



# Moralizing Disruption: China's Ride-Hailing Revolution

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# Moralizing Disruption: China's Ride-Hailing Revolution

A dissertation presented

by

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in partial fulfillment of the requirements

for the degree of

Doctor of Philosophy

in the subject of

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## **Moralizing Disruption: China's Ride-Hailing Revolution**

### **Abstract**

This dissertation offers an ethnographic exploration of China's ride-hailing revolution, and a narrative of the emergence, contestation, and moralization of ride-hailing in five different local communities. Through the stories of corporate managers, on-demand laborers, taxi drivers, and speculative middlemen, *Moralizing Disruption* reveals the visible and invisible host of actors that have shaped the particular evolution of ride-hailing technologies as well as the more general processes of disruption in China's transportation industry. It shows how these actors, in the context of their respective local communities, form shared moral values towards disruptive technologies and how, against the backdrop of a rapidly changing society, they make sense of and negotiate their changing worlds.

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Prologue

**Live, Drive, Prosper**

Of all the defining moments of my childhood, few were more important than my family's purchase of our first car. The year was 2001. I had just finished elementary school and had tested into a good middle school in a nearby city. To support my education, my parents determined that we would move there and live in small two-bedroom apartment close to campus. But both of my parents had jobs back in our hometown: my mom worked in the local Taxation Department, and my dad was the principal of an elementary school. Our main mode of transportation—a gasoline-powered moped—was not going to cut it for the daily commute. We needed a car.

To an American audience it might seem strange for a middle-class family living in a small town to not own their own vehicle by the dawn of the 21<sup>st</sup> century. But back in 2001, cars were still a thing of luxury in China. There were only 18 million cars in a country with nearly 1.3 billion people, and most of these were concentrated in big cities like Beijing and Shanghai.<sup>1</sup> In my mind, cars were for the rich, which my family emphatically was not. A car cost at least ¥100,000 (~\$12,000), and my parents only earned about ¥2,000 per month in wages. But after much consideration, they decided to use our savings to buy a domestic “bread van,” *mianbaoche* (面包车), thus nicknamed because the bulky cars resembled loafs of bread on wheels.

One weekend my whole extended family— parents, grandparents, aunt, and uncle— traveled together to the Chang'An (长安) dealership, one of China's “Big Four” state-owned car manufacturers, to view a van in person.<sup>2</sup> The model we looked at was called the “Star of Chang'An.” It was a sleek silver-grey, with a triangular profile. Its shape imitated the chicness of a sedan while that still being able to comfortably seat seven. Seeing the car, I realized I would never again have to cling on to my mother, as she held onto my father, as he transported us around on the moped. I was in love with this machine.

My parents often reminisce about our family's pre-car past. Following the Maoist tradition of remembering past bitterness and thinking of the sweetness of the present (*Yiku Sitian*; 忆苦思甜),

they recount how brutal it was to ride the moped in the driving rain, and how after buying the van, we stayed warm and dry in all season. My parents sometimes refer to that afternoon at the car dealership as the day we finally “put metal roof over our heads.”

\*\*\*\*\*

The automobile opened up a new world of possibilities for my family. During national holidays, we started going on road trips, filling the van to the brim with relatives and home-made snacks. Within a few years’ time, we had visited nearly all the major parks and tourist attractions in Zhejiang Province.

But the arrival of the car also brought a peculiar change in my parents’ habits. Every day after dinner, the two of them would get in the van and disappear, sometimes for hours on end. They would always say that they had just driven to a nearby park for a walk. But why did the walks last for hours, even in bad weather? It was only when I overheard a conversation between my father and his best friend during a banquet that I finally learned the truth. The two of them had been moonlighting as “black car” drivers!

According to the stories I extracted from my parents years’ later, after dinner, the two of them would hop in the van and cruise the streets of our town, driving to all of the big restaurants and karaoke joints, looking for prospective customers. Whenever they spotted someone trying to hail a cab, they would pull up next to them, and my mom, riding shotgun, would lean out the window to ask, “Where are you heading? Do you need a ride?” After negotiating an appropriate fare, usually 10-15 yuan for a destination in town and 20-30 yuan to go to a satellite village, the customers would hop in the van, and my father would drive them to the desired location.

As it turned out, my parents’ “black car” service was even more popular than that of licensed taxicabs. Most customers were groups of people going out for dinner or for a night of drinking and singing. Because our van could hold up to six passengers at a time (if everyone crowded together),

smaller groups could travel as one instead of having to hail two separate cabs, which potentially saved both time and money. For this main reason, on an average night, my parents could generate between 80-100 yuan in fares, more than their combined daily wages. And during spells of bad weather, their nightly income could climb higher still. As my father once put it, “it was much easier to identify customers and negotiate good fares when they were shivering by the roadside!”

But by far the most lucrative time was the days leading up to the Spring Festival. Not only was there increased traffic from people traveling to and from the train station, but there were also unique seasonal opportunities. One year a local businessman paid my dad 200 yuan to drive him around for a day while he did his end-of-year debt collection. Two decades ago, it was still a common practice in my hometown that businesses would settle at least some of their past year’s debt just before Chinese New Year’s. Out of respect for the holidays and perhaps out of fear of incurring bad fortune, even those who were reluctant to pay would spare a few pennies. Just like that, by driving the businessman around for an afternoon, my dad earned five days’ worth of wages.

What is most striking is that my parents, who are the very image of good, upstanding Chinese citizens, never thought of what they did as “rule-breaking.” True, they didn’t go around advertising the fact to their colleagues, but this was mostly because they didn’t want to be accused of working an extra job. In their minds, operating a black taxi was providing a vital service to the underserved public. In our hometown there was a serious lack of taxis, and until recently there was almost no public transportation. People turned to black cabs because oftentimes, the only real alternative was walking. And the local government officials understood this. Black taxi drivers were rarely, if ever, bothered by the police.

Looking back, I am deeply impressed by my parents’ entrepreneurial spirit and their willingness to seize opportunities to improve material conditions for our family. In the following years, my parents saved up enough funds to send me to Shanghai for high school and college and then to America for

graduate school. Later they bought a couple of investment properties and participated in China's real estate boom. In hindsight, purchasing the van was my family's first step along a path to prosperity.

## **Engineering Prosperity**

There is a Chinese proverb that pretty much sums up how modern Chinese people thought about infrastructure and development. It goes, "if you want to get rich, first build a road (*Xiangyao fu, xianxiu lu*; 想要富, 先修路)." Unfortunately, history teaches us that the relationship between roads and wealth is not so direct.

National Highway 329 (G329) runs directly through my hometown. First built in 1935, it was intended to serve as an artery that would pump lifeblood to and from the major eastern cities of Hangzhou, Shaoxing, and Zhoushan. At the time, China already had about fifty thousand miles of good earthen motor roads, and a rapidly expanding automotive sector with increasing imports from the US and Japan, so expectations for future traffic and trade were high.<sup>3</sup> But soon after G329 was completed, the Japanese Imperial Army invaded Mainland China, and the road quickly fell into a state of disrepair. After the founding of PRC in 1949, G329 was repaved with gravel, and put back into use. But since the CCP imposed new barriers to movement and trade and cut China off from global automotive markets, the fledgling highway system never reached its imagined potential. For decades to come, China had plenty of roads but few cars to use them.

Even by the 1960s and 1970s, automotive traffic was such a rarity, that my father and his childhood friends would use G329 as their playground. Every couple of days, they went out to the highway where they enjoyed picking up well-shaped rocks and using them as ammo for their slingshots. This was perfectly safe, as there were almost no cars or people. The only vehicles on the road were large cargo trucks transporting raw materials to factories and the occasional passenger bus that

transported travelers between towns. And the only other people were teams of workers that traveled along the road, sweeping the mounds of loose gravel back towards the center. It was only in the early 1980s that the G329 was finally given an asphalt surface and began to experience more traffic. But even then, private vehicles remained exceptionally rare. When my parents got married in 1986, my dad had to go and fetch my mother on his bicycle, and my mother's dowry had to be transported to her in-laws' house by rowboat.

It was in the mid-1980s that China's automotive sector finally began to develop. After a series of failed joint foreign-domestic ventures, the most infamous of which was the spectacularly dysfunctional Beijing Jeep, Chinese automotive manufacturers finally succeeded in producing the first generation of Chinese consumer automobiles.<sup>4</sup> In 1984 the Chang'An Automobile Company secured a license from Suzuki to import critical technologies and launch production of the Chang'An Star—the very same model of car my parents eventually purchased.<sup>5</sup> The Star was China's first domestically manufactured minivan, and it became incredibly popular among a growing class of well-to-do Chinese who could not quite afford more expensive luxury sedans.

It would take yet another decade still before there were privately owned cars in my hometown. The first I ever got to ride in was a *Hongqi* sedan that had been purchased by a distant relative who ran a local construction company. *Hongqi*, literally “Red Flag,” was the first domestic luxury car produced in China. During the Maoist era, it was the exclusive automobile of dignitaries and party elites; in 1972, it was a *Hongqi* that drove Chairman Mao and President Nixon around Beijing. I still remember running my hand along the hood of that regal black sedan (its body was modeled after Lincoln Town Car). From the very tip of the hood there jutted an ornamental sliver of red, in the shape of a waving flag. How marvelous!

In 2000s, my hometown became more and more populated by automobiles. If the American imaginary of automobile is often related to freedom: open highways, roaring engines, free spirit to be

wherever one wants. In China, cars signify prosperity and upward-mobility. A hunky Bentley to announce the king has arrived, white BMW to show off ‘I made it,’ a red Audi to be classy upper middle class, and a sleek Honda to be comfortably *Xiaokang* (小康).

Today, State Highway 329 is a modern concrete highway that stretches 1,200 kilometers from the edge of East China Sea to the heart of middle kingdom, Henan province. And numerous newer and wider roads cut cross the villages, fields, rivers of my hometown like a spider-web.

### **The Arrival of Car God**

With the popularization of automobiles there came also changes to the local culture, such as the arrival of the Car God, *chesben* (车神).

The first time I witnessed the worshipping of the Car God was at my own house. Nainai, my grandmother on father’s side, is a devout Buddhist and our family’s ritualist-in-chief. Twice a year, she comes to our house, riding a tricycle full of meat, vegetables, alcohol, dessert, and yellow paper money. Usually she does a two-part ceremony, one part for worshipping the Buddha and another for remembering the ancestors of Lu family. But one day before the Chinese New Year of 2005, I found my grandmother setting up her ritual objects in the middle of our yard, right in front of my dad’s new Mazda sedan.

When she saw me, Nainai beckoned me over to help her prepare. I helped her set up the objects, in accordance with the general principles of Buddhist religious practice in my hometown. In front of the car (see Figure 0.0.1), we laid out six vegetable dishes. In front of the dishes, Nainai instructed me to place a bouquet of incents, two candles, yellow paper money, the “car god sutra,” and a bowl of water.



**Figure 0.0.1.** An explanatory diagram of the car god worshipping ritual.<sup>6</sup>

Normally, during rituals, I was charged with pouring yellow wine in a row of shot glasses for Buddha and our ancestors. But there were no shot glasses set out in front of the car.

“No yellow wine this time?” I asked Nainai.

“Of course not, silly. The Car God can’t drink! It is against the law.”

I couldn’t help but laugh. But in my heart, I admired the ingenuity of Nainai, or whoever so thoughtfully adapted the ritual to ensure that the Car God complied with our local transportation regulations.

After the candles and incents were lit, Nainai picked up the burning incents and held them in front of her, bowing and murmuring, “please Car God bless us with safety, everywhere we go, safety with us always, we pray to you.....” I took over the incents and prayed as well. After all the verbal

messages were conveyed, Nainai started burning paper money and the sutra— a material message and token of gratitude for Car God. After all the colorful papers were reduced to ashes, Nainai then picked up the bowl of water, which she claimed was endowed with magic power, and splashed a bit of water on each car tire. The water was supposed to make the car level and stable (*pingwen*, 平稳).

According to Nainai, the worshipping of car god started in my hometown in the 1980s. People who drove big cargo trucks would make ritual offerings to the car god and pray for safety. As more and more people came to own cars, this practice became widespread, and the economic infrastructure of ritual worship also became more established. Today, one can purchase a pre-drafted “Car God Sutra” (*chesbenjing*, 车神经) from most local Taoist monks (it is one of the standard sutras carried in their shops). Each set now costs around 100 yuan. As Nainai complained, these things keep getting more and more pricy.

In order to save money, since last year, Nainai began reciting and producing her own Car God Sutras. Every day for a couple of hours, she recites a variety of sutras and works on making the ritual objects that our family will use throughout the year. However, because she is completely illiterate, she had to first acquire the text of the sutra from a Taoist monk, and then ask people to teach her the sounds. The sutra conveys wishes of safety and prosperity, and asks Chinese deities to protect us as we use these modern machines. Lines from the sutra read, “...I pray to car god for prosperity in all four seasons...the four heavenly guardians stand in the four directions...all disasters and calamities disappear into nothing...”

