Introduction

New, Old, and Uncertain Futures

The notion of "multipolar" innovation was promoted by the World Intellectual Property Organization (WIPO) of the United Nations in 2009, in response to the increase in patent applications from Northeast Asia.[1] The phrase alludes to the fact that, next to Silicon Valley, other major centers of innovation have emerged within Asia, such as China's Shenzhen High-Tech Park, Korea's Pangyo Techno Valley, and India's IT City Bangalore. More evocatively, the notion substitutes concerns over digital divides and exclusion with a promise of worldwide participation in the radical transformation that sounds through slogans such as big data revolution,[2] smart world revolution, and the Fourth Industrial Revolution.[3] However, from a critical angle, what does such multipolarity encompass? What new social orders and socio-technical trajectories of development does it enable? Or what "old" patterns might still be in place?

This edited volume focuses on communication innovation, namely, the shifting ways communication and social organization are mediated by changing designs of infrastructures and platforms. It investigates multipolar innovation communication by mapping the "new," "old," and "uncertain" futures it invokes and produces across geographical contexts. Chasing "path-breaking" and "disruptive" newness might merely set us heading for "old" futures, inscribed with the power relations that mark the present.[4] Yet, to echo Arturo Escobar, can design and innovation be disconnected

from "old," unsustainable, and future-canceling practices and ambitions?[5] Can we recover our ability to imagine other futures and quit the conditions that eliminate and foreclose them?[6] Such imaginative capacity negotiates conditions—economic, geopolitical, sociocultural, and ecological—rather than reproducing them under the pretext of breaking with the present.

We investigate communication innovation at a moment when Silicon Valley's dominant role in conjuring and "patenting" technological futures is challenged. This development calls for a comparative approach to communication innovation that maps similarities and differences—or, as we will explain, dynamics of integration and differentiation in communication innovation—across national boundaries and regional affiliations. Accompanied by a good deal of futuristic Sinological orientalism, the Chinese case has become emblematic of multipolar innovation and technological developments that keep intriguing observers for apparently diverting from Silicon Valley's models. For instance, the growth of the Chinese search engine Baidu became possible in the wake of Google's decision to shut down its operation at least temporarily in China in 2010, according to the company, to avoid compliance with censorship and vulnerability to hacks. In retrospect, withdrawal helped China to grow its own corporations, aiding Chinese data sovereignty and technological independence, though transnational financial investments have always continued.[7] Contrary to narratives about Silicon Valley's market-driven breakthroughs, the success of the Chinese platforms BAT (Baidu, Alibaba, and Tencent) owes much to protectionism, their close ties to government, and their uptake of active roles in governing the population.[8] The suspension of Ant Group's IPO in 2020 and the antitrust investigation of online platforms—first Alibaba in 2021, followed by Pinduoduo, Meituan, and other e-commerce platforms—have once again demonstrated the Chinese state's controlling role in stimulating as well as curbing communication innovation. The particularity of Chinese communication innovation has led scholars to ask whether, after socialism and neoliberalism "with Chinese characteristics," we now are witnessing the rise of a platform society "with Chinese characteristics."[9] Guobin Yang proposes the concept of "state-sponsored platformization" to elucidate this specific process of platformatization, which resembles the state corporatist model but also demonstrates technological and market logics.[10]

Yet, though often considered an exception and anomaly within global trends in communication innovation, Chinese platforms seem to partake in, or lead, a broader tendency toward correlating digital infrastructure and innovation with territorial sovereignty, rather than disentangling them. With the Snowden revelations about

the global surveillance activities of the National Security Agency (NSA) not yet for-gotten, European states prove to be less willing to accept the central position of the United States in global digital networks. Taking place in the context of the European Court of Justice's decision to overhaul the Privacy Shield arrangement—namely, the data-sharing agreement between the EU and the United States—a recent proposal for European data sovereignty contends that European users' data should be stored locally, and it expresses the political will to search for other options. So far backed by Germany and France, project Gaia-X would be "an enabler for platforms 'Made in Europe'—platforms where the potential of A.I. [Artificial Intelligence] can be tapped while privacy is safeguarded, all without reliance on foreign services."[11]

As the examples cited here indicate, while scrutinizing patterns of similarity/difference or integration/differentiation in communication innovation, this edited volume addresses not just the particularity of Chinese vis-à-vis American innova-tion, but the broader question of a shifting world order and trends that go beyond China. That is, we unpack communication innovation in a world where China has a strong influence by looking at other places in addition, ranging from Ghana to Turkey and Europe. In doing so, we uncover broader trends such as capitalist de-westernization, nascent China-led globalization, and intra-imperialist struggle.

