spaces; XinCheJian
- Maker Media, 9, 68, 91–92, 112, 165, 170, 221, 228n51
- Maker Week, 180, 181, 185–86
- making/maker movement: CCP's embrace of, 7–9, 15, 17–19, 21, 24–25, 37, 41, 42–43, 68–69, 90, 92–93, 175, 177, 189, 202–3, 214, 232n7; in China, 64–72, 86–93, 191–92; Chinese terminology related to, 71–72; co-optation of, by tech industry, 111, 220–21; countercultural aspect of, 8, 16, 41, 42, 150, 223; creativity associated with, 91–92; educational value of, for children, 243n15; empowerment through, 2, 14, 42–43, 46, 48, 218; entrepreneurial opportunities in, 9–12, 123; ethics of, 2; finance capitalism linked to technological experimentation by, 228n51; fun associated with, 52, 70, 91–92, 120, 131, 195; geographic sites of, 4–5, 16; happiness associated with, 18, 69–73, 92, 106; as intervention (social and technical), 9–14, 14, 42, 46, 57, 232n9; misconceptions about, 34; origins of, 10; paradoxes of, 2; popular/democratic access to, 1–3, 8–12, 42, 70, 122, 156, 181, 214, 219, 221; principles of, 1, 11, 72, 232n9; self-transformation through, 2, 7, 42, 70, 122, 136, 142, 191; Shenzhen as center of, 4, 15–17, 17, 23, 76, 176–77, 180–90; West as center of, 11, 14–15. *See also* hacking; maker/hackerspaces; promise of making
- Mao, Isaac, 59–63, 72
- Mao Zedong, 20, 47, 52, 139–40, 233n17
- market devices, 13–14, 37, 132–37
- Martino, Gianluca, 109, 110
- Marx, Karl, 12, 225n8, 241n11
- Marxism. *See* autonomous Marxism
- masculinity: design and innovation associated with, 115, 217; entrepreneurship associated with, 9, 79; Silicon Valley associated with, 79; the state associated with, 47. *See also* gender; men
- Massachusetts Institute of Technology (MIT), 96, 187, 189, 192
- mass entrepreneurship (dazhong chuangye), 8
- mass innovation (wanzhong chuangxin), 8
- mass makerspace (zhongchuang kongjian), 7–8, 203
- McRobbie, Angela, 73
- Media Lab. *See* MIT Media Lab
- MediaTek, 94, 97–98
- Megnoni, Louisa, 102
- Meisner, Maurice, 20
- Mellis, David, 109
- men, as dominant in tech industry, 11, 30, 37, 116, 145, 154–56, 158–60, 166–67, 196, 231n16. *See also* gender; masculinity
- Microsoft, 46, 96, 185
- microworlds, 155, 242n41
- migrant workers, 23, 139–42, 150
- Mingtong Market, 177–79, 204, 206
- MIT. *See* Massachusetts Institute of Technology
- MIT Media Lab, 74–75, 91, 116, 216–18, 239n108, 244n9

276 INDEX

- MIT Technology Review* (journal), 100
modernity: China's relationship to, 17, 20, 25, 40, 46–48, 56–57, 63, 71, 90, 232n7, 237n68; civility associated with, 46; disillusionment with, 3, 17, 76–77, 81, 102; Maoist, 233n17; role of non-Europeans in, 235n15, 236n34; Western nations as prototypes of, 4
Moore, Gordon, 99
Moore's Law, 99–100, 123
Morley, David, 235n10
Mozi, 87, 88, 89
MTK, 193, 197–98
Mudimbe, Valentin-Yves, 235n13
Murphy, Michelle, 118, 120, 129, 137, 171, 221, 228n54
Musto, Frederico, 109