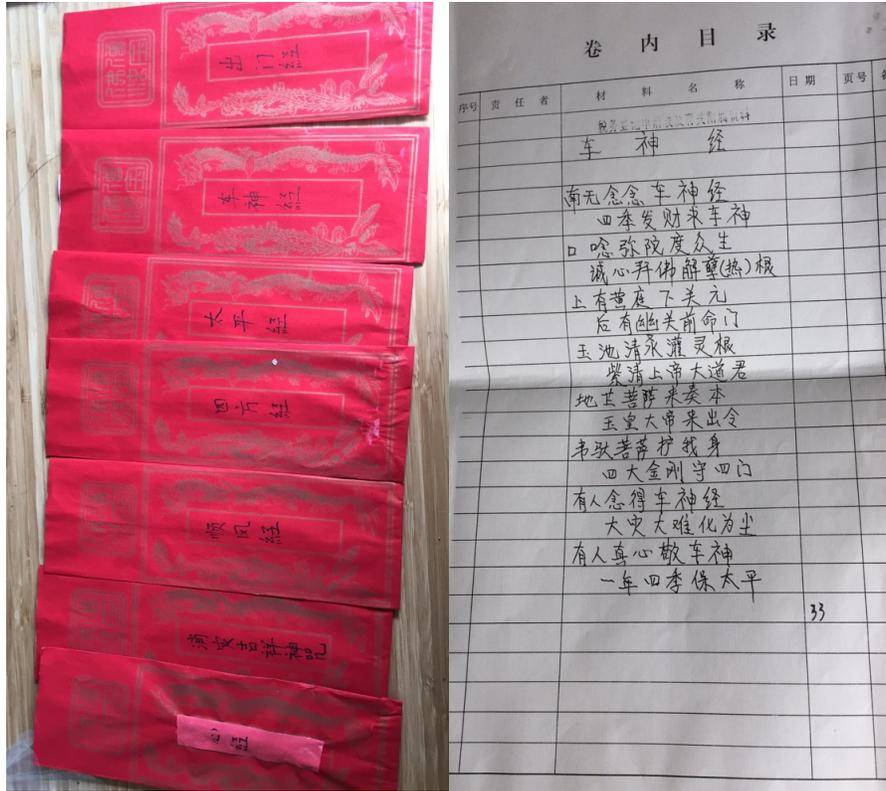


Figure 0.0.2. Left: the exterior of Car God sutra (second one from the top); right: the text of Car God sutra.

“When you get a car in America,” said Nainai, “send me your car plate number and I will take it to the temple.”

Apparently, for those who don’t have the time or knowledge to conduct a complete ceremony at home, they can bring their car information (the plate number, the model and make, the names of drivers) to their local temples where monks will pray on their behalf for a fee.

I chuckled again.

Sensing I doubted the efficacy of this practice, Nainai added, “it works for American cars as well! In the Car God Sutra, it says ‘for every road across all the world!’”

## Driving Together

Between the summers of 2017 and 2018, I traveled back to China to continue my dissertation fieldwork. It was the first time since I left the country for my graduate studies, that I had the opportunity to celebrate the Spring Festival at home. I decided to stay for an entire month, to spend some much-needed time with family, and to try my hand at being a Didi driver.

For a long time, I had wanted to know what it is like to be on the other side of the interface. But it wasn't until I left the metropolises of Beijing and Shanghai (where it is nearly impossible to get a car or a license plate) and returned to my hometown, that I finally got the chance.

First, I tried to register a Didi account with my dad's thirteen-year-old Mazda. The car was still in good nick, but the platform immediately rejected the application. The age of the car was over the limit (usually eight-years old). I was glad to see that the company was being strict about the condition of cars. Then I tried to register my mom's new Audi. It was a success. My driver's license also went through the "background check" without a hitch. Within a few hours, I was an official Didi driver.

But I soon encountered another hurdle: strong parental opposition. My parents thought it was too dangerous for me to be a Didi driver. I didn't have a lot of driving experience, and the idea of a young woman chauffeuring strangers around town made them nervous. But after several days of negotiation, we finally came to an agreement: my dad would ride shotgun.

It turned out to be a great arrangement. As a new driver, I spent most of my time hectically operating the app. Although the process sounds straight forward— turn on the app, wait, get a beep for a new trip, locate the customer, pick up the customer, hit "start" when the trip commences, and then "end" once you reach the destination— it still takes a while to develop the necessary motor memory while driving. I think I forgot to hit "start" at least twice, which resulted in significantly reduced fares for my lucky customers. While I was driving, my dad would draw upon his repository of local knowledge to keep the customers entertained.

“I know your village just finished a new road! It’s very nice. Isn’t it?”

“How old is your kid? Which school is he going to now? Ah, I know the principal there.”

My dad is a natural anthropologist.

Although my experience with driving for Didi was rather brief, I confirmed a feeling that I had throughout my research. That is, for customers, the taxicab is a transitory place or even a “non-place” to which no meaning is attached.<sup>7</sup> But for drivers, the inside of the car is a deeply personal space with histories and memories. A tiny universe of small socialities.

In our little world, we welcomed people from all walks of life. We had a young mother, who hailed our car to take her toddlers to shop for New Year’s supplies; the children were bursting with excitement the whole trip. We also picked up a boy and a girl from a local high school, who hailed a Didi to go to a book store after school. From the nervous way they looked at us and at each other, they seemed to be on a date. Some of our other customers wondered who we were and why we were driving for Didi with a brand-new Audi. These questions were answered with my father’s lengthy and incoherent explanation about my strange research. In the span of a few weeks, I came to know more about the people in my hometown than I had in the previous two decades.

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Over the last six years, I have taken over two hundred Didi, Uber, black car, and taxi rides in China. And I have hailed rides all around the world, from the snowy streets of Helsinki, to wide avenues of Mexico City, to the cobbled roads of Cartagena’s old town. I have grown so used to my role as a ride-hailing researcher, that every time I climb into a car, I automatically sit shotgun and begin interrogating the driver.

Going on these trips provided me with a broader sense of what the ride-hailing revolution is about. It made me realize that China's story of driving towards prosperous is being reproduced in many contexts around the world.

A retired pro football player in Helsinki told me that he began driving for Uber as means of last resort, after sustaining a debilitating injury. But soon he found that he really enjoys it. Traveling with strangers and hearing their stories made him feel less trapped in his body.

A middle-aged driver in Boston is saving the money he earns by driving for Uber to go sailing around the world.

A Somalian refugee in D.C. drives for Uber to send his daughter to a good school. He told me that he hopes to eventually get a M.P.P. in public policy, so he can join the elites on the hill.

These interpersonal experiences reminded me of the basic fact that in addition to the economic and technological forces driving the adoption of ride-hailing, there are also deeply human reasons why it became so popular around the world. For so many of those I have spoken with, ride-hailing brings the opportunity to live, drive, and prosper.

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<sup>1</sup> Huang 2011.

<sup>2</sup> Chang<sup>2</sup>An Automobile Company has a history that traces back to 1862, when Li Hongzhang, an eminent politician and industrialist in the Qing government, set up a military supply factory in Shanghai. During Sino-Japanese war, the factory was moved from Shanghai to Chongqing, a city in southwest China. In 1959, the company began engineering China's first production vehicle, the Changjiang, for the government.

<sup>3</sup> Hessler 2010; "Four-Fifths of Chinese Automotive Imports Come from U.S.A." *The China Weekly Review*, Nov 29, 1930.

<sup>4</sup> Mann 2018.

<sup>5</sup> Gallagher 2006.

<sup>6</sup> All figures included in the dissertation, unless otherwise specified, are photographs taken by the author or images collected during online and offline fieldwork.

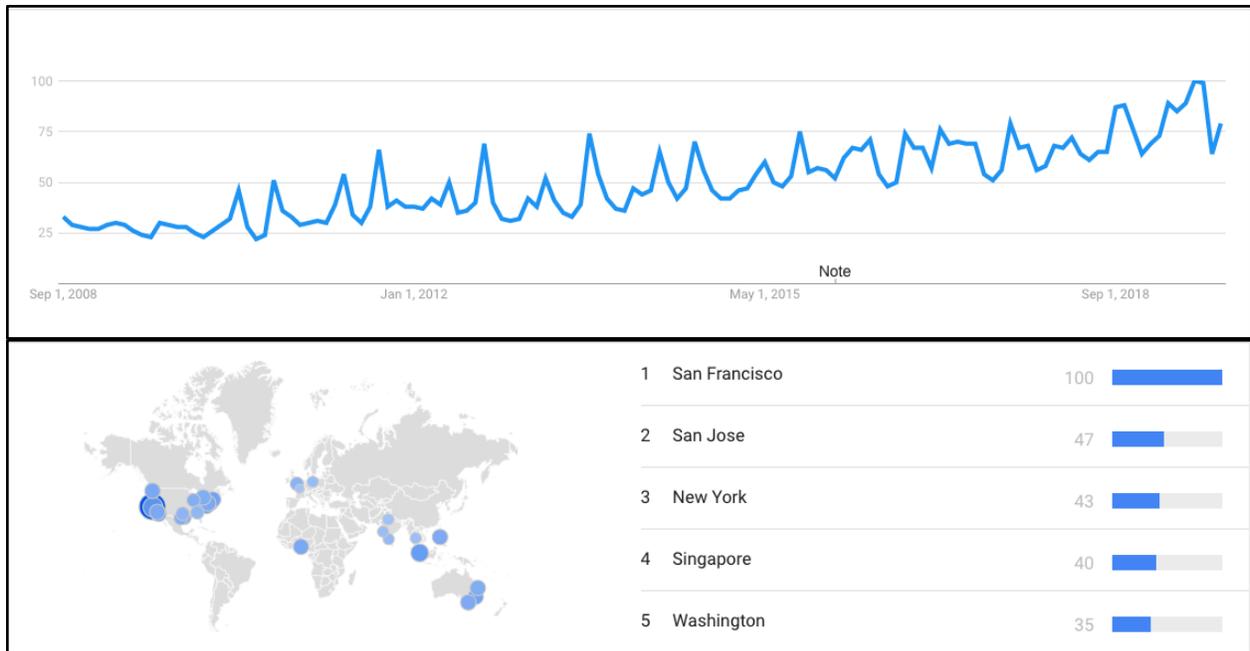
<sup>7</sup> Augé 1992.

Introduction

**DISRUPT**

Since the turn of the century, a new generation of tech companies, enabled by recent advancements in computational technologies, created digital platforms that directly linked producers and service-providers with consumers and capital. These companies aimed to fundamentally reconfigure social production through the building of new socio-technical systems. On platforms, ordinary citizens would be transformed into on-demand laborers and their private property converted into means of production. And through these transformations, this technologically empowered labor-force would disrupt overly-regulated industries, displace incumbent rent-seekers, and strike at the very foundations of the dominant mode of production. Against the backdrop of the Global Financial Crises, the technological disruption brought on by digital platforms was thus heralded as a vision of a brighter economic future built on entrepreneurialism and the “sharing economy.”

A quick Google search will tell you that disruption is a hot topic. The frequency of the word in internet searches has risen four-fold over the last decade. If we investigate the places that disruption is most searched, we find (surprise, surprise) that it is exactly in global tech hubs, such as Silicon Valley, New York, and Singapore. The idea of disruption has captured the public imagination and has become deeply embedded in the language of innovation. But why exactly are people so fascinated by disruption? And how did a word, which at its core means to “rip apart, to throw into disorder, to upset the normal course of things,” somehow take on a positive, or even heroic, connotation?



**Figure 0.1.** Google Trend of “DISRUPT.”<sup>1</sup>

Our contemporary understanding of disruption can be traced back at least to the mid-1990s, when two Harvard Business School professors published a seminal article on “disruptive innovation.” The term was used to describe the phenomenon of large firms, making all the right business decisions, being outcompeted by small companies with few resources. How could this happen? They argued that it is because the small companies effectively deployed “new and raw technologies,” thereby transforming the industry or creating an entirely new one.<sup>2</sup>

While Christensen and Bower have been praised for their insights, the idea that disruptive forces drive social development is nothing new. This notion can be traced directly back, at least half a century, to the older (and more encompassing) concept of “creative destruction.” Joseph Schumpeter, an Austrian economist and Harvard professor, coined the term “creative destruction” to refer to what he viewed as “the most essential fact of capitalism.” Schumpeter argued that the entrepreneurial innovation that occurs within competitive market systems sets into motion a process that “incessantly

revolutionizes the economic structure from within, incessantly destroying the old one, incessantly creating a new one.” This ceaseless churn, he said, lay at the very heart of all of the benefits and problems of capitalist societies.<sup>3</sup>

While contemporary scholars are more likely to cite Christensen than Schumpeter, I find that the former’s definition of technological disruption does not fully capture what the process really entails. What is being disrupted is not just markets and industries, but societies, social relations, cultural values, and the lives of ordinary people. More fatally though, Christensen’s framework compartmentalizes theory and society. In their recent *Harvard Business Review* article “What is Disruptive Innovation,” Christensen and his co-authors argue that Uber and other ride-hailing platforms do not fit into their framework of “disruptive technologies,” even though they represent the most salient examples of disruption in the popular imagination.<sup>4</sup> Such an argument ignores the fact that theories, once produced, take on a life of their own outside of academic enclaves, and are actively reshaped and invested with new meanings by markets and the public at large.

As an anthropologist, I view technological disruption as multivalent process that is co-produced by disparate groups of actors. Some, such as engineers, corporate managers, and venture capitalists, are well-recognized for their role in shaping technological development. Yet there are also others, such as hackers, speculative middlemen, and online communities of drivers, who might seem upon first glance more distal to the disruptive process, but are equally determinant of how the technologies evolve.

In my project, I selected five distinct communities of actors Uber managers, on-demand drivers, and speculative middlemen, Didi employees, and taxi drivers. Through the ethnographic exploration of communities, my work explores the visible and invisible host of actors that have shaped the evolution of ride-hailing. It asks, first, how are disruptive innovations actually being produced: Is disruption really driven by technological innovation, or is it equally the result of a reshuffling of

political and economic power? Second, how are disruptive innovation interpreted by actors on the ground? Is disruption moral or immoral? Or does it perhaps occupy a grey zone? Finally, does disruptive innovation truly bring us social good?

In this dissertation, I will explore these interrelated sets of questions by retracing the emergence, contestation, and moralization of China's ride-hailing platforms. I will show how participants of this technological disruption, in the context of their respective local communities, form shared moral understandings of ride-hailing. And I will demonstrate how, against the backdrop of China—a society that has seemingly embraced disruption as its most fundamental developmental logic—these individuals make sense of and negotiate their own position within their changing local worlds.

## **Silicon Valley**

The history of ride-hailing began in Silicon Valley in 2009, the year that Uber launched its black car service.<sup>5</sup> Founded by Travis Kalanick and Garret Camp, two entrepreneurs who were deeply dissatisfied with the existing taxi industry, Uber combined new smartphone technologies, with digital infrastructure, and traditional chauffeur service. Unlike taxis which had to be ordered by phone or physically hailed from the curb, Uber allowed users to hail rides from anywhere, at any hour, with a few simple clicks on their smartphones. The service soon became a local hit.