We embark on a critique of communication innovation at times of increased global connectedness *and* antagonism.[12] Whereas "multipolar" innovation at least initially promised global exchange and inclusion, it takes place against the backdrop of intensifying geopolitical tension, whereby digital communication infrastructures no longer serve as the hallmarks of cyber-themed cosmopolitanisms but have become frequent targets of suspicion and sabotage. Most prominently, the US government under Trump has gone to great lengths to convince the public and its allies of the dangers of Chinese innovation, including the digital infrastructure developed by Chinese companies such as Huawei, and social media such as the by then most-valuable start-up TikTok (Douyin inside China, both owned by China's ByteDance Ltd.).[13] With global markets no longer automatically at the disposal of American companies, the Trump administration has portrayed Huawei as nothing less than a PLA-devised weapon, a Trojan horse meant to render America's commu-nication susceptible to Chinese interference.[14] At the time of this writing, it remains unclear what specific course Biden and his government, as Trump's successor, will take. Meanwhile, in the United States, UK, and Northern Europe, communication infrastructures have become the unlikely targets of violent attacks, inspired by online conspiracy theories insinuating that 5G towers associated with Huawei are responsible for spreading the Coronavirus (COVID-19). In the rather different

context of Hong Kong, Chinese technological expansion has been perceived with suspicion too. Tensions over the territory's political autonomy have intensified since the Umbrella Movement of 2014. When protesters partaking in the 2019 movement discovered that Mainland China's Guangdong Province intended to extend the Chinese social credit system to Hong Kong, they dismantled existing smart-city infrastructures in an attempt to discover and examine undisclosed functions. A year later, the newly implemented National Security Law alarmed many locals in Hong Kong and moved them to protect their digital privacy by using pseudonyms online and deleting applications, especially if they belong to Chinese companies.[15]

These recent developments go to show that communication innovation can facilitate not only new forms of alignment and affiliation, but also geopolitical tensions and indeed frightening regimes of surveillance and repression. In the context of these developments, the question is whether and how struggles around communication-related rights occur in different places.[16] The suspicion and subversive acts of sabotage against communication infrastructures across different geographies indicate the global breakdown of communication and consensus. They suggest the decoupling of innovation from beliefs in shared futures and trajectories of change as well as shared norms and values related to communication. The Chinese social credit system appears dystopian in the western press, but undeniably enjoys rather high approval rates in China itself. The United States, Edward Snowden continues to be charged with violating the Espionage Act, but he has long been considered a hero in Europe and his statue has traveled to many of the Continent's major public squares. Developing a comparative approach, this book unpacks the politics, ethics, and struggles of multipolar communication innovation and tracks how different formations lead to both hope and fear. Across our case studies, the book argues that communication innovation lies at the heart of bilateral debates between the United States and China and also of international agendas and struggles that overlap with and sometimes contradict existing US and Chinese investments and histories. In this sense, our book offers a truly global examination of how communication innovation impacts our daily lives, political identities, and capacity to imagine and construct futures. The rest of this introduction offers three critical lenses pivoting around the dyads change/continuity, disruption/structure, and integration/differentiation. These lenses can be applied to the overarching themes that cover the three parts of this book: formal innovation, everyday inventiveness, and novelty as technodiversity.

Old Futures: Change/Continuity

Innovation in Western contexts typically denies the historicity of its own material formations, practices, and imaginaries.[17] Its proponents enshrine innovation in an aura of newness, for instance through the incontrovertible seriality of gadgets such as iPhone models that are numerically labeled in ascending order from 1 to *n*. Yet though imagined, lived, and marketed as novelty, communication innovation often remains contained and embedded in power structures.[18] This enmeshing of the "new" within old power structures follows from the fact that innovation as a process is managed by exclusive institutions and often nation-states, whereas, as material technology, it is inscribed with sociocultural and geopolitical hierarchies.[19] What counts in terms of the critical analysis inquiring into the interplay of "old" and "new" futures are the wider social *effects* and ramifications of innovation and the extent to which they shape societies anew. For instance, data analytics supposedly produce a "new" gaze onto society that focuses on actual behavior rather than assumed identity, and this allows for innovation that "disrupts" industries, markets, and societies. Nonetheless, current technology engenders continuous structural disempowerment, discrimination, and racial profiling, as demonstrated by applications in China that identify Uyghurs specifically, and in the United States that profile African Americans through proxies that can be reduced to race.[20] Neither of these applications disrupts power relations nor do they stir technological instrumentalization away from histories of surveillance and repression of minorities.