Nakamura, Lisa, 149
NBBJ, 183, 185
Neff, Gina, 123, 227n39
neoliberal exceptions, 6, 20, 226n19
neoliberalism: affect for quantity in, 129; alternatives to, 82; CCP's co-optation of, 19, 43, 47, 49; competition encouraged by, 220; contingency of, 31; counter-culture co-opted by, 73; critiques of, 11, 201; and desire, 150; economization of life as feature of, 3, 13; features of, 3; and finance capitalism, 132–37, 145, 146; happiness promised in, 5, 175; historical constitution of, 225n8, 226n32; and human capital, 120, 129, 201; intervention in, 5, 10; laissez-faire ideology of, 120; rhetoric of inevitability linked to, 10, 31, 37, 128, 216, 220, 221; and the self, 19, 26, 122; and self-economization, 61–62, 132; tech industry linked to, 41, 228n51; universities affected by, 128
NetEase Mobile Media Summit, 124
netizens, 58
Neumann, John von, 186
New Left Movement, 232n13
New Yorker (magazine), 11, 216
New York Times (newspaper), 215
New York University Interactive Telecommunications Program (NYUITP), 91
Ng-Adam, Ricky, 65–66
Nigeria, 81
Nike, 63
Niu, Greta A., 236n15
Noisebridge, 67
Nokia, 93

Nomiku, 9
No Starch Press, 96
Now-ism, 75
NYC Resistor, 122

Obama, Barack, 2, 181
OCT Loft, 6, 226n21
O'Donnell, Mary Ann, 27, 140, 238n89
O'Melly, Peter, 127, 129–31, 133
Ong, Aihwa, 226n19, 228n53
open boards. *See* gongban
open innovation, 29, 36, 87, 113, 133, 148, 186, 194, 234n45
openness: affect for, 43, 228n54; as ideal occluding violence, 37, 41, 230n102; as ideal of technology production, 11, 12, 24, 31, 36, 48, 50–51; as social ideal/value, 48–52
open sharing, 12, 31, 51, 60–61, 73, 91, 95, 146, 197–98
open source technology: Arduino and, 106–12; Chinese attraction to, 9, 15, 19, 41–42, 64–72; colonialist character of, 15; elitist practices in, 95–96, 221; ethics of, 89, 95–96, 110–13, 115, 200; popularity of, 11; shanzhai and, 88–97, 100–101, 115; Shenzhen's contribution to, 22, 94–98; 3D printing and, 124; universal availability of, 3; Western principles of, 91. *See also* free culture movement
Opium Wars, 20, 46
Oppo, 93
opportunity zones, 215
optimism, 14, 18, 29, 42, 71, 216. *See also* happiness; techno-optimism
O'Reilly's Make, 221
orientalism, 76–79, 77, 90, 98–99, 105, 117, 148, 192, 235n9, 235n10, 235n15, 236n15

Pacific Standard (magazine), 9, 11
Pan, Eric, 22, 87–92, 96, 100, 107, 107, 186
Panasonic, 197
Pebble Smart Watch, 136, 240n42
peer production, 6, 12, 24, 31, 51, 70, 72, 73, 78, 115, 120, 125, 133, 145–46, 164, 168, 213
period of national humiliation, 20, 22, 40
personality tests, 131–33
Pettis, Bre, 118, 122–23, 136
phantasmagrams, 137, 228n54
Philip, Kavita, 99
Philips, 50, 197