While Uber Black did attract a fair bit of attention in the Valley, it was not until the launch of “UberX” in 2011 that the company began making waves. “UberX” was an instantly controversial service that enabled ordinary people who owned their own cars to generate an income by driving for the platform. It blatantly ignored the existing regulations in most cities that special permissions are needed for commercial vehicles; and it transformed taxi driving, a professional and full-time job, into

part-time gigs that can be conducted by anyone who are able to drive. Though still small and new, eventually this service would fundamentally reconfigured labor relations, legal boundaries, and social imaginations of urban transportation.

In the context of the US, Uber's business model was based on tapping into underutilized capital and labor. U.S. tops the world ranking of vehicle per person with 899 cars/1,000 individuals, staying true to the saying "nation on wheels." And the vehicle utilization rate (i.e. the percent of time that vehicles remained in usage) was merely 5%.<sup>6</sup>

First, Uber disrupted the existing taxi industry by undermining their basis of profits. In many cities across the world, taxis were regarded as part of public infrastructure (as well as a lucrative source of tax revenues) and were thus tightly regulated by municipal governments. In places like New York City, the total number of commercial vehicles was strictly capped, and licenses were coordinated through a medallion system. Because the demand for taxis often outstripped the controlled supply of vehicles, the market price of medallions soared. At its peak in 2013, a single medallion can go over \$1,000,000.<sup>7</sup> This system translated into a hierarchical and exploitative system for drivers. Young cabbies usually lease medallions and taxi cars from fleet garages, which cost from \$100 to \$130 per half-day shift. After expenses, on average a taxi driver who does not own a taxi can make \$150-250 per shift.<sup>8</sup>

By allowing private, unlicensed individuals to enter the transportation service market, Uber significantly undermined the value of taxi medallions. Between 2014-2015, medallion price dropped a whopping 45%; and it has kept dropping since then. Today, one can purchase a medallion for less than \$200,000.<sup>9</sup>

Uber also disrupted the structure of taxi fares. For as long as taxis have existed, governments have required them to charge standardized fares both as a consumer protection and as a way of regulating the market. Even the ancestor of taxi— horse-drawn carriages on the streets of London

under the reign of Charles I in 1600s— are governed by rules of fixed fares.<sup>10</sup> However, Uber completely unsettled this norm by introducing dynamic surge pricing controlled by computational algorithms. Every time a user opened its Uber app and enter a destination, the algorithms will generate a fare that takes into consideration not only the current demand and supply in the area, but prediction of future demand and supply based on historical data. Recent reports have shown that Uber might also have been implementing personalized pricing, i.e. generating personalized price for each consumer based on the wealth of her neighborhood, her consumption habits of the person, and so on. And Uber has admitted that it has implement certain forms of it such as route-based pricing.<sup>11</sup>

Uber also actively deskills and devalues labor. Taxi-driving was once a highly skilled profession. In London, black cab drivers still need pass the world's most rigorous exam on urban space, befittingly named *The Knowledge*. Get in a cab in Hong Kong or Singapore, and you will find drivers who are not only masters of urban space, but also polyglots, conversant in all of the major languages found in the city. Yet the premise of platforms like Uber is that with certain technologies (i.e. an accurate GPS, a simplified navigation system, a translation app, and a frictionless interface) anyone with car can become a driver. The idea that driving is not only low-skill, but almost no-skill, is partly what enables Uber to define its workers as contractors, or in their own parlance “driver-partners,” rather than employees, thus obviating the need to pay them minimum wage, provide them with welfare and social protections, or allow them to form labor unions.<sup>12</sup>

Uber's revolutionary business model incited hysterics in capital markets. In its first two rounds of funding, the company courted capital from major institutional venture capitalists including Google and Goldman Sachs.<sup>13</sup> Less than a year after its founding (and without having earned a cent in profits), the Uber's valuation reached \$3.7 billion. By 2015, the company's valuation had soared up to a mammoth \$62.5 billion, more than five times the total annual revenue of the US taxi and limousine industry.<sup>14</sup> From 2015 until its belated IPO in May 2019, Uber was generally ranked as the world's

most valuable start-up. Using this near limitless supply of venture capital, Uber rapidly expanded its service across the world. By late 2015, Uber had already forged a transnational business empire, stretching 374 cities in 68 countries.<sup>15</sup>

As Uber's operations spread around the world, and a succession of local enterprises emerged to compete against the multi-national (Ola in India, Grab and Gojek in Southeast Asia, Taxi99 in South America), ride-hailing platforms popularized the so-called "sharing economy." The concept of sharing economy had been floating around since early 2000s, but for much of this time, its applications were limited to community-based organizations that enabled people to share skills, resources, and goods.<sup>16</sup> It was only when Uber delivered this model to the mass market that the idea of connecting consumers and service providers via digital platforms began to be emulated by start-ups in virtually every sector, from food delivery (Doordash, Caviar, Seamless), to home stays (AirBnb, Vrbo, Homeaway), to dog-walking (Rover), to handy work (TaskRabbit, Handy), to digital labor (Mechanical Turk). In this sense, Uber's impact on the global economy was far larger than the activities of its own platform.

Perhaps most centrally to my research, Uber and other ride-hailing companies inspired a new social imaginary of a platformized future. Against the backdrop of the 2008 Global Financial Crises, platforms emerged as an alternative economic configuration, built on individual entrepreneurialism and interpersonal sharing. The creators of platforms claimed that by relying on the power of machine learning, big data, and other cutting-edge technologies, platforms could connect millions of ordinary people and their private property with consumers, thereby transforming them into an on-demand labor force with privately-owned means of production. Such an economy would not only benefit individuals (who would enjoy higher incomes and flexible work schedules), but also cities and the environment writ large. By networking urban transportation and coordinating it centrally, ride-hailing platforms would make cities more efficient, democratic, and green. Or so we imagined.

## China

Ride-hailing first appeared in China about the same time as in the US. In 2010 Yidao (易到用车), a Beijing-based transportation company, began offering on-demand black car services to wealthy businesspeople with their professional fleet.<sup>17</sup> However, because Yidao operated only within a niche market segment (it failed to follow the same evolutionary trajectory as Uber), and because the firm's services were significantly more expensive than traditional taxis, the greater urban transportation market remained undisrupted. However, the general equilibrium began to shift in the summer of 2012, when a succession of domestic taxi-hailing firms emerged to conquer the mass market. Didi, a venture created by Xiaoju Technologies in Beijing, was the first major firm to offer digitally mediated transportation services to the median consumer. And it was quickly followed by Kuaidi, a rival firm based in Hangzhou, the Southern tech capital in China.<sup>18</sup>

China's urban transportation markets posed a unique set of opportunities and constraints that shaped the development of domestic ride-hailing firms. In contrast to the US, where the number of automobiles per capital was very high (899 cars per 1,000 individuals), the automotive ownership rate in China stood at only 173 cars per 1,000 individuals.<sup>19</sup> At the same time, Chinese cities were far greater scope; there were more than 100 cities in China with at least one million residents, compared to just ten in the U.S.<sup>20</sup> Because of these and other factors (such as price controls, municipal regulations, and the supply of low-cost labor), China's taxi industry was far more expansive and exhibited greater economies of scale. It is perhaps no surprise then that when Didi and Kuaidi adapted the US ride-hailing model to China, both firms opted to build platforms that focused exclusively on licensed taxi services.

Didi and Kuaidi's decision to focus on licensed taxis greatly hastened the adoption of digital

ride-hailing technologies. Taxi drivers eagerly joined platforms because they enabled them to locate customers more quickly and keep their cars filled. According to statistical reports, prior to the advent of ride-hailing, in Shanghai and Beijing empty-load rates (i.e. the percentage of time when a taxi driver had no passengers) hovered around 40%.<sup>21</sup> As many drivers reported, after using Didi and Kuaidi, taxis remained unoccupied for much shorter durations of time, and drivers experienced a concomitant rise in income.<sup>22</sup> Additionally, Didi and Kuaidi did not charge taxi drivers commissions on the fares they generated through their platforms. Quite the opposite; they doled out coupons and rewards for fulfilling trips. Many taxi drivers questioned the sensibility of these firms' business model, but they went along anyway for the profits.

Chinese tech giants like Alibaba and Tencent, having identified digital taxi-hailing as the next great battlefield for digital consumers, immediately rushed to stake their own claim in the burgeoning industry. After a brief interview with the director of Kuaidi, Alibaba Group decided to invest ¥100 million in the fledgling firm, as well as integrate their mobile payment service, Alipay, into Kuaidi's platform.<sup>23</sup> Alibaba's major rival, Tencent, the then fifth-largest internet company in the world, chose to back Didi.<sup>24</sup> Tencent invested a roughly equivalent amount in Didi and linked its services to its own super app, WeChat. With this massive influx of technology and capital, Didi and Kuaidi experienced rapid growth. By the first quarter of 2014, Didi was operating in 178 cities and controlled a 45.3% market share, whereas Kuaidi had expanded to 261 cities, and commanded 51.6% of the market.<sup>25</sup> The two companies quickly outcompeted their rivals and, for a time, came to exercise a virtual duopoly in China.

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My first encounter with ride-hailing took place in Shanghai the winter of 2013. At the end of a night out on the town, after having dinner and singing Karaoke with old friends, I needed to get back to my

hotel. It was raining, and I dreaded standing out on the curb, freezing and soaked, as I waited to flag down a passing cab. But just as I was getting ready to make my way out, I noticed that all of my friends had taken out their smartphones and were tapping away.

“There is one 3 miles away.”  
“I have one who said he can be here in ten minutes!”  
(an excited scream)  
“I got a free Audi A6!”

Seeing that I was clearly confused by what was transpiring, my friend, the one who had screamed, explained that they were hailing taxis through *Dahuangfeng* (literally Big Yellow Wasp), a local mobile app. And she had just won a free trip home. It was part of a marketing promotion that Big Yellow Wasp had created to attract new users to its platform. My friend then asked if I wanted to ride with her, since we were going in the same direction.

A few minutes later when we exited the building, a brand-new black Audi A6 was already waiting for us in the circular drive. As we approached, the driver hopped out, greeted us, and held the door open as we got in. As soon as the car started moving, my friend opened her WeChat account, and posted a screenshot of her ride-hailing win. Within a few minutes her post already had a dozen “likes.” As I sat there, making sense of being chauffeured around Shanghai in a luxury car, my friend, completely nonplussed, turned to me and said, “Aww, sorry, today they already ran out of the free lollipops!”

It is difficult to overstate how much digital ride-hailing has altered the urban experience. Hailing a cab was one a quintessentially urban act, an exercise of knowledge and power. I remember once being so deeply impressed by native New Yorkers’ ability to hail a cab. They could just walk up to any curb, strike a pose, and almost magically a taxi would appear to pick them up and take them wherever they wanted to go. It seemed to me that all of their cosmopolitan knowledge and confidence was manifested in that gesture for summoning a cab.

But what I witnessed for the first time that night in Shanghai, was something quite different. Without any hand-waving, or without even getting up from their seats, my friends booked taxis on a mobile app. No longer did they need to know which street they should stand on to have the highest probability of finding an empty cab. Nor did they need to consider other travelers and adhere to the local rules of etiquette for determining who has priority in taking the next available taxi. A few button-clicks completely side-stepped that complex “combat sport” whereby urban residents vie for cabs in the rain, or haggle prices, or convince drivers to take them to the opposite side of town.<sup>26</sup>

My encounter also illustrated a more fundamental trend: digital technology’s increasing mediation of everyday life in China. Before the arrival of ride-hailing apps, there was already expansive infrastructure for and huge consumer interest in the development of mobile digital applications. Take for example the rapid rise of WeChat, an “everything app” that combines the functions of Facebook, WhatsApp, PayPal and more. Early in the digital revolution, in March of 2012, WeChat already boasted a user-base of more than 50 million monthly active users. By the end of 2014, that number had risen ten-fold, to more than 500 million monthly active users.<sup>27</sup>

Leading taxi-hailing platforms such as Didi and Kuaidi successfully rode this digital wave to reshape taxi services in China. Just like that, in the span of two short years, urban Chinese citizens had become accustomed to ordering cabs through smartphone apps. The adoption of the digital technologies was so sudden and comprehensive, that in cities like Hangzhou and Beijing, residents complained that without a mobile app, it was no longer possible to hail a cab on the street. The way that Chinese people took taxis was forever changed.

## **People’s Uber**

While the development of China’s ride-hailing industry from 2010 until the summer of 2014 might be

characterized as the digital enhancement of existing transportation services, what came after was something altogether different. The fragile equilibrium that had been established by the Didi-Kuaidi duopoly in taxi-hailing services was soon overturned by the introduction of an entirely new business model: person-to-person ride-hailing.

Uber had existed in China since 2013. In the fall 2014, Uber China, which has been testing the grounds in China for a year, launched a new service called “People’s Uber” (*renmin youbu*, 人民优步). This new platform allowed ordinary Chinese people to work as transportation providers. Seemingly overnight, the industry was thrown into disorder, as droves of migrant workers flowed into the cities to take up work as Uber drivers. As you can see, Uber even adopted revolution-style advertisements, which resembled Maoist era propaganda posters. And by naming itself “People’s Uber,” Uber harnessed the power of revolutionary discourse to legitimize its place in Chinese society.



**Figure 0.2.** Advertisement of People’s Uber.<sup>28</sup>

The launch of People’s Uber spurred an immediate reaction from domestic Chinese firms. Didi and Kuaidi, long-time rivals that had burned through millions of competing against one another, decided to combine their strength in order to fight Uber.<sup>29</sup> On Valentine’s Day in 2015, the two companies

announced formal plans to become a unified entity: Didi Kuaidi. Although Didi and Kuaidi were of equal size going into the merger, Didi assumed control. The headquarters of the new company would be located in Beijing, rather than Hangzhou, and Cheng Wei, the founder of Didi, would assume the position as CEO. Later, even the name of the new company was shortened to Didi, erasing the existence of Kuaidi altogether.