Deploying the dyad change/continuity as a critical lens, we raise the question of whether multipolar communication innovation renders redundant geographically oriented critiques of capitalist modes of production. Such critiques address, for instance, the international division of labor, which underscores the geographical distribution of high-skilled and low-skilled labor, and extractivism, which marks processes of dispossession and primitive accumulation of local resources by global players.[21] Nowadays, the capacity for innovation requires access to what is dubbed the most important "raw material" of our times, namely, data that are mined and extracted. What is mined ultimately are our social relations, our private selves, collective behavioral patterns in cities, the logistical flows of goods, and the bioinformatic consistencies of our bodies.[22] Some have argued that data-driven innovation amounts to a global regime of data colonialism that renders everything and everyone a resource for its own reproduction.[23] Yet this perspective fails to

acknowledge how unequal levels of disenfranchisement and subaltern status inter-sect with the power inherent in data and datafication; and more so, that the labor in the process of data-driven innovation still registers particular geographies and social orders.[24] Despite the fact that such geographies have become more complex than simple schemes of First/Second/Third World or Global South/North purport, new types of digital sweatshop labor involve work that machines currently cannot perform either as well or as cheaply as their human counterparts can.[25] Human workers are responsible for image recognition assignments via Amazon Turk, "gold mining," and removal of impermissible content from platforms, in addition to infrastructural maintenance in data centers. What these examples suggest is that communication innovation often draws on, and reproduces, persistent power relations and social orders, which outline particular, though shifting, geographical distributions and ethnic relations.

Uncertain Futures: Disruption/Structure

Next to change/continuity, the second critical lens we introduce revolves around the dyad disruption/structure. Disruption and destruction play prominent roles in mainstream innovation discourse. Joseph Schumpeter's notion of creative destruc-tion naturalizes a logic of capitalism, in which capitalism is spurred by innovation, which allows for creating a temporary monopoly in a new market, while destroying existing industries and institutions.[26] Such effects of innovation are disruptive but also systemic and even exploited as opportunity by the entrepreneurial agents of innovation. Nowadays, investors as well as tech companies themselves speculate in entrepreneurial manner when they invest in, or acquire, promising start-ups in order to capture the next innovation and dominate its market.[27]

Rooted in such a Schumpeterian appetite for disruptive innovations conquering markets, the financialization of innovation has taken on new proportions since the 1980s. Smart-city development, for instance, has proven far from immediately successful, but enterprises have been sustained through speculative bets on innovative potential by investors and shareholders.[28] What matters hereby is not just the immediate success of a particular product or service in terms of technological functionality and social adaption, but the future promise that the company's potential will disrupt markets. The investor bets on the capability of a company to develop new technologies by buying its shares, while hedge funds

create markets around the risk of failure. However, the debate about whether financialization encourages innovation or undermines it is divided, with some arguing that financialization happens at the expense of more open-ended research and development activities. Even though it is true that operating special innovation units can enhance a company's reputation and entice investors, resources are not allocated to fundamental research that takes a longer time, or to research that has less market potential.[29] Meanwhile, companies take financial logics to the heart of their corporate decision-making and budget strategies when they spend their profits on buying back their own shares to manipulate prices rather than reinvesting that capital in research.[30]

Following such dynamics of financialization, entrepreneurial activity may in fact limit human and technological potential for creating new futures.[31] However, it should be noted that even though communication innovation may not produce the path-breaking futures that it promises and often remains embedded in structural relations, the effects of technological change are often neither controlled nor foreseeable. They exist as unaccounted-for, and often invisibilized, disruptions, destructions, and risks—in other words, as uncertain and precarious futures. For instance, financialization comes with unequal distributions not only of (potential) profit but also risk. Substantial risk is borne by the Uber driver in India, who invests in a new car but then suddenly faces a decrease in payment when Uber adjusts the pay scale in response to pressure from investors to show a profit. In a secondary cycle of financialization, the option the driver is left with is to apply for a loan, again from Uber.[32] For this driver, the path of securing a better future is full of risk, uncertainty, and potential disruption to their livelihood. Indeed, what Schumpeter's account of creative destruction leaves out are the social costs of this logic, which Marx defined before him in terms of continuous insecurity for labor.

"Uncertain" futures can be understood in terms of the imminent risks of ecological breakdown and catastrophe, indicating the unsustainability of the present. The philosopher Paul Virilio dramatically proclaimed: "When you invent the ship, you also invent the shipwreck; when you invent the plane you also invent the plane crash; and when you invent electricity, you invent electrocution. . . . Every technology carries its own negativity, which is invented at the same time as technical progress."[33] Virilio's quotation orients us to the destructive nature of innovation. Waste is intrinsically related to innovation when we consider the role of planned obsolescence in, for instance, consumer electronics. It forms an externality of the innovation-driven economy that causes harm and suffering, which often do not

appear in any calculation of costs. Risk pertains to the unpredictable environmental and health consequences of innovations such as plasma screens when they become waste and are (illegally) exported to poorer and less regulated regions. Just when environmental regulation and advocacy have forced companies to ban or reduce one harmful component used in electronic devices, the next component is introduced in the name of novelty and innovation, while its environmental consequences remain unknown.[34] In such cases, innovation induces moments of openness and opportunity, but also uncertainty, risk, and destruction.