- phones, 85, 93, 94, 97, 103, 104–5, 104, 113, 178, 197, 198
- piracy, 98–99, 112–13, 217
- itches: in academia, 128, 218, 227n50;
for acceptance to incubators, 126; of
creativity, 73; features of, 12–13; gender
roles concerning, 30; incubators' train-
ing of individuals for, 30, 135, 145–46;
to investors, 12, 30, 33, 132, 134–36; of
making's social value, 11–12; of open
source and free culture ideas, 41–42; for
opportunity-zone investment, 215; by
Shenzhen makers, 195–96; three-minute,
195–96; ubiquity of, 227n50. *See also*
socialist pitch
- platform capitalism, 146, 150, 161
- play. *See* fun
- politics. *See* depoliticization
- positive feeling (zhengnengliang), 19
- postcoloniality, 21, 39, 63
- precarity: of academic employment, 127–28,
240n26; of flexible/creative work, 29–31,
80, 131, 148–49; of happiness labor, 149;
of migrant workers, 26, 140–41; of tech
labor, 75–76, 131, 148–49, 227n39; toler-
ance of, 24, 73, 174–75; of traditional
labor, 202. *See also* risk-taking
- Production Realization Lab, Stanford Uni-
versity, 194
- promise of happiness: CCP's, 19, 43, 175;
challenges to, 38; denials of, 214; in
economization, 4; in maker movement,
69–73; neoliberalism's use of, 5, 175;
precarity masked by, 174–75; in self-
transformation, 25; socialist pitch for, 69;
in technology, 4, 214
- promise of making: access to entrepreneur-
ship as, 9–12; China as model of, 4, 6,
16–25; overview of, 1–4
- promises. *See* promise of happiness; promise
of making; technological promise
- prototype nation, China as, 4, 16–25, 31,
220, 225n10
- prototypes of intervention, 1, 3, 13, 218, 223
- prototypes/prototyping: of alternative mod-
els of living, 77, 219; citizens as, 36, 43,
49, 66; colonialism as, 4–5; concept of, 1,
2, 219; of entrepreneurship, 181; of a new
China, 4, 16–25, 31, 203, 220, 225n10;
questioning of, 223–24; regions as, 4; as
social intervention, 12
- public boards. *See* gongban
- Pujiang Innovation Forum, 19
- Qualcomm, 94, 198
- quality (suzhi): of Chinese technology, 2,
15, 22; of citizens, 19–20, 26, 36, 41, 44,
46, 49, 140, 175; educational cultivation
of, 49
- qushanzhahua. *See* de-shanzhai
- racialization: Chinese/Asians as subject of,
6, 18, 79, 148, 153–54, 174, 203, 235n9;
Italians as subject of, 112; tech indus-
try practices of, 25, 30, 34, 37, 79, 116,
145–48, 153, 165, 170, 201, 222. *See also*
orientalism
- real estate development, 182–83
- reference boards. *See* gongban
- relational labor, 61, 161, 163
- remix, 61, 98–99
- Republican Party (United States), 215, 220
- resistance: barriers to/co-optation of, 8, 14,
21, 31, 34, 86, 117, 143, 151, 170, 203; to
capitalism, 83, 86, 169–71; everyday acts
of, 169–71; making associated with, 2, 34.
See also intervention
- responsibility. *See* zerengan
- reverse engineering, 7, 96–98, 198
- Rheingold, Howard, 59
- risk-taking: Chinese aversion to, 41; Chinese
embrace of, 62, 68, 92, 106, 140–41, 173,
175, 200, 203; as neoliberal value, 26, 140;
Shenzhen associated with, 106, 189, 200;
in tech industry, 123, 145, 148, 175, 189,
200, 203, 227n39. *See also* precarity
- rivercrab (hexie), 57–58
- Robins, Kevin, 235n10
- robotics, 64–65
- Rockchip, 198
- Rofel, Lisa, 47, 150, 230n90
- Roh, David S., 236n15
- Ross, Andrew, 148
- Rossiter, Ned, 86
- Rowan, David, 113
- Russo, Gina, 232n13
- Sacks, David, 119
- Said, Edward, 74, 76, 226n11
- Salazar Parreñas, Juno, 5, 18
- Samsung, 185
- Sandvig, Christian, 234n45
- SanShu (three book) Salon, 48
- Sanyal, Kalyan, 214
- Schein, Louisa, 192
- Scott, James C., 169–70, 241
- Second Life, 62