Just a few months after the corporate marriage, the newly restructured giant launched its own ride-hailing service, Didi Kuaiche (滴滴快车), literally “Didi Fast Car,” and entered into a costly war of attrition against Uber.<sup>30</sup> In the span of a year, between May 2015 until July 2016, the two firms burnt through billions of dollars in venture capital. In the first half of 2016 alone, Uber reported spent around \$1 billion on driver and customer subsidies.<sup>31</sup> Although Didi never disclosed the specific amount of money it spent in the subsidy war, given that the firm was coordinating about four times as many trips as Uber and was generally matching subsidies dollar-for-dollar, it is safe to assume that its spending was also in the billions. To many outside observers, it seemed that if the subsidy war continued in this fashion, then both companies would be driven into the ground.

It was only as the result of massive external shock that this war of attrition was finally brought to a close. On July 31<sup>st</sup> 2016, China’s Ministry of Transport surprised government leaders around the world by announcing that China would become the first major economy to fully legalize the ride-hailing industry.<sup>32</sup> On August 1<sup>st</sup>, 2016, just two days after a draft of the new regulatory framework was released, Uber announced that it would be making a tactical exit from Chinese markets. This was the first time that Uber had ever been forced to retreat.

In the following weeks, Uber China was bought out by its domestic competitor Didi. As per the merger agreement, Didi invested \$1 billion in Uber (at a valuation of \$68 billion), and Uber gained a 17.7% stake in Didi. With Uber out of the way, Didi experienced rapid growth as China’s ridesharing monopolist. In 2020, Didi facilitates 1.43 billion trips a year across more than 400 Chinese cities,

roughly four times as many as Uber services globally. And the Chinese ride-hailing market became the biggest in the world with \$55.5 billion annual revenue, surpassing the U.S. with \$41.6 billion.<sup>33</sup>

## **Didi Era**

Since its inception, Didi has continually rebranded itself and redefined its corporate mission. When the company was first founded as a taxi-hailing platform, the company proclaimed that its goal was to cut out exploitative middlemen from the taxi industry and serve the taxi drivers. Yet just a couple of years later, Didi launched a P2P ride-hailing service that flooded the market with private drivers and heavily subsidized their activities. Resultantly, the cabbies, even those who were early adopters of Didi, experienced a precipitous fall in income. Many of my informants told me that they increasingly could not generate enough revenue to cover their monthly costs for their cars and licenses. Eventually, those who could get out of their contracts with cab companies abandoned the profession altogether. So much for empowering ordinary taxi drivers.

After shifting its business model to ride-hailing, Didi's persona underwent a transformation. In order to circumvent the strict regulations that control China's transportation service sector, the company rebranded itself as a technology and data company. In public appearances, Didi's corporate executives continually emphasized the firm's technological prowess as well as its increasingly diversified portfolio of services. In September 2017, I attended the public speech of the vice president of Didi, Zhang Wensong. Zhang came from a very techy background: he was the founder of Linux Virtual Server, Chief scientist of TelTel, and CTO of many Alibaba branches before he joined Didi.<sup>34</sup> On the impressively big stage in Mercedes Benz Center in Shanghai, he presented Didi's vision as a technology company that collects and processes enormous amount and various kinds of urban data. He opened the talk by saying that Didi collects more than 1 terabyte data every day.<sup>35</sup> Specially, he

pointed out that the big data Didi collected could not only be used for more than the coordination of cars; they were also being applied to help local governments to build smart cities with data-driven infrastructure. The new corporate messaging was clear: Didi was not just a transportation company.



**Figure 0.3.** Didi vice president Zhang Wensong speaking at Zaojiu event, Shanghai, Oct 2017.

Most recently, Didi has begun to rebrand itself as a social service company. In 2018, when the Ministry of Labor appealed to tech companies to create transitional jobs for workers in China's rustbelt, Didi was among the first to answer the government's call; the company collaborated with the Shanxi Coal Group, owner of the largest mining operation in Shanxi Province, to retrain laid-off miners as on-demand drivers. Later, Didi co-developed another project with the municipal government of Jinan that used the company's data to design smarter road-systems, with the goal of alleviating traffic

congestion in the provincial capital. Didi also launched initiatives within the company aimed at increasing the welfare of workers. For example, it created a need-based loan for drivers who fell into economic hardship and a cash rewards system for drivers who performed good deeds. Through such activities the company is trying to position itself as something akin to a social enterprise, a company that aims to maximize social value rather than quarterly earnings.

However, these social efforts were overshadowed by the sexualized platform design of Didi Hitch, which led to two tragedies on the platform. On May 5th, 2018, a young woman booked a ride through Didi's carpooling service, Hitch (*Didi Shunfengche*; 滴滴顺风车). A while later, she texted a friend that the driver kept commenting on her appearance and saying that he wanted to kiss her. Alarmed, the friend contacted both Didi and the police. But Didi refused to share location information and help arrived too late. The body of the young woman was discovered by the roadside a few hours later. Investigations revealed that the driver was an ex-convict who had forged his identity to join the platform. In response to this incident, Didi announced that it would tighten control by drivers to perform facial scans several times a day and by monitoring their behavior during late hours. However, despite these efforts, three months later, another young woman was raped and murdered while using Didi's carpooling service.<sup>36</sup>

These murders sparked intense public debate about Didi's responsibility to society. These incidents, as Chinese netizens discovered, were not isolated events, but were the most extreme manifestations of a systemic problem in the platform's design. For years, Didi had been commoditizing its users' sexuality, first, by advertising carpooling as a gateway to romantic relationships, and second, by enabling drivers to comment on and chat about users' physical appearance. In the eyes of many, Didi had created an environment in which sexual harassment was pervasive and user safety was a secondary consideration to market growth.<sup>37</sup>

At the heart of this debate was an emergent collective awareness that technologies are deeply

moral. Beyond simply coordinating the actions of their users, platforms govern and influence user behavior. Indeed, the core competency of digital platforms is precisely their ability to collect massive quantities of user data, analyze it, and on the basis of this analysis, either make decisions on their behalf or nudge them towards a course of action that is desirable from the perspective of the system as a whole. Throughout this process, the moral values that are embedded in the system design subtly influence the behaviors and decision-making processes of platform users.

### **The Platform Revolution**

The disruptive power of ride-hailing is predicated on a new technological form: digital platforms. Platforms are socio-technical systems designed around computational algorithms that coordinate the activities of countless users and service providers. When I place orders on a ride-hailing app, the platform collects data about my neighborhood of residence, my place of work, my travel habits, the elasticity of my demand (i.e. my price tolerance), and so on. My data, along with that of other users, are fed into algorithms that use the information to predict total supply and demand. If the algorithms determine that demand is too high, then they will “surge” fares in order to induce greater supply. If the algorithms calculate that demand is low, they will reduce fares to attract more customers away from rival platforms or from alternative modes of transportation. The centralized processing of vast quantities of user data enables platforms to make system-level adjustments that ostensibly optimize user-behavior and push the system towards equilibrium.

It is important to note, however, that from the perspective of users, all these decision-making processes are intentionally black-boxed. When I hit “order” on a ride-hailing app, I get placed in a position in the queue (based on an opaque prioritization algorithm), and after an unspecified increment of time, I get paired with a driver. The driver is instructed to pick me up and to carry out the trip by

following the app's prescribed route. When we arrive at the destination, and the trip is complete, the app deducts the fare from my linked bank account or credit card and deducts a certain amount before the payment is transferred to the driver. The drivers do not know how much the customers have paid— Uber blackboxes its platform commission from both customers and drivers (and it is often more than the 20% commission it claims). In this whole process, neither the driver nor I are allowed to question how we are paired, the route we take, or how the fare is generated. The only decision we are free to make is whether or not we accept the trip.

Digital platforms are inserting themselves as powerful mediators of everyday life. Contrary to corporate rhetoric that describes platforms as passive facilitators, these technologies actively reformat our decision-making processes and redefine the scope of human agency in economic transactions. On platforms like Uber, the interactions between users and service providers are rigidly controlled by omnipresent tracking, monitoring, and data feedback. Service providers are treated as the physical extensions of algorithms whose sole purpose is to faithfully execute orders and conduct repetitive tasks.<sup>38</sup> In this respect, many digital platforms have come to resemble Deleuzian “control societies,” systems in which it almost impossible for economic actors to diverge from predesigned paths.<sup>39</sup>

Concerns over the societal influence of platforms deepen further when we consider the fact that their values are often opaque. Travis Kalanick, the founder and former CEO of Uber, once attempted to justify his platform's role as a public transportation service by explaining that Uber's algorithms are actually programmed to maximize the number of trips performed, not the company's total revenue.<sup>40</sup> “If we can do more trips at a lower surge multiple,” wrote Kalanick, “then the algorithms will automatically lower the multiple [to raise the aggregate number of rides].” But we'll just have to take his word for it. Because Uber's algorithms are blackboxed and shrouded in corporate secrecy, we cannot inquire as to what other values are being expressed in the adjustment of prices and the creation of trips.

Scholars declare that we are entering an “algorithmic era,” an age when algorithmically governed markets and algorithmically-defined living is the dominant modality.<sup>41</sup> The rise of digital platforms is not only reshaping market activities and labor relations but is transforming very structure of our societies. By enabling new forms of flexible work, digital platforms are increasing the income-generating potential of mothers, racial minorities, immigrants, and other disadvantaged groups who have been historically excluded from formal labor markets. However, because they offer artificially depressed wages and few worker protections, platforms also play a role in perpetuating the impoverishment of this economically marginalized labor force.<sup>42</sup> The computational algorithms that underpin the functioning of platforms also reproduce and even exacerbate existing forms of social bias.<sup>43</sup> For instance, studies have shown that African American guests are more likely to be rejected by hosts on Airbnb, and female Uber drivers earn 7% less than their male counterparts.<sup>44</sup>

Platform capitalism, the economy system that is being produced by emerging technologies, is distinct both from Smithian capitalism of the Industrial Era and managerial capitalism of the 20<sup>th</sup> century. According to Adam Smith, a market economy is one in which the diffuse forces of production and exchange are coordinated by the invisible hand of the market (rather than by the state, or the church, or powerful mercantilist institutions). Individuals, acting from their own narrow self-interests, send signals (in the form of changes in price) to all other participants in the economic system, who respond by altering their own production and consumption plans in turn.<sup>45</sup> The result is a spontaneous order in which people guided by price changes “[act as if they] understand that their decisions have significance far beyond their immediate aim.”<sup>46</sup> For this reason, in the neo-classical worldview, “no measure or policy must be countenanced that would influence the action of these markets. Neither price, nor supply, nor demand must be fixed or regulated.”<sup>47</sup>

In the 20<sup>th</sup> century, as industrialized economies grew increasingly complex and information asymmetries grew, large firms began to internalize functions of markets. Ronald Coase, a Nobel Prize

winning economist, theorized that whenever the transaction costs of coordinating production are higher through market exchange than through hierarchical management, entrepreneurs will subsume productive activity within the firm.<sup>48</sup> As firms internalized production and grew, they also discovered new ways to innovate. Joseph Schumpeter observed that through the hiring of scientists and the establishment of R&D labs, large corporations were successfully routinizing the processes of innovation to drive down costs and increase output.<sup>49</sup> Alfred Chandler pushed the argument even further, contending that the emergence of the modern industrial enterprise represented an entirely new chapter in the history of global capitalism.<sup>50</sup> As modern enterprises, with their managerial hierarchies and superior organizational capacity, continued to vertically and horizontally integrate an ever-greater share of societal production, there would be an inexorable supersession of the price mechanism by the managerial hierarchy. In other words, the invisible hand of the market would soon be replaced by the visible hand of management.

Just as the rise of multi-divisional firms had struck at the economic foundations of the Smithian economy, the advent of digital platforms undermined the advantages of diversified corporations. Proponents of companies like Uber and Didi described the creation of the platform economy as a return to a Smithian principals. Digital platforms, they argued, greatly reduced person-to-person (P2P) transaction costs by connecting service providers directly with consumers, thus obviating the relative benefits of managerial hierarchies. Moreover, by disrupting monopolistic taxi firms and empowering individual economic actors, platforms increase market participation and democratized transportation services.

**Table 1:** The Political Economy of Platforms

	Industrial Era	Post-Industrial Era	Digital Era
Economic System	Smithian Capitalism	Managerial Capitalism	Platform Capitalism
Principal Institutions	Small Enterprises	Multidivisional Corporations	Digital Platforms
Decision-Makers	Entrepreneurs	Corporate Management	Centralizing Algorithms
Guiding Mechanism	Price Mechanism	Managerial Technologies	Disruptive Innovation

While such arguments contain elements of truth, they elide the important ways that the political economy of platforms represents a distinct break from economies of the past. Digital platforms are far from passive facilitators of free-market activity. They control critical features of “the market” that, according to the formalists, ought to arise from spontaneous order. By setting price for users, adjusting prices to influence supply and demand, and pairing users by its own logics, the role of platforms could even be compared to central planner in socialist economies. The visible hand of the corporation was thus disrupted by the black-boxed algorithms.