Multipolarity: Integration/Differentiation

As argued so far, the paradoxes of *change/continuity* and *disruption/structure* are central to our "critique of the new." But how do these themes play out in the case of multipolar communication innovation? Mainstream innovation studies often render context implicit, and such decontextualization results in universalist accounts, which combine celebrations of "path-breaking" disruptive change with narratives that cast technological development as an inevitable, irresistible, and rational movement, unfolding in universal and homogeneous time. The school of diffusionism, which emerged around the middle of the nineteenth century, subscribed to "the idea of technology as historical grand narrative, as a primary determinant of history itself."[35] This school has held that technologies were conceived and created in Europe and subsequently "diffused to the rest of the world almost entirely through European agency and without significant local input."[36] Reiterating aspects of the diffusionist argument more recently, Everett Rogers's much-cited work presents a model for adoption rates that considers technological diffusion a matter of rational choice to adopt or reject a new technology.[37] He divides global society into groups of "innovators," "early adopters," the "early" and "late majorities," and "laggards," who make their decisions on the basis of knowledge available to them.

Whereas such temporalized discourse renders innovation a matter of universal rationality and singular, ultimately irresistible development, the Global South appears as nothing but an "ontological designing consequence" of the North, at the expense of recognizing context-specific questions, problems, and practices related to design and innovation.[38] In contrast, postcolonial studies has called for "provincializing Europe" to take into account the existence of alternative modernities and perspectives from the so-called "Third World."[39] For the study of science

and technology, this perspective offers analytical tools to decenter West-centric technoscience, while recognizing "hybridities, borderlands and in-between conditions" that reveal other and counter-hegemonic experiences and socio-technical realities.[40] Postcolonial approaches have spurred regional and local social studies of science and technology in, for instance, India, Singapore, Taiwan, and Japan.[41] Such endeavors at times deploy cultural studies techniques of "inter-Asia referencing" and "Asia as method" to trace similar experiences across Asia and strengthen local agency and solidarity.[42]

Informed by postcolonial perspectives, this edited volume inquires into today's multipolar communication innovation. Does multipolar innovation imply a continuation of technoscientific universalism or does it enable technodiversity— that is, the emergence of technological, or in fact socio-technical, difference and alternativity?[43] While the proffered arrival of multipolar innovation suggests global participation in communication innovation, the notion of multipolar innovation does little to challenge the diffusionist logic and temporality. What we can witness nowadays in China is an emerging form of technoscientific nationalism that is built on the historical experiences of technoscience and modernity.[44] China is not alone, as other East Asian countries have embarked on similar races. Hence, even as an effort to address a globalizing innovation development, the setup of the multipolar model reveals not only globally shifting power relations but also, implicitly, the continuation of dynamics and ideological frames constructing progress, development, and modernity in ways that both seduce and force those "lagging behind" to commit to "catching up."[45] The recent surge in innovation among the East Asian countries continues this endless loop of "catching up," again erasing actual experiences of disruption, destruction, and harm that are concomitant with being implicated in technological makeover as well as alternative socio-technical realities and possibilities.

This becomes clear when looking at tech companies from more "developed" countries within Asia that are exploring their regional footholds to expand their market share by leveraging innovativeness as competitive advantage, along with geographical and cultural proximity. For instance, in Korea, US-based multinational tech companies, such as Apple and Google, have little presence, while local companies such as Kakao, Samsung, and LG dominate the market. Kakao is a South Korean mobile messaging provider whose shares are partly owned by China's Tencent. It has expanded its operations to include financial services (KakaoPay, KakaoBank), geolocation services (Kakao T, KakaoBus), and games (Kakao Games).

Beyond Korea, KakaoTalk operates in Indonesia, Japan, and Vietnam. There is a need to come to terms with not just waning Western hegemony, but the new territorial divisions of an emerging multipolar world, including the rise of an upper-case "Asia" that dominates, controls, and subordinates the marginals, who are once more "lagging behind."[46] Globally, the development toward "multipolar" innovation signifies a process of capitalist de-westernization by the proverbial "rest," such as the BRICS (Brazil, Russia, India, China, South Africa) countries. Forming sizable blocks that counter US hegemony, their surge does not undermine capitalism and imperialism as much as introduce intra-imperialist struggle.[47]

Though inspired by postcolonial approaches, our endeavor is not to emphasize particularity per se, be it of the institutions of modernity itself or of postcolonial geographies cast as sites of radical resistance and alternativity.[48] Rather, along with paradoxes of *change/continuity* and *disruption/structure*, we aim to underscore dynamics of *global integration* and *differentiation*, as two tendencies unfolding as part of the same movement. For instance, Chinese innovations such as the social credit system are often discussed in the Western press as if they were isolated and unique to China, accompanied by Cold War rhetoric. Yet social credit systems share features with American consumer credit technologies as well as rating mechanisms on digital platforms such as Uber and eBay, and they find an uncanny counterpart in students' surveillance systems operationalized by what are supposedly the very beacons of liberalism, namely, US universities.[49] This example goes to show that any comparative approach should not just relinquish West-centric universalisms relegating others to the past, but also what seems just as pertinent nowadays: cyber-orientalism propelling others into a (dystopian) future at the expense of recognizing mutual implication in technological development. Common technologies and infrastructures are at work, though critical differences exist with regard to their applications and current state of integration across them.