278 INDEX

- Seed Studio, 22, 87, 90–92, 107, 109–10, 125, 185
- seeing like a peer, 146, 169, 241
- SEG Makerspace, 180, 191–92, 192
- SEG market, 176, 179–80, 179, 188
- self: CCP's cultivation of, 19–21; in contemporary Chinese society, 31, 47; DIY fashioning of, 48–49; finance capitalism's conception of, 122, 129–37; as human capital, 13, 47, 131–33; neoliberal conception of, 19, 26, 122; postsocialist, 47, 49. *See also* autonomy; citizens; individuality
- self-directed innovation (*zizhu chuangxin*), 40, 232n2. *See also* indigenous innovation
- self-economization: affect for, 73; CCP's encouragement of, 18–19, 21–22, 63; neoliberal doctrine of, 61–62, 132; socialist pitch for, 13, 61–62, 73
- self-investment, 5, 21, 30, 31, 37, 119–20, 122, 128, 133, 140, 142–43, 145, 148, 153, 174
- self-reliance, 21, 40, 87, 123, 140–43, 142
- self-transformation: of Chinese citizens, 20–22; in Chinese Internet culture, 59–62; desire for, 26–31; entrepreneurial, 9, 15; happiness promised in, 25; into human capital, 13, 37; making as means of, 2, 7, 42, 70, 122, 136, 142; making as means to, 191; popular/democratic opportunities for, 9–10
- self-upgrading: China's promotion of, 19–24, 40–41, 46–47, 71, 140, 173–74, 233n17; individual, 1, 19–24, 47, 71; marginalized citizens as candidates for, 22–23; neoliberal strategy of, 19, 35
- sexism, 3, 11, 24, 147, 164–65
- SEZs. *See* Special Economic Zones
- Shangbu district, Shenzhen, 183
- Shanghai, China, 21, 39–40, 43–46, 54–55, 63–65, 89, 189, 195–96
- Shanghai Expo (2010), 43–44, 45, 63
- Shanghai Science and Technology University, 191
- Shannon, Claude, 186
- shanzhai (copycat production): Arduino and, 106–12; attitudes toward, 79, 85–88, 92–93, 96–107, 112, 115, 166–67, 196, 199–200; CCP aversion to, 233n27; characteristics of, 107–8, 115; ethics of, 86, 89, 95–96, 103–4, 112; extensions of, 85; freedom and democratization made possible by, 95–100; as grassroots experimentation, 85–87, 101–2; internal development of, 193; and open source, 88–97, 100–101, 115; as opportunity for technological advancement, 79, 101–6, 116–17; products of, 84–85; Shenzhen as site of, 15, 33, 79, 83–86, 90, 191–201
- Sharism (*fexiang zhuyi*), 59–62, 72
- Shekou district, Shenzhen, 181–83, 185, 190, 193, 243n11
- Shenzhen, China: as center of making, 4, 15–17, 17, 23, 76, 176–77, 180–90; creative industry in, 21; everyday labor in, 25–26; FDI in, 93–94; incubators in, 126–27; invention of, 78–80, 137, 139, 143, 148, 176, 220; as laboratory/model, 21, 26, 37, 77, 78, 82–83, 105–6, 139–40, 148, 160, 189, 220, 230n92; male dominance linked to, 158–60; promotion of, 106, 139–41, 160; scale achieved by production in, 93–95, 178; as SEZ, 21, 26, 83–84, 140, 182, 220; shanzhai in, 15, 22, 33, 79, 83–86, 90, 191–201; as Silicon Valley's other, 15–16, 18, 76, 79, 158–59, 194–96; as technological/economic frontier, 27, 74–76, 96–97, 115, 116–17, 125, 137, 156–57, 188–89, 214–15, 217; urban fabric of, 26–27, 182–83; urban villages of, 27, 29
- Shenzhen Industrial Design Association (SIDA), 188–89
- Shenzhen Open Innovation Lab (SZOIL), 186, 194
- Shenzhen speed, 127, 137–43, 178
- Shenzhen wan (Shenzhen Bay), 183, 190, 193, 200
- Shirky, Clay, 113, 115, 185
- “Shuihuzhuan” (folk story), 89
- Silicon Valley, California: criticisms of, 11, 89, 167; as object of desire, 152–54, 195; Shenzhen as other of, 15–16, 18, 76, 79, 158–59, 194–96; as technological/economic model, 5, 54, 65–66, 72–73, 148, 154, 194–96
- Sims, Christo, 119, 229n63
- Singapore, 81, 182
- Skolkovo, Russia, 5
- slow violence: of de-shanzhai, 191–201; of displacement, 5; of displacements of technological promise, 24, 38, 174, 202–3
- Smart Projects, 109
- Smith, Zach Hoeken, 142
- Snowden, Edward, 34
- social capital, 61
- social change/social justice: affect for, 170, 215, 216; conflicting outcomes of, 30–31, 151, 216; desire for, 13, 30, 57, 59, 64, 69, 73, 79, 89–90, 93, 129, 150, 151, 215; openness as means to, 48–49; socialist pitch