### Understanding Platforms

In his monumental work *The Great Transformation*, Karl Polanyi argued that with the economization of thought and action that accompanied rise of neoclassical economics, economic activity was becoming increasingly “disembedded” from its social matrices.<sup>51</sup> According to Polanyi, in non-capitalist societies,

economic decision-making was shaped more strongly by principals of reciprocity and redistribution than by the incentives of market exchange. However, as “substantive” economic activity becomes separated from the social and cultural relationships in which (and for which) it takes place, it is increasingly “formalized,” i.e. related to only other economic activity until all goods and services are “commercialized and commoditized... in terms of a single standard, money, and prices [are set] through the self-adjusting mechanism of supply and demand.”<sup>52</sup>

Because of its universal applicability and its amenability to large-scale analysis, the formalistic approach soon became the dominant framework for studying economic activity.<sup>53</sup> The most profound influence of the formal economy, according to Carrier and Miller, is that the concepts and models of economic abstraction are gradually regarded as “the fundamental reality that underlies and shapes the world.”<sup>54</sup> When economic actors start believing that virtual (i.e. formalized) reality is no longer an over-simplified way to describe the world but is, rather, a prescriptive vision of how the world ought to be, they build real-world institutions based on those abstracted concepts. In such a way, virtual reality becomes *virtualism*— the ideology of molding the world according to economic abstractions.<sup>55</sup> This molding has real world consequences. *Virtualism* creates “not just webs of meaning but practical webs in which many people can become ensnared.”<sup>56</sup>

Carrier and Miller’s concept of *virtualism* is becoming ever-more relevant in an age when economic transactions are becoming increasingly mediated by computational technologies. As scholars have shown, algorithms, based on economic abstractions, come to govern people’s economic lives.<sup>57</sup> Their studies show that computational technologies do not just expand people’s capacity to engage in economic activities. Machines such as high-speed traders, automatic circuit breakers, and so on, have also become essential economic actors. Operating in black-boxed systems, they created markets that are to some extent incomprehensible to human minds and impossible to predict.<sup>58</sup> Despite its opaqueness, most industry leaders, experts, and even citizens, regard algorithmically

governed markets to be the future of capitalism.<sup>59</sup>

One promising area of platform research is on the role of individual agency and tacit knowledge in this new economic and technological system. Hayek argued that the most important reason why social planning failed and would always fail in comparison to market is because tacit knowledge exist in individuals can never be known to planners but only be mobilized by market processes.<sup>60</sup> And Michael Polanyi created the tacit knowledge to refer to the type of knowledge that cannot be fully codified in language; this type of knowledge was heavily emphasized by in the field of anthropology.<sup>61</sup> However, with the increasing capacity of computational technology to collect, process, and analyze data, platforms such as Uber has achieved significant success in allocating resources and adjusting prices. So, are tacit knowledge produced by individuals and local communities still important in this new market environment? What roles do they play? How are they being transformed by digital platforms that are subsuming our lives?

### *Situated Knowledge-Making*

Any act of knowledge production, whether formal or informal, can be understood only from within its situated context. STS scholars have produced a large body of research on knowledge production in institutional contexts that showcases how scientists and engineers are influenced by “the social.” This research shows us that whether in the context of research laboratories or corporations, scientific and technological innovation is never produced in a social vacuum.<sup>62</sup> As Coopmans et al. stated in *Representation in Scientific Practice Revisited*, “as ‘the laboratory’ extends to other spaces and places via collaborative ventures, shared data centers, and information and communication technologies,” it is reshaped by organizational structures, socio-cultural contexts, and subjectivities, and the very boundary between the scientific and the social is blurred.<sup>63</sup>

Scholars of technology, in particular, have always been mindful about the interaction between “the social” and “the technological.” In their seminal work *The Social Construction of Technology Systems*, Pinch and Bijker distinguished three layers of meaning for the word “technology.”<sup>64</sup> At the most basic level technology is a set of physical objects or artifacts; at a meso-level, technology is comprised of activities and processes; and finally, technology also includes so-called “know-how,” what people know as well as what they do. When we talk about technological systems then, we are thus referring to a hybridity of materials, humans, protocols, institutions, and knowledge.<sup>65</sup>

While STS scholars focus more on institutional contexts, anthropologists tend to pay attention to the micro-practices through which ordinary users of technologies obtain and produce knowledge. Among the numerous anthropological works on modern technology, Anand Nikhil, Andrea Ballesterro, and Leo Coleman are exemplary in showcasing how local communities negotiate technological standards and produce shared moral values towards infrastructural technologies (electric and hydraulic systems).<sup>66</sup> They all demonstrated that the technology-making process is also a process of fashioning new citizenships and subjectivities.

Actually, social anthropologists’ engagement with technology could be traced back all the way to Evans-Pritchard’s classical work on cattle farming and timing technologies.<sup>67</sup> In this incredibly long genealogy of scholarship, I found works on skills and enskillment most applicable and helpful for my own research.<sup>68</sup> On my hand, they help me challenge the one-sided conversation on deskilling with technologies of automation; one the other hand, and more importantly, they showcase how social structures dictates transmission of knowledge and changing apparatus of knowledge-production disrupt social relations and cultural hierarchies in local communities.<sup>69</sup>

To summarize, in both institutional and less institutionalized contexts, scholars have proved that the locus of knowledge-production resides not with individual actors but within communities. Local communities are the key sites in which groups of actors share knowledge and make sense of

rapid social changes. With the rise of platforms, there also emerged new types of social organizations that facilitate knowledge producing in different ways. There are online communities that form around the sharing of specialized knowledge and skills (e.g. Ride-hailing men), social networking groups (offline gatherings of AirBnb hosts), and many other less formal but equally vibrant communities. These online communities and social networks, I propose, serve as the economic infrastructure of digital platforms.

Anthropologists have a great tradition of identifying and recognizing the importance informal institutions and activities in economic and technological systems, an aspect often neglected by technological studies. In her series of works on micro-enterprises in Cairo, Julia Elyachar proposed that we should regard the channels through which informal economic activities are conducted not as a form of culture of the poor but rather as economic infrastructure— a type of collective resource or public good that people can utilize in their economic life.<sup>70</sup> Building on Elyachar’s proposal, Anand in his study of water provision in Mumbai further integrated the study of informal networks as infrastructure with technological infrastructure and termed his framework “heterogeneous infrastructure.”<sup>71</sup> He saw the water system the city of Mumbai as an interaction of two infrastructural systems: one is the technical end water delivery made up by pipes, engineers, and bureaucratic institutions; another one is social part of water system composed by social networks, patron-client relationships, and “phatic labor.”<sup>72</sup>

These informal networks, against stereotypes, do not only exist in the informal sectors and effect a small number of people. Donaghy showed through his research of offshore financial centers, which are playing host to growing numbers of international banks and financial institutions, that informal economy is by no means the “little people’s alternative.”<sup>73</sup> Informality is “a form of economic action situated at the forefront of global capitalism,” he argued.<sup>74</sup> The rise of digital platforms was largely depended upon the formalization of informal practices. Didi and Uber did not create the

billion-dollar industry out of thin air. I will show in the following chapters that the rise of China's ride-hailing industry has depended on the vibrant online communities of drivers and the grey institution of labor contract companies. Therefore, the framework of human infrastructure— seeing humans and their formal and informal networks as integral parts of technological systems— is a helpful analytical lens to understand the hybrid systems of computational technology.

*From Knowledge-Making to Value Production*

Just as individuals are not the passive recipients of expert knowledge, neither are they the reactive subjects of moral governance. Groups of actors situated in communities of practice make judgements, form intersubjective understandings, and engage in ceaseless self-cultivation. As they share knowledge and social life, they also produce values and negotiate acceptable norms in local communities. Ethical practices in everyday life are not mundane, but full of “moments of world-making and world-annihilating encounters” that make and remake societal morality.<sup>75</sup> In local communities, knowledge production goes hand-in-hand with the production of values.

An “ethical turn” in the field of Anthropology has led scholars to increasingly investigate the practices of ethics in everyday life. Inspired by neo-Aristotelian virtue ethics, anthropologists have documented and theorized how individuals in different cultures form distinct moral values.<sup>76</sup> One of the pioneers in this sub-field, Michael Lambek, coined the term *ordinary ethics* to encapsulate the anthropological approach to studying ethics. Lambek emphasized that, first, ethics should be understood as part of, rather than external to, the human condition. Because human beings are necessarily embedded in their social contexts, they cannot avoid “being subject to ethics, speaking and acting with ethical consequences, and evaluating [their own] actions and those of others.”<sup>77</sup> Second, by highlighting ordinariness, Lambek draws our attention to tacit ethics that are “grounded in agreement rather than rule, in practice rather than knowledge or belief, and happening without calling

undue attention to itself.”<sup>78</sup> This focus sets their scholarship apart from philosophers and policy researchers operating under the umbrella of Technology & Ethics, who try to delineate universal and prescriptive rules for emerging technological systems. Lambek and other anthropologists, instead, look for “what really matters” to individuals in their situated local contexts.<sup>79</sup>

At the same time, scholars of *ordinary ethics* are keenly aware that a delicate balance must be struck between universalism and particularism as the Boasian anthropology has espoused.<sup>80</sup> In a world increasingly shaped by global (rather than localistic) forces, it will not be sensible to ignore how broad social forces such as consumer capitalism, media and advertising, economic inequality, and technological disruption are shaping how individuals understand and practice ethics in their everyday life.<sup>81</sup>

In my own exploration of contemporary Chinese society, I have found the framework of *ordinary ethics* immensely helpful for making sense of sense-making, but I’ve needed to make one key modification: a shift in the focus of inquiry from ethics to morality. Ethics, a term more prominent in law and philosophy, is closely associated with rules spoken or unspoken and is generally studied from the perspective of individual agents. Scholars of ethics theorize how individual actors conform to or challenge, negotiate or reproduce, and articulate or silence rules.<sup>82</sup> Morality, on the other hand, reveals people’s visions, desires, ideals, and imaginaries about goodness reflected in everyday practices. Morality is about the pursuit of goodness, and usually a life-long pursuit in Confucian philosophical framework.

I have been able to better study key elements of disruptive technologies: the aspirations, dreams, and visions about what could be achieved through technological innovation. Compared to nation-states and corporations in Euro-American context, which are more sensitive to computational technologies’ threats to privacy, security, and accountability, the Chinese state and Chinese tech companies lean into technology’s ability to transform society. The embrace of science and technology

was an indispensable part of the Chinese moral landscape, from the top to bottom.

When studying technological disruption in the context of China, it is critical to explore the interplay between communal and societal moralities. This is where the concept of sociotechnical imaginaries provided a helpful conceptual bridge. According to Jasanoff and Kim, sociotechnical imaginaries are “collectively imagined forms of social life and social order, reflected in the design of scientific and technological projects.”<sup>83</sup> They argued that, although multiple imaginaries can coexist, power actors such as the state and the media will try to elevate some imaginaries above others to order society. Therefore, “imaginaries encode in them not only visions of what is attainable through science and technology, but also of how life ought, or ought not, to be lived; in this respect, they express a society’s shared understandings of good and evil.”<sup>84</sup>

Throughout six-years of research on ride-hailing in China, I observed the full cycle of the emergence, popularization, contestation, and stabilization of an emerging technology. I witnessed how the imaginary of platform technologies created by tech start-ups and propagandized by investors, media, and the public, became elevated to societal imaginary by state actors at the highest level. The entire evolution shows how sociotechnical imaginaries on different levels interact and negotiate with each in contemporary China.

### **Understanding China Through the Platform Revolution**

In 2019, the *Chinese Journal of Communication* ran a special issue on the “Platformization of Chinese Society,” which brought together studies of Didi, WeChat, food delivery services, online streaming apps, and Alibaba’s social credit system. In the introduction, the authors proposed that in China, as in the rest of the world, economic, infrastructural, and social aspects of society are being increasingly mediated by digital platform and centralized algorithms.<sup>85</sup> Therefore, the authors urged that scholars

should steer away from “geopolitical binarism,” “methodological nationalism,” and “techno-orientalism,” in which China is perceived as the distinct model in and of itself.<sup>86</sup>

It is true that digital platforms depend very much on universal technologies and economic structures. However, how the way that platformization manifests in local contexts is, in my opinion, equally important and woefully underexplored. It is in this area that anthropological perspectives could make a significant contribution.

In this section, I try to bring together a wide array of literature to explore what makes China’s platforms particular. I ask two sets of questions: First, how is a platformized society becoming a collectively desired future, and how does it relate to the country’s unequivocal belief in modern technology? Second, how does the process of platformization intertwine with existing social structures such as informal labor?

### *Social Imagination of Technology*

The rise of ride-hailing platforms in China is a product of two distinct technological imaginations joining forces in a particular historical moment. The first is the Chinese state’s powerful desire to develop computational technology and Internet economy under the directives of the Internet Plus, Made in China 2025, and strategy of Artificial Intelligence.<sup>87</sup> It follows the political ideology of scientism and technicism that has been front and center of national plans since post-reform era.<sup>88</sup>

At the same time, ride-hailing platforms also rode the rising wave of *laissez faire* market ideology in post-reform China. For the last four decades, individual Chinese citizens have increasingly embraced the logics of the “enterprising self” and “privatizing self.”<sup>89</sup> Privatization is not only a market process, argue Ong and Zhang, it is a process through which individuals come to embrace calculative logic originated from market activities as “the ethic of subject formation” and come to adopt a series of neoliberal values— self-interest, self-development, and self-realizations— as principles of self-

governance.<sup>90</sup> The current generation of Internet corporations promote an updated version of private self, promising citizens a world in which they are free to consume and sell, free to connect, free to entertain, and free to move around with the most cutting-edge digital gadgets and networks.

The social imagination of ride-hailing is thus shaped both by the state— its vision to grow national economy and control its subjects and by the citizens— their hope to access vibrant economic opportunities and live prosperous urban lives. The corporations have to cater to both desired futures and straddle in between.

In her recent work on China's obesity pandemic, Susan Greenhalgh pointed out another prominent trend of governance through science and technology, namely the increasingly collusive relationship between the state and big corporations.<sup>91</sup> She argued that by relying on its reputation and influence as a western firm, Coca-Cola played an important role in reshaping the public health discourses surrounding obesity. Large pharmaceutical companies, according to Greenhalgh, get academic scientists to produce articles for commercial benefit while making them look like traditional academic work and getting them published in top medical journals. The case of Coca-Cola sheds light onto big corporations' influence on public policy-making and knowledge-making in contemporary China.

Scholars of communication also seconded this proposal and further emphasized the role of private corporations. Hong argued that in China's ICT sector, private corporations, in particular a handful of tech giants, have tremendous influence on policymaking and industry operations.<sup>92</sup> And the state, scholars generally agree that, functions more as a gatekeeper through practices such as censorship and regulation.<sup>93</sup>

Greenhalgh's work on Coca-Cola also dovetailed with another prominent trend in China tech studies, that is seeing the political economy of China as an integral part of global economy. In the field of digital economy in particular, the global/local perspective has become the *de facto* approach. In

*Networking China*, Hong argued that China's communication system is caught between two parallel economic processes: "the export-processing economy driven by transnational capital and the state-controlled economy inside the system."<sup>94</sup>

The gaming industry in China has also been portrayed as deeply embedded in global context. As Dyer-Witthford and Peuter addressed in *Game of Empire*, China's local economy was closely connected with the International gaming industry.<sup>95</sup> They discovered a range of enterprises from small shops to factory-like enterprises with hundreds of computers and employees that engaged in "gold digging." These enterprises hire college students and graduates, and rural-urban migrants to work in one of the world's most popular games World of Warcraft. These professional players were hired to rapidly advance their avatars to their maximum levels so they can access the high-level, lucrative areas of the game and later sell their gains to amateur players all around the world. These local enterprises in China had a big impact on the normal operations of the game and the players around the world; some players even organized group activism protesting against Chinese gold farmers.