Moreover, as an analytical lens, *integration/differentiation* offers distinct advantages to the endeavor of comparing experiences of innovation and technological development in different contexts. Within the anthropology of technology, the opposites of universalist diffusionism and particularist, culturalist approaches were negotiated by André Leroi-Gourhan, a student of Marcel Mauss, who explored technologies adapting and being adapted to the local milieu in the process of technological evolution. The encounter between new technologies

and the particularity of the milieu into which they were integrated can form an instance of invention, but it also conditions and limits the possibilities of technological development.[50] Leroi-Gourhan's point was not to underscore the specificity or "genius" of particular ethnic cultures but to understand processes of technological evolution manifesting itself through diffraction and differentiation. In this volume, we emphasize exactly such processes: the global integration of communication infrastructures and our shared implication in them, along with the heterogeneity of situated concretization, adaptations, and risky ramifications.

Following the dyad *integration/differentiation*, we develop a comparative approach that underscores the ways infrastructures of communication innovation both affiliate us *and* set us apart, and how they implicate us in similar technologies and techniques but also expose us to unwieldy and context-specific adaptations, effects, and ramifications. Our comparative approach builds on the insight that finding similarity opens the way to the discovery of further difference, whereas difference can only become apparent and meaningful against an interpretation of commonality or equivalence at some level, too. This is to say that similarity and difference exist in a symbiotic relation.[51] Sensitizing ourselves to this mutual enmeshment between similarity and difference forms a way of addressing movements of *integration/differentiation* in technological development and creating analytical and normative lenses that lock us to the pole of neither universality nor particularity.[52]

Three Themes

This book is structured around three themes. The first theme explores *formal innovation*, including institutional discourses of innovation, law, political economy, and geopolitics. This theme discusses the planning and regulation of innovation by states or other institutional actors such as the EU. Authors attend to contradictions or coalescences between state and market forces as well as to the disjunction between instrumentalization of planned innovation and unintended and disruptive effects. The second theme considers *everyday inventiveness*, namely, the shared capacity to create, solve, and collaborate, which can challenge capitalism but also is exploited by it. The third theme addresses *novelty as technodiversity*, which encompasses the search for alternative socio-technical, or even bio-socio-technical worlds.

Formal Innovation

Multipolar communication innovation signifies capitalist de-westernization and intra-imperialist struggle. Nonetheless, its agents may not simply copy capitalism or imperialism, but also change where they, or more generally globalization, are headed.

This holds for the futures of platform capitalism and platform imperialism, which seem less homogeneous than assumed in terms of relations between platforms, industry, and state.[53] Dealing with such questions of formal innovation, Lianrui Jia and David Nieborg consider Chinese platforms at the intersection of infrastructure, geopolitics, and finance. As Chinese platforms have become the infrastructures of life and labor in general, their ability to enhance datafication facilitates governance of the population, be it through fintech applications, social credit scoring, or AI-driven judicial processes. Such datafication processes advance financialization of society as much as authoritarian social governance. However, such "indigenous innovation," which is promoted and protected by the Chinese state, does not easily align with aspirations to operate in markets abroad as applications so far have not proven to be "as globally exportable as the platforms and apps coming out of Silicon Valley." Though highlighting the particularity of Chinese platforms as they are integrated with the governance of the population, this chapter forms a very necessary warning against taking for granted the national scale of Chinese communication infrastructure at the expense of underscoring global infrastructural and financial connections and entanglements. As Jia and Nieborg point out, Chinese digital platforms are "deeply plugged into global circuits and networks of financial elites through fundraising, investment, and corporate management." Mapping such networks undermines the narrative of a Cold War type of competition between two hegemons.

In the following chapter, Angela Daly discusses the legal regulation of digital data in the context of multipolar innovation and its geopolitics. In the chapter aptly titled "Neoliberal Business as Usual or Post-Surveillance Capitalism with European Characteristics?," Daly takes the European General Data Protection Regulation (GDPR) as a case study to explore the EU's role and impact as a regulatory power in data protection and privacy. The question is whether the GDPR truly manages to safeguard user data from surveillance capitalism and thereby indicates a turn away from the tendency toward deregulation that has marked neoliberalism. Alternatively, the regulation represents a compromise that sets some boundaries to

the operations of Big Tech, but that does not undermine surveillance capitalism in the process, possibly instead stimulating European industries to lead in a (somewhat more) privacy-aware innovation that complies with the GDPR. Scrutinizing the extraterritorial effects of the GDPR as well as the strategies of US and Chinese companies operating within the EU, Daly teases out the nuances and contradictions of the EU's attempt at acting as a regulatory power shaping markets and industries in the context of multipolar innovation.