- for, 13, 37, 181; technology as means to, 1–4, 9–14, 42, 46, 57, 59–62, 72, 146, 150, 191–92, 219, 232n9, 244n9
- social factory, 146, 149, 241n11
- socialism, repurposing of ideals of, 52
- socialist pitch: agency/intervention promised in, 12, 42, 59, 64, 123, 128–29, 133–36, 181, 215; contradictory character of, 12–15; critiques of, 244n6; entrepreneurial opportunities promised in, 13–15, 17–19, 49, 143, 170, 213, 216–18, 223; features of, 12, 59; happiness promised in, 69; incubators' use of, 133–36; for justice/social change, 13, 37, 181; persistence of, 228n51, 244n6; for self-economization, 73; sense of anticipation projected by, 12, 129; sense of inevitability projected by, 129, 134; Shenzhen as subject of, 16–17; start-ups and, 30; strategic use of, 13–15, 129; ubiquity of, 218; universities and, 129. *See also* pitches
- South China Morning Post* (newspaper), 220
- South Korea, 81
- Sparkfun, 91
- Special Economic Zones (SEZs), 21, 26, 83–84, 140, 182, 220, 243n10
- speed, in technology design and production, 137–43
- Stanford University, 194, 196, 200
- Star Trek* (television series), 157–58
- start-up weekends, 13, 41, 79, 119, 120, 124
- state-operated enterprises (SOEs), 83, 182–83, 243n10
- Stoler, Ann Laura, 6, 24, 39
- Stratasys, 136, 221
- Suchman, Lucy, 2
- supply chains (chanyelian), 16, 24, 76, 78, 81, 129, 143, 156, 188, 190, 194, 197, 200, 217
- surplused populations, 10
- survival tactics, of businesses, 85, 89, 167, 194, 196
- Swartz, Aaron, 96
- SZOIL. *See* Shenzhen Open Innovation Lab
- Tadiar, Neferti, 10
- Taiwan, 81, 89, 93–94, 182
- Taobao, 151–52
- Taylorization, 131
- techno-fix, 14, 222. *See also* techno-optimism; techno-solutionism
- technological innovation, design, and engineering: affect for, 62; capitalism imbricated with, 3, 10–11, 75, 80–81, 89, 214; China's place in, 4, 6, 17, 19, 24–25, 33, 62, 66, 70, 76, 96, 99–106, 125, 225n7; colonialist character of, 5, 24, 76–77, 99, 104, 147, 157–58, 217, 222; democratization of, 1–3, 8–12, 14, 18, 24, 36, 42, 67, 70, 95–96, 119, 122–23, 143, 146, 156, 181, 214, 219, 221; ethics of, 10, 24, 37, 75–77, 239n108; feminization of, 76, 80, 131, 158–59, 218; inevitability imputed to, 80–81, 187, 193, 222; legal constraints on, 99; male dominance of, 11, 30, 37, 116, 145, 154–56, 158–60, 166–67, 196, 231n116; neoliberalism linked to, 41, 228n51; opportune sites for, 4, 15–16, 24, 76–79, 81, 116–17, 156–57, 160, 215; precarity of, 75–76, 227n39; re-acceleration of, 122, 123; reconception of, 101–6, 115; risk associated with, 123, 145, 148, 175, 189, 200, 203, 227n39; Shenzhen as source of recuperation for, 75–77; traditional industries adopting practices of, 149, 227n50; women in, 30, 50, 154, 227n48 (*see also* feminization of *this entry*)
- technological promise: CCP's strategic use of, 18–19; colonialist uses of, 78; contradictions associated with, 4; of empowerment, 219; genealogies of, 6; occlusion of exploitation and inequality by, 14, 24, 32, 61, 73, 79–80, 84, 129, 140–41, 147, 148, 158–59; persistence of, 72–73; recuperation of, 4–5, 13–14, 37, 76–78; suspicion and criticism of, 4, 10–11, 75–78, 80–83, 122–23, 214, 219, 221, 227n39, 238n107; violence resulting from/occluded by, 5, 24, 73, 201–2, 219–20. *See also* displacements of technological promise
- techno-optimism, 11, 14, 22, 25, 42, 72, 146, 227n39. *See also* techno-fix; techno-solutionism
- techno-orientalism, 77, 235n10, 236n15
- techno-solutionism, 3, 222. *See also* techno-fix; techno-optimism
- techno-utopianism, 33, 75, 149, 222, 232n9
- tech research institutes, 129, 239n26
- Tecno Mobile, 93
- TED, 46
- Tencent, 103, 183, 184
- Thatcher, Margaret, 221, 226n32
- Thiel, Peter, 118–19, 122, 123
- Thiel Fellowship, 118–19, 121, 122
- THINK, 46
- Third World, 4, 78
- 3D printing, 3, 12, 53, 66, 112, 122, 124, 221
- Tiananmen Square protests, 140