I also aim to situate my work on China's ride-hailing industry in a global/local context. It is because, first of all, the major ride-hailing companies have fundamentally been shaped by the constant flow of capital, talents, and technologies across national boundaries. Among Didi's top investors, there are international players such as Softbank, Apple, Booking, Sequoia, and so on.<sup>96</sup> The capital injection from Apple in 2016, totaling \$100 million, helped Didi to deliver a deadly blow over Uber China and sealed the deal of the merger. But my research shows that the development of Didi challenges the traditional global/local narrative in which China is the local and the West is the global. In the past few years, Didi has been an aggressive player in the global market as well. It formed strategic alliance, through investing and merging, with other ride-hailing companies such as Lyft in America, Ola in India, and GrabTaxi in Southeast Asia, Taxi99 in Brazil.

In their article "Digital Utility," Chen and Qiu used their case study of Didi— its datafication

strategies, its relations with government, and its labor management systems— to discuss the process of platformization of the society as well as the infrastructuralization of platforms that are taking place widely in Chinese society.<sup>97</sup>

What is infrastructuralization of platforms? It refers to the increasingly blurry boundary between platforms and infrastructure in the digital society. Tech companies come to fill the vacuum in areas where governments failed to provide universally accessible infrastructure (e.g. in places such as California, the lack of accessible and convenient public transportation facilitated the rise of ride-hailing); and it also refers to the trend of tech companies expanding beyond their core businesses and building vast tech ecosystems (e.g. Alibaba started as B2B E-Commerce platform but now had expanded into finance, cloud service, mobile payment, entertainment).<sup>98</sup>

In light of these phenomenon, Chen and Qiu created the concept of “digital utility” to refer to, first, the public services and values provided by digital platforms and, second, the existing public and private services whose accessibility have been fundamentally transformed by digital platforms.<sup>99</sup> By employing the concept of digital utility, the authors also made explicit their intention to compare these digital services to other types of public utility such as electricity, water, and telecommunication. For instance, citing Dijck et al., they stated that urban transportation sector affects public values in two ways, the quality of urban transport for urban residents (including the safety and inclusiveness of transportation), and the rights of transportation workers.<sup>100</sup> For these reasons, Chen and Qiu suggested that the digital utility markets need to be governed like traditional utility markets. Such a stance challenges the current platform ecosystem, which is “predicated on an architecture that is primarily staked in, and driven by, economic values and corporate interests” and often endangers “public values.”<sup>101</sup>

The infrastructural quality of platforms was more pronounced in Chinese society. For decades, China has been functioning as “infrastructural state,” which uses “infrastructural fix” to boost

economic growth, to propagandize China's image as a modern state, and to employ a large labor force.<sup>102</sup> China's economic miracle has been fueled by the construction of spectacular infrastructure, such as modern cities, rail roads, highways, and bridges. Bach pointedly stated that throughout most part of 20th century, China's infrastructural development has depended on western technology, first colonial then Soviet. Thus, the post-socialist fixation on infrastructure is very much about "reclaiming modernity as a Chinese project."<sup>103</sup>

The building of Chinese internet is a monumental infrastructural project itself. In Zhou Yongming's *Historicizing Online Politics*, he compared the building of internet to the construction of telegraph, as both projects contributed a lot to the formation of Chinese nation-state as an imagined community.<sup>104</sup> The Internet project, according to Zhou, shows Chinese government's contradictory attitude that could be encapsulated as "proactive control." He argued that CCP was attempting to control the Internet but also actively promoting it; therefore, the actions taken by the state should not be seen "as merely manipulative but also as innovative and experimental."<sup>105</sup>

Building on these works, my dissertation uses the rise of ride-hailing platforms in China as a lens to examine the effects of "platformization of society" and "infrastructuralization of platforms." Specially, it looks at how digital platforms are changing the accessibility of employment opportunities in urban transportation (Chapter Three), how the state is influencing the development of the industry via central and municipal regulations (Chapter Three), how digital platforms are assuming increasing infrastructural functions such as contributing big data for city building and solving unemployment issues by proving flexible jobs (Chapter Four).

*Informal Economy, Re-invented in Digital Era*

Informal economy, as historian Philip Huang defined, is a sector consists of “workers who have no security of employment, receive few or no benefits, and are often unprotected by labor laws.”<sup>106</sup> Based on this definition, by the year 2009, 168 million out of 283 million (60%) urban employed workers in China are informal laborers without the protection of labor laws. Many of them are from the 150-200 million migrant workers that swarmed into the cities after the reform (which is 15-17 percent of the total Chinese population).<sup>107</sup> China’s informal sector does exist at the margins of the economy; it is closely intertwined with formal economic institutions and fundamentally underpins the development of new economic sectors, even the most cutting-edge technological sector.

First of all, contemporary scholars have found that some particular social structures in China, such as localistic networks and familial networks, have played important roles in the rise of new economic sectors such as E-commerce and ride-hailing.<sup>108</sup> In her work on Alibaba, communication scholar Zhang Lin argued that the success of the world’s biggest E-Commerce platform has depended on the mobilization of family-based shop owners.<sup>109</sup> In the first decade of its development (1999-2007), Alibaba harnessed the bottom-up economic energy by promoting itself as “a more democratic, accessible, and participatory alternative to state infrastructures.”<sup>110</sup> The majority of the e-shop owners on Alibaba she encountered during fieldwork are small or medium-sized businesses that employ few employees beyond relatives and friends. She argued the informal form of organization even shaped the shop owners’ “tactical, emotional, morality-based” resistance against the monopolization of digital platforms. When Alibaba instituted a new policy that disadvantaged small businesses, shop owners used informal tactics such as hacking platform algorithms, placing fake orders, and leaving negative reviews as the main form of protest.

My research engages with this line of inquiry but further explores how the entrepreneurialism

of informal capitalists energized platform economy. I found throughout my fieldwork that individuals generate socially-embedded innovations that harness local resources and social relations: they utilize localistic and familial networks to raise funds and recruit workers, they discover consumer needs and pain points in local contexts, and they collaborate with various actors to solve systematic inefficiencies. I call such economic creativity socially-embedded entrepreneurship.

I explore the concept of socially-embedded entrepreneurship in-depth in Chapter Five through the story of V Taxi. This group of taxi drivers in Hangzhou harnessed existing social structures and local values to create their own ride-sharing platform before the advent of Didi and Uber. The human-centric design of their platform mirrors sociologist Fei Xiaotong's illustration of "Differential Modes of Association (*chaxugeju*, 差序格局)."<sup>111</sup> The socially-embeddedness of their platform has limited them from quick upscaling (though I showed that V Taxi experienced tremendous organic growth), it made the platform superior to its corporate counterparts in regard of transparency, accountability, and cultivation of skills.

The informal sector in China is defined by the structural informality that is produced and persisted by the collusion between the state and corporate actors. Because of the huge profits that could be derived from such collusions, the state and corporations are incentivized to keep the status quo of informality. This mechanism has been closely studied by scholars of the construction industry, which is historically dominated by so-called street guerrillas.<sup>112</sup> In the construction industry, the informality of labor relations is characterized by layers of subcontracting, which is sustained by the collusion between the state and large contractors.<sup>113</sup> Swider argues that the state has adopted an attitude of "tolerated illegality" towards informal activities: large contractors who subcontract their work, migrant leaders who establish urban enclaves for migrants, and street labor market bosses who control the street labor markets. Since these actors organize large numbers of informal laborers, state tolerance and collusion are directly related to "the existence, growth and persistence of informal

work.”<sup>114</sup> As a result, the most economically and socially marginalized population came to shoulder the extreme high risk of real-estate industry in contemporary China.<sup>115</sup>

The persisting informality of labor relations in many important sectors such as construction industry has also contributed to what could be named “informal personhood” among workers. Guerrilla workers, according to Guang, hold a distinct set of ethical ideas or principles than the traditional industrial workers.<sup>116</sup> Firstly, lacking the experience of being incorporated in formal state economy, migrant laborers do not share a collective working-class consciousness. When asked about their work lives in the cities, they rarely use the term *gong zuo* that refers to formal employment; instead they use *da gong*, a term that indicates the temporariness and informality of their jobs. For them, the sense of fairness is not derived from the comparison between the socialist past and authoritarian capitalist present, but from the access to rural-urban mobility and economic up-mobility.

The systematic issue of informal economy however has not been extensively scrutinized by China scholars. One reason behind this, accordingly historian Philip Huang, is the strong inclination towards free market ideologies among scholars.<sup>117</sup> Having experienced a disastrous planned economy and inefficient state bureaucracy, most Chinese economists held a “deep revulsion” against state’s interference with market economy.<sup>118</sup> They applaud free market’s incomparable ability to induce creative energy, nurture entrepreneurship, and provision employment, while neglecting the ancestor of free market theory Hayek’s caution of the pitfalls of free market.

The vibrant socially-embedded entrepreneurship, the persisting informality of labor relations, the deeply entrenched informal personhood, the free market attitude of scholars and entrepreneurs, and the de facto collusion between the state and large corporations created the perfect storm for the disruption of ride-hailing industry in China. I hope to illustrate this process in my dissertation.

## Methods

In order to study technological disruption of ride-hailing, a process which simultaneously configures and is reconfigured by a broad host of actors, I decided to conduct a multi-sited comparative research in five local communities. During my 20-months of fieldwork, I immersed myself in corporate managers in Didi and Uber, labor contract companies, on-demand drivers, and taxi drivers. In order to study these very different groups of actors, I used a wide range of methods such as participant observation both online and offline, corporate ethnography, in-depth interviews, ride-alongs, and textual analysis of online comments.

Specific methods for each community are chosen based on accessibility and suitability. For corporate managers, I mainly adopted in-depth interviews, and supplemented with corporate ethnography and online observation; for labor contract companies, I used interviews along with on-site visits and casual hangouts with informants. With taxi drivers and on-demand drivers, I mainly conducted ride-alongs, which is more suitable for the peripatetic nature of their work and living. For individuals need following-up, I asked for their contact information and contacted them again online. Another key method for understanding drivers was to observe their interactions with one and another and with other actors such as hacking engineers, professional trip fakers in online communities. I conducted participant observation in three online communities, without revealing my own identity. With consultancy with IRB specialists, I decided not to disclose my researcher identity because all of the subjects use online avatars which do not reveal their real identity, so there would be minimal risk for me to observe and narrate their activities. Under such circumstances, the ethics committee and I agreed that the technique of deception is acceptable.

Outside of the five main communities, I have also conducted supplementary research on other stakeholders of ride-hailing industry. My research subjects include corporate managers in other ride-hailing companies such as Yidao and Shenzhou; experts in science, technology, policymaking,

transportation, and economics; consumers of ride-hailing platforms; taxi drivers who do not use digital platforms; black car drivers; and so on. In total, I have conducted over 200 interviews during my fieldwork.

Another key part of my supplementary research was participant observation in national and international tech conferences, events, and exhibitions. These gatherings showcased the technological landscape of China in a concentrated way. I recorded the exhibitions with photographs and the talks and panels with audio recording. But the most interesting encounters were often casual chatting up with participants. To my surprise, these events congregated not only people who work in tech sector, but citizens from all walks of life. They came to these events simply because their fascination of emerging technology and their deep belief that technologies such as AI, automation, blockchain will inevitably shape their work and life in the future.

This project also benefited hugely from numerous media reports, self-narrations, social media posts related to ride-hailing. With permission, I added many of my informants on WeChat, a Chinese social media application. By simply browsing their posts every day, I have gathered large amounts of news, images, and stories that provided me with incredible insights. Since the WeChat is a semi-public space (it is less public than Twitter or Weibo that are viewable for everyone, but most people post information with acknowledgement that they could be circulated outside of their friend circle), so I exercised my own judgments when it comes to whether to use certain information posted on WeChat. If the materials are clearly posted for public consumption, I would use it for my research purpose; if they were meant only for the eyes of friends, I would omit those posts.

All in all, I attempt to explore a productive way to study the relationship between human and technology on digital platforms in this dissertation. Undoubtedly, we cannot copy and paste traditional ethnographical methods to study our new socio-economic environments that are increasingly populated by non-human actors. For anthropologists who are used to understanding things from the

native's point of view, new objects such as platforms, algorithms, and formulas seem to resist the gaze of conventional ethnographic research.<sup>119</sup> In her article "Interrogating the Algorithm," Snider argued that the market today was made up by interactions of "legions of powerful, superfast trading algorithms," quoting Salmon and Stokes, which are hard for humans to understand and predict.<sup>120</sup> "A mathematical formula cannot be interviewed," said Bill Maurer in *A Handbook of Economic Anthropology*, but "its makers and users can."<sup>121</sup>

However, is the classical STS approach of opening the blackbox applicable to platform studies and sufficient? I think the answer is no. First, understanding the algorithms themselves has not been the main goal of platform studies. Although both treating algorithms as their research subject, platform studies differ from critical code studies in the field of media studies that focus on the epistemology and semantics of codes. Platform scholars generally try to understand algorithms more from the perspective of how they reconfigure organizational operations, information (a)symmetry, data flow, and control individual behavior.<sup>122</sup>

Furthermore, platforms (and technological systems in general) are shaped by actors, institutions, policies, and imaginaries way beyond their direct producers and users. Maurer followed up his previous statement that, although we could interview human agents, "the results it [technologies] produces can have effects unintended by and outside the control of those human agents."<sup>123</sup> In other words, understanding the creators of technology is far from grasping the technological systems and their impact on society. Therefore, I advocate for a much broader approach for studying digital platforms and adopted a comparative framework. By studying the actors traditionally not considered part of platforms, I reveal the broad and deep reach of them.