In the next chapter, Serra Sezgin and Mutlu Binark discuss the tensions between "local" and "global" innovation in the case of Turkey. The Turkish state considers digital games both a potential technology of governance of the population as well as, when exported abroad, a tool for international diplomacy and nation branding. Hence "local" games, grounded in the state's "own" culture and history, are supposed not to merely offer entertainment but to be useful in sectors such as defense, health, and education, along with nation branding. However, by means of a discourse analysis of interviews with game developers in Ankara, Sezgin and Binark argue that these workers undermine the state's framing of indigenous innovation. Turkish game developers think of themselves as members of a global, creative community of game enthusiasts, who leverage a purely individual creative potential to compete in global game industries. Exploring the contradictions between the two sets of discourses, Sezgin and Binark note that the highly individualized notion of creativity that game developers cultivate dampens their resistance to the illiberal cultural milieu in Turkey. Allowing for fruitful comparison with the case of China, this chapter opens up questions about whether liberal freedoms are a precondition for the flourishing of innovation.

Everyday Inventiveness

Next to formal innovation, there is the inventiveness of everyday life, often associated with places where systemic breakdown and decay require people to have certain skills to engage in making their cities livable.[54] This inventiveness again appears in accounts of "pirate modernity," where people have access to new technologies and products thanks to informal production and distribution channels that weaken boundaries between users and producers.[55] Pirate modernities revolve around co-creation practices of imitation and invention. They render the locus, or origin, of innovation ambiguous and hence challenge myths of genius,

individuality, and autonomy that undergird the intellectual property regimes of formal innovation.[56] However, recent developments have blurred the boundaries between piracy and formal innovation. For instance, the "Silicon Valley of China," Shenzhen, was long cast as a pirate enclave, derided for lacking originality, before it became celebrated as a space of innovation, creativity, and design.[57] Shenzhen's emergence as a technology hub draws on practices of design and manufacturing infamously known as *shanzhai*, originally a derogatory term in Cantonese to describe cheap knockoffs.

Daniel H. Mutibwa and Bingqing Xia explore the current hype of Maker culture in China, which has emerged since the 2000s from the *shanzhai* culture in Shenzhen and the Pearl River Delta.[58] Engaging with current debates of global Maker culture, the authors discuss the extent to which the framings of *making* reflect "countercultural" values in the context of China's technological development. The analysis is built on a wide array of documentary evidence and an ethnographic study of four makerspaces and hardware entrepreneurial hubs in Shenzhen. It investigates questions such as: What does *making* in Shenzhen reveal about the identities and composition of its digital fabrication communities? In which ways do the aspirations and motivations of these communities reflect countercultural values? Where countercultural values are discernible, how are they reconciled with entrepreneurial motivations and institutional agendas to achieve change? The authors argue that despite the authorities' instrumental (mis)appropriation of countercultural values for its politico-economic ambitions, and the tensions and contradictions within this multifaceted development, *making* practices in Shenzhen carry an open-source ethos and transformative capacity offering makers autonomy for peer production and social intervention. *Making* in Shenzhen does correspond to the grassroots countercultural values of the globalizing Maker movement.

Jian Lin and Jeroen de Kloet explore how the inventiveness of everyday life intersects with the state-commerce relationship through a case study of Kuaishou, an algorithm-based video-sharing platform targeting second- and third-tier Chinese cities as well as the countryside. While existing studies have exposed how the platform economy has contributed to the deterioration of labor conditions, turning individuals into "subcontractors" and "prosumers" without stable wages or benefits, Lin and de Kloet pinpoint how this could overlook the active agency and creative practices initiated by individuals—in their study, the often forgotten, unnoticed, and unlikely "grassroots" (caogen 草根) content producers. These grassroots digital entrepreneurs find their opportunities in social media platforms like Kuaishou. Kuaishou's very existence is closely linked to national policies—"Mass

Entrepreneurship and Innovation" and "Internet+"—and it is firmly in line with the state's order for censorship and social stability. The complicated state-platform relationship distinguishes the Chinese platformization of cultural production from that in the West. Lin and de Kloet argue that institutional regulations and censorship have not stopped these "unlikely" grassroots creators from being creative; more intriguingly, their study demonstrates how these individuals appropriated the algorithmic digital system and negotiated with the state-platform governance to reach their creative and financial objectives.