280 INDEX

- tinkering, 7, 11–12, 25, 36, 41–42, 57, 69, 72–73, 92–93, 96, 120, 131, 134–35, 150, 153, 181, 218–19. *See also* experimentation
- Tolentino, Jia, 11
- Tongji University, 55
- TopDesign, 194–98, 199
- traditional industries, tech industry's practices adopted by, 149, 227n50
- Tronti, Mario, 241n11
- Trump, Donald, 118, 239n107
- Tsing, Anna, 17, 30, 169, 213, 221
- Turkle, Sherry, 155
- Turner, Fred, 42, 72, 232n9
- Twitter, 125, 165, 167, 239n107
- UABB. *See* Bi-City Biennale of Urbanism \ Architecture
- Uber, 14, 150, 167
- Ubiquitous Computing (UbiComp), 24
- UNESCO City of Design, 40
- “Unidentified Acts of Design” (exhibition), 102–5, 103, 104
- United Kingdom, 20
- United Nations, 84
- United States: China's relations with, 77, 116, 231n123, 235n9, 235n10; displacements of technological promise in, 215; maker movement in, 11, 15; suspicion and criticism of tech industry in, 11, 18
- universities. *See* higher education
- upgrading. *See* industrial upgrade; self-upgrading
- Urban China* (magazine), 53
- Ushahidi, 81
- utopianism, 31, 82, 146, 222, 223, 236n34, 236n40. *See also* techno-utopianism
- venture capital, 2, 12, 29, 37, 78, 88, 119, 141, 156
- venture labor, 16, 29–31, 42, 57, 96, 145, 148, 215
- Vice* (magazine), 166
- Victoria & Albert Museum, 102, 105
- violence: occluded by feeling of intervention and agency, 30–31, 151, 216; occluded by ideal of openness, 37, 41, 230n102; resulting from/occluded by technological promise, 5, 24, 73, 201–2, 219–20. *See also* slow violence
- Wade, Robert, 82
- Wajcman, Judy, 138–39, 159
- Wang, Justin, 69–70, 72, 121–22
- Wan Gang, 19
- weapons of the weak, 169–70
- Weber, Max, 82
- wenming. *See* civility/civilized
- West: China's relationship to, 16, 18–22, 25, 36–37, 46–48, 56–57, 63, 71, 76–77; suspicion and criticism of tech industry in, 18; technological promise in, 11, 14–15; Third World as other of, 4, 78
- Whirlpool, 197
- Whole Earth Catalogue, 232n9
- Wiener, Norbert, 186
- Window of the World theme park, 25–26
- Wired* (magazine), 11, 16, 53, 113, 114, 124, 232n9
- Wiring (platform), 112
- women: exclusion of, from craftsman circles, 159; exploitation and unequal treatment of, 79, 146; in tech industry, 30, 50, 154, 227n48. *See also* gender; sexism
- Wong, Winnie, 27
- work, conceptions of, 21, 50–52
- World Bank, 84
- World Trade Organization (WTO), 21, 40, 44, 189
- Wu, Naomi, 165–67, 166, 168, 170–71, 227n48
- Xiaomi, 93, 113
- Xi Jinping, 18, 19, 23, 175, 201, 229n77, 232n2
- XinCheJian (new workshop), 66–67, 87, 90, 118, 121, 124
- XinDanWei (new workunit), 39–41, 43–44, 46, 48–54, 57, 59, 60, 62–66, 72, 87, 232n12
- Xinhua News* (newspaper), 7
- XinShanzhai (new shanzhai), 87, 101
- Yang, Fan, 24, 47, 77, 229n79, 230n106, 235n9
- Yang, Jie, 19, 175
- Ye, Ricky, 64–65
- yearning. *See* desire/yearning
- Yong, Hu, 58
- YouTube, 165, 167
- Yunmi Technology, 113
- zerengan (feeling responsible), 173, 203
- Zhang, Zafka, 62
- Žižek, Slavoj, 221–22
- ZTE, 197
- Zuckerberg, Mark, 81