Lastly, my research approach can also be seen as a political action towards taking power away from corporate secrecy. In tech sector today, both in China and the U.S., decision-making processes are deliberately blackboxed and treated with secrecy. Such mystification of technology granted more

power to those who have access to the inside of systems and give them exclusive authority to create narratives. Many scholars attempted to infiltrate these blackboxes to reveal their secrets. Though their works are of great value, they re-enforce to some extent the inside/outside dichotomy of technological systems and the power of secrecy. Not to mention that with increasing protection of non-disclosure contracts, most of the time scholars can only get part of the secret instead the entire picture, giving corporations the upper hand in this whose has the ultimate secret race. What I hope to show through my dissertation is what lies outside of the blackboxes are equally valuable, if not more valuable, for social scientific studies.

## **Dissertation Structure**

Through personal stories and ethnographic accounts, my dissertation reveals how ordinary citizens are embracing, contesting, and re-inventing emerging technologies in contemporary China. It is organized into five body chapters, each of which focuses on the local moral world of a distinct community.<sup>124</sup> The chapters proceed in a loose chronological fashion that reflects and highlights the evolution of ride-hailing industry.

In **Chapter One, *Uber Dreamers***, I adopt the perspective of Uber's corporate managers to retell the story of Uber's efforts to conquer the Chinese market. This group of managers, comprised mainly of transnational elites, believed in the ethos of disruption and viewed their work as fundamentally moral. They argued that by disrupting inefficient and outmoded forms of urban transportation, ride-hailing platforms ultimately improve the quality of transportation, reduce congestion, and make cities greener. Moreover, by providing flexible employment opportunities, they also empower workers and democratize labor. Because of the massive potential benefits associated with such changes, any unintended consequences caused by the introduction of platforms (such as the

circumvention of laws or the displacement of taxi drivers) were morally justifiable.

As the competition between Uber and Didi heated up, China's ride-hailing industry became engulfed in a bitter subsidy war. In an effort to capture greater market share, both Uber and Didi doled out billions of dollars of venture capital in the form of cash subsidies to customers and drivers. In such a context, new online communities of *Hacker Drivers* (**Chapter Two**) emerged to profit from the tsunami of loose capital. On-demand drivers teamed up with hackers to fake or duplicate trips by exploiting technological and managerial loopholes in the platform design; at one point, it was estimated that 30-40 percent of all trips on the Uber China platform were fake. Interestingly, within online communities, such activities were characterized not as fraud or theft, but as acts of disruption. According to groups of hacker-drivers, digital platforms were disrupting China's existing transportation industry, and so they were simply disrupting the platforms.

In **Chapter Three**, I unravel the mystery of how the world's largest ride-hailing industry flourished in a country with low rates of car-ownership by demonstrating the central role of *Labor Contractors*. As China's ride-hailing industry became increasingly regulated, firms like Didi struggled to recruit sufficient numbers of on-demand drivers. They solved this problem by partnering with labor contractors, speculative middlemen who rent fleets of unused vehicles, recruit migrant workers, and then contract out these people and cars out to platforms. Though labor contractors initially operated in a legal grey-zone, they have since become increasingly formalized. Municipal governments have allowed them to establish companies and bid for licenses to legally manage a specified number of vehicles and drivers. In such a way, the disruption of China's old taxi industry has given rise to a new (and more exploitative) hierarchical order.

In **Chapter Four**, I tell the story of the *Didi System Builders*. After the Didi-Uber merge and legalization of ride-hailing by central government in 2016, Didi established itself as the legitimate virtual monopoly in China's ride-hailing industry. Its corporate mission has since pivoted from market

expansion to building smart city infrastructure, creating jobs in the rustbelt, contributing to social credit system, and so on. This chapter explores how mid-level Didi managers and researchers reproduce discourses that legitimize acts of social engineering and design the platform to best serve this purpose. Unlike the *Uber Dreamers* (Chapter One), they emphasize the importance of working together with the state to achieve societal goals. However, after the two murder cases on its carpooling service, its legitimacy was questioned and challenged by the public.

In **Chapter Five** I explore an alternative model of platform economy through the study of *V Taxi*, a grassroots community of taxi drivers who designed and created a self-governing ride-sharing platform. Before the founding of Didi or the arrival of Uber to China, a group of local taxi drivers began offering digitally mediated transportation services. Together they created a digital platform that harnessed the power of personal networks to not only increase the incomes of its members, but also facilitate the production of community values. What is more, through the adoption of this model, the V Taxi community experienced rapid organic growth. In China's hyper-competitive transportation services section, they successfully expanded to more than 50 cities and established a coordinated national service network— all without a cent of venture capital or other external investment. The example of V Taxi proves that alternative models cannot only succeed in the platform economy, but can even engender greater accountability, autonomy, and social-belonging.

Through the juxtaposition of different communities of actors that interface with ride-hailing platforms, I show that moral truths present themselves in Rashômon fashion: each community produces a local moral world that uniquely defines “what really matters” to its members. By placing these subjective truths in a comparative framework, I illustrate the complex process of negotiation through which the moralities of a platform are produced and reproduced. Furthermore, by exploring how contending truths are produced and reproduced, I show that in this digital era, the boundaries of “moral worlds” are beginning to map more closely onto technological divides than the traditional

divisions of geography, nationality, or culture.

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- <sup>1</sup> “Google Word Trend of Disrupt,” n.d., Google, <https://trends.google.com/trends>, accessed November 2, 2019.
- <sup>2</sup> Bower and Christensen 1995.
- <sup>3</sup> Schumpeter 1942, 83.
- <sup>4</sup> Christensen, Raynor and, McDonald 2015.
- <sup>5</sup> Kirby et al. 2016.
- <sup>6</sup> Morris 2016.
- <sup>7</sup> Drum 2019.
- <sup>8</sup> Abrams et al. 2007.
- <sup>9</sup> Ibid.
- <sup>10</sup> Lowrey 2014.
- <sup>11</sup> Mahdawi 2018.
- <sup>12</sup> In September 2019, the federal court of California ruled that Uber drivers are employees, but since then Uber has been appealing this ruling (Conger and Scheiber 2019).
- <sup>13</sup> The company received venture funding in late 2010 from a group of super angel investors in Silicon Valley, California, including Chris Sacca. In early 2011, Uber raised more than \$11.5 million in Series A funding led by Benchmark Capital. In late 2011, Uber further raised \$32 million in funding from several investors that include Goldman Sachs, Menlo Ventures and Bezos Expeditions bringing their total funding amount to \$49.5 million. See more detail at Kirby et al. 2016.
- <sup>14</sup> Kirby et al. 2016.
- <sup>15</sup> Ibid.
- <sup>16</sup> Benkler and Nissenbaum 2006. And see Schor and Fitzmaurice 2014 for examples of food swapping and time-shares in Boston.
- <sup>17</sup> “About Yidao,” n.d., <https://www.yongche.com/cms/page/v10/aboutUs.html>, accessed May 10, 2020.
- <sup>18</sup> Frost 2020.
- <sup>19</sup> *Yicaiwang* 2017.
- <sup>20</sup> *The Guardian* 2017.
- <sup>21</sup> *Yicaiwang* 2016.
- <sup>22</sup> iResearch 2013.
- <sup>23</sup> Alibaba Group is a privately-owned Hangzhou-based group of Internet-based e-commerce businesses including business-to-business online web portals, online retail and payment services, a shopping search engine and data-centric cloud computing services. In 2012, two of Alibaba’s portals together handled ¥ 1.1 trillion (\$170 billion) in sales, more than competitors eBay and Amazon.com combined. The company primarily operates in the People’s Republic of China and in March 2013 was estimated by The Economist magazine to have a valuation between \$55 billion to more than \$120 billion.
- <sup>24</sup> Tencent Holdings Limited (*Teng Xun*; 腾讯), founded in 1998, is a Chinese investment holding company based at Shenzhen. It provides mass media, entertainment, Internet and mobile phone value-added services, and operates online advertising services in China. According to market capital rank (\$144 billion), it is now the fourth largest Internet company in the world, following Google, Alibaba, and Facebook. It developed mobile message application WeChat, what I mentioned earlier in the paper.
- <sup>25</sup> Analysys 2014.
- <sup>26</sup> Adams et al. 2007.
- <sup>27</sup> Released at January 2011, WeChat now has 889 million active users, it’s the third largest messaging app after WhatsApp and Facebook Messenger (Statista 2019, <https://www.statista.com/statistics/258749/most-popular-global-mobile-messenger-apps/>).
- <sup>28</sup> Picture retrieved from *Wangyiqiche*, “Fangdi Shenduan Uber Tui Pinche Fuwu ‘Renmin Youbu’ (Uber Promotes Car Sharing Service ‘People’s Uber’),” Aug 4, 2014. <http://auto.163.com/14/0804/21/A2R7QSS0000854CH.html>.
- <sup>29</sup> Frost 2016.
- <sup>30</sup> Sanjiekē 2017.

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- <sup>31</sup> Asher-Schapiro 2016.
- <sup>32</sup> The acting law was entitled, “Wangluo Yuyue Chuzu Qiche Jingying Fuwu Guanli Zanzing Banfa (Acting regulatory framework for operating Internet-based taxis.” *Xinhua Net* 2016b.
- <sup>33</sup> “Global Comparison-Revenue,” Statista, accessed May 9, 2020.  
<https://www.statista.com/outlook/368/100/ride-hailing-taxi/worldwide#market-arpu>.
- <sup>34</sup> *IT Zhijia* 2016.
- <sup>35</sup> 1 terabyte is  $10^{12}$  bytes or 1000 gigabytes.
- <sup>36</sup> Sun 2018.
- <sup>37</sup> Zhang 2018.
- <sup>38</sup> Gray and Suri 2019; O’Neil 2016; Rosenblat and Stark 2016.
- <sup>39</sup> Deleuze 1992; Rosenblat and Stark 2016.
- <sup>40</sup> Lowrey 2014.
- <sup>41</sup> Kelty 2003; Boellstorff and Maurer 2015; Muniesa 2000; Maurer 2005; Lash 2007; Lepinay 2011; Snider 2014; Ziewitz 2016.
- <sup>42</sup> Fraser 2013; Neely 2015; Van Doorn 2017; Shade 2018.
- <sup>43</sup> O’Neil 2016; Edelman, Luca, and Svirsky 2017
- <sup>44</sup> FitzPatrick 2015; Hawkins 2018.
- <sup>45</sup> Smith 2000[1776].
- <sup>46</sup> Hayek 2005[1945], VI.
- <sup>47</sup> Polanyi 2001[1944], 68-69.
- <sup>48</sup> Coase 1937.
- <sup>49</sup> Schumpeter 1943.
- <sup>50</sup> Chandler 1962, 1977.
- <sup>51</sup> Polanyi 2001[1944].
- <sup>52</sup> Carrier 2005,14.
- <sup>53</sup> Ibid.
- <sup>54</sup> Carrier and Miller 1998, 2.
- <sup>55</sup> Ibid.
- <sup>56</sup> Carrier and Miller 1998,9.
- <sup>57</sup> Muniesa 2000; Maurer 2005; Lash 2007; Lepinay 2011; Snider 2014.
- <sup>58</sup> Snider 2014.
- <sup>59</sup> Boellstorff and Maurer 2015.
- <sup>60</sup> Hayek 2005[1944].
- <sup>61</sup> Polanyi 1974[1958].
- <sup>62</sup> Latour and Woolgar 1979; Shapin and Schaffer 1985; Rabinow 1996.
- <sup>63</sup> Coopmans 2014,1.
- <sup>64</sup> MacKenzie and Wajcman 1985.
- <sup>65</sup> Edwards 1997.
- <sup>66</sup> Anand 2011, 2017; Ballesterro 2015, 2019; Coleman 2017.
- <sup>67</sup> Evans-Pritchard 1940.
- <sup>68</sup> Herzfeld 2004; Grasseni 2007.
- <sup>69</sup> Cohn 2007; Frost 2017.
- <sup>70</sup> Elyachar 2002, 2010.
- <sup>71</sup> Anand 2011.
- <sup>72</sup> Elyachar 2010; Anand 2011.
- <sup>73</sup> Donaghy 2002.
- <sup>74</sup> Donaghy 2002, 272.
- <sup>75</sup> Das 2015, 54.
- <sup>76</sup> Foucault and Rabinow 1997; Mahmood 2005; Zigon 2011; Faubion 2011.
- <sup>77</sup> Lambek 2010, 1.
- <sup>78</sup> Ibid.
- <sup>79</sup> Kleinman 2010.

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- 80 Geertz 1973; Lambek 2010.  
81 Appadurai 1996.  
82 Lambek 2010.  
83 Jasanoff and Kim 2015, 20.  
84 Ibid., 4.  
85 Jeroen et al. 2019.  
86 Ibid.  
87 *Xinhua News* 2017; Greenhalgh and Zhang 2020.  
88 Greenhalgh 2020.  
89 Rose 1990.  
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92 Hong 2017.  
93 Zhang 2020; Hong 2017; Shen 2016; Weber and Jia 2007.  
94 Hong 2017:12.  
95 Dyer-Witthford and Peuter 2009.  
96 *Craft* 2020.  
97 Chen and Qiu 2019.  
98 Ibid.  
99 Ibid.  
100 van Dijck et al. 2018:73.  
101 Chen and Qiu 2019; van Dijck et al. 2018:139.  
102 Bach 2016.  
103 Ibid.  
104 Zhou 2006.  
105 Ibid.,16.  
106 Huang 2009, 405.  
107 Ibid.  
108 Chen 2017; Chen and Qiu 2019; Zhang 2020.  
109 Zhang 2020.  
110 Zhang 2020, 121.  
111 Fei 1992[1948].  
112 Guang 2005.  
113 Guang 2005; Ngai and Lu 2010; Swider 2015.  
114 Swider 2015,55.  
115 Guang 2005; Ngai and Lu 2010.  
116 Guang 2005.  
117 Huang 2009.  
118 Ibid.  
119 Geertz 1973.  
120 Snider 2014, 754. Salmon and Stokes 2011.  
121 Maurer 2005: 184.  
122 Rosenblat 2016, 2018; Chen; 2018; Gillespie 2018; Gray and Siddharth 2019.  
123 Maurer 2005, 184.  
124 Kleinman 2010.