Novelty as Technodiversity

If we understand technodiversity to imply a disruption of power relations, the question emerges: under what conditions could communication innovation call forth alternative communicative and organizational possibilities in support of social justice? Ruha Benjamin evaluates several initiatives that stage design for social good. She quotes a definition of "design justice" that describes it as "a field of theory and practice" concerned with procedural and distributive justice, namely, with advancing the participation of marginalized groups in design processes and with interrogating how the design of objects and systems distribute risks, harms, and benefits.[59] Such ideas, though attractive, are not new and go back to participatory design, which several authors addressing postcolonial/decolonial computing have problematized in the light of the inequalities that mark postcolonial settings.[60] Even when committed to design for social good and participatory practice, the danger remains that designing technologies and systems for "others" locks them into assumptions about culture, needs, and desired outcomes. Benjamin questions whether "design-speak" itself might not already imply hierarchies and exclusions, privileging professional designers. Meanwhile, design-speak appeals to a desire for novelty in a way that other "old-fashioned" methods of struggling for social justice often do not. Its promise for newness via design and quick fixes to social problems may simply distract from the need for more radical and comprehensive social imaginaries that challenge our ways of life at large. As Benjamin phrases the confusion, "If design is treated as inherently moving forward, that is, as the solution, have we even agreed upon the problem?"[61]

In her chapter, Miao Lu raises the question whether an alternative design process is possible and indeed experimented with by Chinese mobile-phone vendors catering to so-called "bottom of the pyramid" (BOP) markets that are

overlooked and deemed unprofitable by global tech giants. She bases her chapter on fieldwork in Ghana with a Chinese company headquartered in Shenzhen, which booked its original success in the domestic rural market and subsequently grew into the biggest manufacturer of cellphones for the African market. Lu examines how the mobile-phone vendor Transsion Holdings seeks to emulate "indigenous innovation." Transsion's *shanzhai*-like innovation practices reveal the persisting gaps between the Western-based normative design, which is often male-, urban-, and white-oriented, and the actual needs of users from peripheral countries. Such gaps could allow tech producers in the Global South to reimagine the use and design of technology and carve out alternative socio-technical worlds. However, while Transsion might have challenged the hegemonic Global North tech designs, its strong presence and growth in the BOP markets could at the same time turn it into the next dominant—albeit emerging—tech company in specific local contexts. The chapter therefore poses questions about the binary opposition between the Global North and Global South, revealing the fluidity and complexities at stake in the global development of communication innovation.

Along with decolonial epistemologies, ecological and more-than-human philosophies can help us think of novelty in the sense of alternative bio-socio-technical relations. Braidotti and Haraway have advanced an understanding of sustainability that involves becoming aware of actual and possible entanglements with human and nonhuman others, bringing about a creative transformation of the self through such sensibility.[62] Novelty, considered along such lines of sustainability, mutuality, and care, could prompt us to explore ways of communicating and organizing that foreground shared existence and the potential to transform.

But such ethical visions, however inspiring, still require embedding in concrete political context. Monika Halkort's chapter explores technologies that were introduced in the name of sustainability and care, yet that end up effectuating surveillance and neglect. She discusses how bioscientific sensing technologies that monitor marine ecologies in the Mediterranean Sea are repurposed as military technologies to surveil migrants risking their lives to make the crossover to Europe. In the process, mediated practices of sensing engender hierarchies, divisions, inclusions, and exclusions. Whereas marine life is cared for, migrant deaths are naturalized and overlooked, even though the vulnerability of these various forms of life in some ways derives from their interdependency and mutual exposure to histories of colonialism, extractivism, and climate change. Halkort's case study goes to show that technological innovations often consist of adaptations. Moreover,

it expands the notion of "multipolar" from a non-anthropocentric perspective by highlighting the multiplicity of nonhuman actors implicated in change and transformation. Exploring the violence concomitant with technical incursions undertaken in the name of human ingenuity and progress, this chapter serves as a critical mirror for ongoing and future projects of globalization and colonization that reproduce such myths for the sake of their own legitimation.

In Conclusion

In the concluding chapter of this book, Jack Linchuan Qiu provocatively posits that media and communication scholarship has "long chased cutting-edge innovations," the latest popular brands as well as "trending concepts, methods, memes, and hashtags."[63] But what actually defines novelty and creativity? Qiu questions whether scholarship often remains in the grasp of a fetish with all things "new" because we still lack sufficient critical distance from the Wall Street–dictated futures envisioned in corporate boardrooms, and from rhetoric staked on lingering US-centrism and Chinese exceptionalism. Qiu encourages us to see futures—in the plural—emerging from unlikely places in the Global South and to practice a genuine multipolarism premised on solidarity.

This book hopes to make a humble contribution in this regard by offering a critical framework regarding multipolar communication innovation in the introduction, followed by a set of seven empirically grounded and analytically rigorous studies that cover various geographies, plus Qiu's concluding reflection. As this introduction has argued, whereas innovation induces moments of openness and opportunity to be exploited by a class of entrepreneurs, others merely face uncertainty, risk, and destruction. Hence, our critical approach to innovation reveals paradoxes of *change/continuity* and *disruption/structure* and distinguishes between "new," "old," and "uncertain" futures. Moreover, the narratives of diffusionism and multipolar innovation alike tend to overlook the plurality of experiences, socio-technical realities, and possibilities pertaining to communication innovation. In contrast, the comparative lens of *global integration/differentiation* highlights how technological integration is concomitant with differentiation: infrastructures of communication innovation both affiliate us *and* set us apart, as similar technologies and techniques often result in rather context-specific adaptations, effects, and ramifications. To render visible practices that are either overlooked, marginalized, or considered illicit

by mainstream innovation literature, the term "innovation" requires opening up. Per our framework, we can distinguish between *formal innovation*, which is supported by dominant political, economic, and legal apparatuses; *everyday inventiveness*, which resides in the shared capacity to collaborate and co-create; and *novelty as technodiversity*, which imagines and generates alternative socio-technical, or even bio-socio-technical, worlds.

Multipolar innovation seems to coincide with the decoupling of innovation from beliefs in a universal trajectory of change and universal values. The antagonisms and divisions that proliferate at the side of digital infrastructure reflect contrasting public perceptions, values, and regulations. Amidst intensifying division and antagonism, it becomes harder to imagine how to integrate innovation and social justice. Many have presumed a connection between the cultivation of freedoms in a society and that society's ability to innovate. But what is left of the thesis that innovation requires liberal freedoms? China's authoritarianism has apparently not stood in the way of the success of its innovation industries, measured by dominant indicators such as the amount of intellectual property applications.[64] Despite Big Tech aligning itself with the government, this does not mean that industries find themselves constrained in their ability to innovate. Simultaneously, tech industries in the supposedly "free" world are increasingly showing their dark side. The most renowned Silicon Valley brands have gone as far as cultivating secrecy at the expense of integrity of the US democracy, providing misleading testimonies and refusing to testify in person in the British parliament, and signing controversial contracts pertaining to military and medical technology, without knowledge or approval of those employees who are supposed to dedicate their creativity and skills to the endeavors. Coincidentally, in times of multipolar innovation, struggle and resistance take up various forms. Sabotage, as in the aforementioned case of smart-city infrastructure in Hong Kong, is but one form of struggle. Tech workers self-organizing to protest their companies, as happened in the United States, is another. Yet given the global impact of innovation and the connectedness of digital communication infrastructure, what is sorely lacking are more cosmopolitan as well as inclusive institutions and organizations that enable effective regulation of innovation.

A different but related issue is participation in innovation. Currently, the social energy and potential of everyday inventiveness are either criminalized by the intellectual property regimes that underpin formal innovation, or they are exploited. For instance, co-creation of culturally specific content drives the big

American platforms such as Facebook and YouTube and has enabled them to build a global reach—a strategy dubbed platform imperialism.[65] From TikTok to Kuaishou, Chinese platforms are attempting to follow suit nationally and internationally by integrating different subcultures and extracting value from mass innovation. Meanwhile, platforms for all kinds of gig work such as Amazon Turk or Zhaopin, and Uber or Didi exploit everyday inventiveness, local knowledges, and savoir faire. Both the Western discourse on "open" and "free" sharing and the Chinese discourse on "mass innovation" incite co-creation and inventiveness, yet may betray the more radical roots of such ideas, namely, socialist as well as Western-countercultural visions of creativity and participation.[66] Whereas grassroots creativity is alive today, at times overcoming the constraints imposed by mediating platforms, these past ideological visions in fact carried aspirations, such as collectively building another world, that are harder to come by today.[67] Integrating innovation and social justice does not just involve better regulation but also resisting the exploitation and constraints imposed on everyday inventiveness, while recovering such social energy and capacity for participation in world-building and imagining futures.

Across the "old" imperialisms of the West and the emergent technonationalisms and intra-imperialist struggles concomitant with multipolar innovation, what remains rather constant is the belief in progress and "path-breaking" innovation. The ideology of newness obscures the very repetition of marginalization of other (possible) ways of life, the exploitation of everyday inventiveness, as well as extractivism and destruction of ecological commons. But, as decolonial and more-than-human perspectives contend, novelty instead can be sought in sustaining, nurturing, and, in doing so, *reinventing* relations with who and what exist around us. Integrating innovation and social justice hence may be better served by the pursuance of reinventing relations than by the infatuation with newness or "design-speak" that promises quick fixes. This requires not just creativity, but also critique of existing conditions and geopolitical, social, and ecological relations that persist despite supposedly "pathbreaking," "disruptive" innovation, or even because of the latter. As editors, we hope that this volume can bring together, and give voice to, such badly needed critique from various geographical contexts and across geopolitical divides.

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