Chapter One

**Uber Dreamers**

“My dream is that one day, all of this [traffic] will disappear. And on-demand rides will flow like water from a faucet.”

— Davis Wang, June 2014

Back in the summer of 2014, few urbanites in Shanghai has heard of Uber. “Have you heard of Uber, or Youbu”? I asked many taxi drivers during my fieldwork that summer. No, never heard of that, they said. I explained that Uber is an on-demand ride-hailing platform very popular in the U.S. and some European countries. It is similar to taxi-hailing platforms in China like Didi and Kuaidi, except on Uber all the cars are private cars and drivers are ordinary urbanites. “What? That will never work in China! Such things are illegal in China, haha,” they casually laughed it off, as if it is just another exotic tale from foreign lands.

The disinterest from drivers was quite understandable. At that time, the whole nation was distracted by the competition between the taxi-hailing platforms Didi and Kuaidi. Under the heavy smoke of their battle, Uber snuck in. In February 2014, Sam Gellman, the then director of Uber Asia, announced that Uber would be starting its business in China under a catchy Chinese name, Youbu (优步; translates as “good steps”). They set up offices in three first-tier cities in China: Shanghai, Guangzhou, and Shenzhen, and started offering on-demand services in partnership with local commercial car companies. They modeled themselves after the black car service that was first launched in San Francisco.<sup>1</sup>

For quite a while, Uber was just a foreign company existing in a niche market: their service was restricted to certain downtown areas in a handful of cities and was much more expensive than taxicabs. According to a white gloved driver I spoke to in Shanghai in 2014, most of his consumers

were foreigners who happened to have used Uber abroad. But under the calm water, a revolution was brewing.

In October 2014, Uber launched service that completely disrupted China ride-hailing market. “People’s Uber” (*renmin youbu*; 人民优步), a Chinese equivalence of UberX in the U.S., enabled ordinary urbanites with cars to become commercial drivers. This move sent a shock wave across China. According to Travis Kalanick, the founder and then CEO of Uber, they chose the name People’s Uber because “it felt inspiring, it felt natural, and it felt local.”<sup>22</sup> But with a close examination of the images used in their advertisements, one can also see their explicit references to Maoist propaganda posters. The images harkened back to the revolutionary sentiments of red socialism, smartly aligning the rise of Uber with the interest of people. It seems to be indicating that since the platform is designed for people and embraced by people, it should have a legitimate position in Chinese society.

Uber not only started a transportation revolution in China’s transportation sector, more importantly, it introduced a new version of socio-technical imaginary into China, one that is hip, young, western, and disruptive. The adoption of this type of technology has less to do with strengthening the nation, but more to do with becoming cosmopolitan, cool, mobile, social, and connected to the rest of the world. For once, the citizens of China are not limited to the intranet created by the state: using Baidu instead of Google, WeChat instead of Facebook, Weibo instead of Twitter. The public could finally access a popular technology simultaneously as Silicon Valley. Uber represented a technological culture that is authentically global and full of western flair (*yang qi*; 洋气).

Uber’s entrant into China not only excited consumers, but also a generation of highly-educated youth whose Chinese dream has a distinct American undertone. Most of Uber managers hired during its expansionary time were twenty-something young Chinese talents who just graduated from undergraduate or master programs overseas. They were often nicknamed “sea turtles” (*hai gu*; 海龟) in China. With coveted western degrees, they could often pick and choose from the best jobs on the

market. But many of them wanted to join Uber. I was told that at its peak, Uber received two thousand applications for one advertised position. “You can meet the coolest people here, some you will never meet again in your whole life,” one sea turtle there proudly told me.

The launch of People’s Uber spurred huge reaction from its competitors. Didi and Kuaidi, once mortal enemies that spent millions of dollars to outcompete each other, decided to merge in order to fight Uber. On February 14<sup>th</sup> 2015, Valentine’s day, the two companies announced that they were going to formally become one: Didi Kuaidi. Although Didi and Kuaidi were of equal size at that time, Didi became the dominant entity after the merger. The headquarter of the new company was located at Beijing, home of Didi. And the founder of Didi, Cheng Wei, assumed the position as CEO of Didi Kuaidi. Even the name of the new company was later shortened to Didi, erasing the existence of Kuaidi altogether.<sup>3</sup>

The newly restructured giant Didi (who had 99% market share of taxi-hailing market at the time of the merger) also launched its own ride-hailing service, Didi Kuaiche (滴滴快车; translates into “Didi Fast Car”) in May 2015.<sup>4</sup> In order to capture the enormous ride-hailing market, Didi and Uber waged an unprecedentedly aggressive and expensive subsidy war against each other. Dipping into the massively deep pockets of their investors, the companies began doling out enormous cash rewards to both customers and drivers. As they collectively burnt through billions of dollars in venture capital, they became locked in a war of attrition, each trying to out-survive its rival.

The capital they injected into ride-hailing exerted a massively distortionary effect on urban transportation. Many middle-class Chinese stopped using taxis and some were even drawn away from public transportation. After all, if hailing a ride is almost as cheap as buying a subway ticket, why not enjoy a private car? On the other hand, waves of rural migrants were attracted to cities by the lucrative driver subsidies. The congested streets of China’s metropolises grew even more crowded, traffic

conditions worsened, and automotive pollution increased. The effects on urban transportation were exactly the opposite as Uber managers imagined.

To outcompete its rivals, Uber also employed hundreds of underpaid interns. During Uber's peak expansionary period, the Shanghai office maintained a ratio of five interns for every one of its full-time employees. And these interns were not just doing basic office work— they were resolving disputes with drivers, carrying out high-level operations, and even handling sensitive data from Uber's headquarter. Even worse than that, Uber China also used them to carry out morally questionable acts, such as corporate espionage. Uber hired interns and sent them to apply for jobs at competing companies such as Didi; once hired, they acted as double-agents and fed intelligence back to Uber. Now do not get me wrong, Uber was not alone in adopting shady practices. The people over at Didi were doing the same and worse. Such underhanded strategies were reflective of the broader ethos of the ride-hailing industry, which held that anything is fair in disruption and war.

With significant discrepancies between what ride-hailing technology aimed to achieve and what they actually achieved in reality, the faith of Uber managers remained unshaken. As one of my informants put it, "Uber is almost a religious cult. You enter, you internalize its values and culture. And you have to rely on the belief in our moral superiority." In the local moral world of Uber managers, disruption is regarded as a moral imperative. Having internalized an ethos of techno-utopianism, the managers and interns of Uber deeply believe that technological disruption is the engine of economic and social transformation. And for such a noble end, virtually any means is justified.

This chapter covers the development of Uber between mid-2014 to mid-2016, a period of savage growth of ride-hailing industry as described by Chinese media outlets.<sup>5</sup> The majority of my data was collected in Shanghai during my preliminary fieldwork in the summers of 2014, 2015, and 2016, during which time I conducted participant observation in Uber Shanghai office, in-depth interviews with Uber managers and interns, and ride-alongs with Uber drivers. Some supplementary interviews

were conducted in Beijing and Boston. Also, I have relied heavily on social media such as WeChat to follow up with my informants over the years and to understand the Uber world through their own social media posts. I also included plenty of media articles, industry reports, and autobiographic books to both supplement my materials but also cross reference with my own experience.

### **The Beginning, The Pioneer**

In early 2014, Davis Wang joined Uber to be the general manager of Shanghai, the first city chosen to be Uber's test ground. Davis was then already a veteran in the Internet industry. In his 17-year-long career, he spent three years in Google China (2006-2009), spearheading its early stage development in Chinese market. After that, he spent another three years in Tencent, the biggest Internet tycoon in BAT triad (together with Alibaba and Baidu). He climbed the corporate ladder as high as vice general manager, supervising many aspects of its operation in search engines, social networking, and mobile technology.<sup>6</sup>

Davis was the first Uber manager I interviewed for my dissertation project. In 2014, I was just starting out my first summer fieldwork and did not know anyone at Uber or in ride-hailing industry. I wandered around on the vast world wide web, and stumbled upon Davis' Weibo account and sent him an invitation for interview.<sup>7</sup> I did not expect he would reply to a stranger on such a public platform, but he did. After some back and forth over email, we finally sat down in a cafe in Shanghai's former French concession.

Davis described himself in his profile as "calm on the surface, passionate inside."<sup>8</sup> But my first impression of him was being direct and sharp, even a bit unforgiving. The most memorable line from

that interview, I can still recall today, was “this is a business secret.” He said it eight times during an hour-long interview (out of curiosity I went back and counted it), refusing to answer half of the questions I asked him. For example, he wouldn’t tell me whether they give subsidies to drivers as incentives, neither would he disclose whether Uber collects their own transportation information or buys them from other companies or the governments. He refused to answer what was the biggest price surge ever happened in Shanghai, who were their cooperating partners in Shanghai, so on and so forth. The whole conversation was interjected by “no comment” that I began to wonder why he accepted my interview in the first place. The atmosphere of secrecy and distrust filled the air.

But from the limited information he did disclose, I learned that in mid-2014, Uber was still a small ride-hailing company, operating only in downtown Shanghai (inside of inner ring road in Puxi and at the CBD area of Pudong). He used a metaphor to describe how they chose the areas to put their limited cars.

“Imagine Shanghai as a role of Xuan paper,” he said, “We would first drop an ink on it and see where it goes.”

Putting this metaphor in technical language, what Davis and his colleagues were doing was identifying hotspots in the city based on places users clicked on the Uber app (even instances when users only opened the app and did not order cars), and then they sent cars to the hotspots and let it grow organically from there. Given their limited supply of cars and the increased cost of dispatching cars to destinations faraway, they had to give up some isolated hotspot such as the Pudong Airport.

Uber took an extremely hands-off approach towards human management of drivers. Davis stressed that they were not “their drivers,” because Uber did not sign any labor contract or form employer-employee relation with them. When asked about driver training, he said that it was limited to passing on feedbacks from customers and warning them that they would be banned from the platform if their service scores drop too much.

Davis believed the computational algorithms would do most of the work, from disciplining drivers to distributing cars. And entrusting everything to the algorithms, he argued, increases the liquidity of the system and thus its efficiency. For instance, he thought that users should give up the stupid habit of pre-booking, which locks drivers into appointments and prevent them from being mobile. Instead, consumers should trust that the platform would pair them up with the most optimal driver in real-time. But as soon as the Uber model hit the market, Davis realized that it was quite difficult to convince Chinese consumers to simply trust the platform. He told me a lengthy conversation he had with a friend who wanted to go to Pudong airport around 6 a.m.

“He insisted that he had to book a car in advance to ensure that there will definitely be a car picking him up at that time. I want to convince him that booking a ride in real-time on Uber’s platform will be as reliable.”

His friend doubted this strategy, and Davis got a bit argumentative and started questioning his friend, “so, you think the car you booked will definitely show up 100%? What if the driver misses his alarm? What if he is stuck in traffic?”

But after the lengthy conversation, he finally reconciled with the fact he cannot convince users only based on “theory,” since most people make decisions based on past experiences. In time, he reckoned, the users will trust the algorithmic system of ride-hailing platforms as much as they trust taxi-hailing in the past. Reflecting on his words today, I realized that his vision has been realized. People’s habits of ride-hailing, even ways of reasoning, have been greatly transformed by platforms such as Uber. Today many people, myself included, will feel very comfortable hailing a ride on the spot for important trips and expect drivers flow onto their doorsteps, just like turning on water faucets and expecting clear water to flow out.

The advantages that algorithmic liquidity afford to us are numerous, Davis claimed. The liquidity of fares, for instance, incentivizes drivers to come out during busy hours to increase the

demand. At the same time, surge pricing suppresses demand, nudging people to delay or change their trips. But instances of extreme liquidity of pricing have also attracted strong criticism from the public. In 2014, during an armed hostage crisis in Sydney, the fare of Uber surged four times because of the sudden increase of demand.<sup>10</sup> Uber was later accused by the media for taking advantage of this distressing situation. The company later responded by setting limits for surge pricing.

The persistent desire of Uber managers to entrust everything to the computational algorithms stands in contrast to the reality that human labor is indispensable for their technological system to function. This glaring gap was shown to me again and again throughout my research. But I was puzzled by the managers' attitude towards human labor. They fervently advertise the power of their algorithms, while deliberately shy away from discussing the significant role human actors, including themselves, play in its daily operations. Perhaps the narrative of infinite automation is more aligned with their imaginations of platform technology. Or perhaps their imaginations became so powerful that it replaced the reality as "the truth."

The most memorable and telling moment of our interview happened after it ended. After we said good-bye in front of the cafe, we started walking in opposite directions. But while I was standing at a busy intersection, I felt someone tapped on my shoulder. It was Davis again.

"Look at this," he pointed to the road, "My dream is that one day, all of this [traffic] will disappear. On-demand rides will flow like water from the faucet. And then the city will become a better place." Under his veteran-style caution and restraint, I saw a person with a utopian dream of technology transforming life, space, and environment.

He was the first, but definitely not the last, corporate manager to impress me with such an impassioned speech. Most managers of Uber (and later Didi) all held a dream that sounds idealistic and noble in theory: making the world a better place through technology. The belief in technology's ability to improve society kept Davis and his colleagues hustling. Under the leadership of infamously

aggressive founder and then CEO Travis Kalanick, Uber broke out of its niche market and emerged a strong player in China's ride-hailing market.

### **From Uber to Youbu**

Until the end of 2014, China's ride-hailing industry has been developing in a different direction than the U.S. Large platforms such as Didi and Kuaidi had focused their business on taxi-hailing. Some smaller platforms such as Yidao, Yihao Zhuanche (A subsidiary of Kuaidi), Shenzhou Zhuanche serve non-taxis. But all their drivers are licensed full-time commercial drivers with high-end business sedans. Therefore, though attracted a bit of controversy, the ride-hailing industry was mainly seen as enhancing an existing industry and creating a different type of service that exist in a niche market. There was no real "sharing economy" or "gig economy." There was no mobilizing the masses—the resource of ordinary people's cars and labor. There was no real disruption. But that changed in 2015, when Uber China, after two years of operating in the black car sector, formally launched its ride-hailing platform "People's Uber" in Beijing. China's transportation industry became truly disrupted.

When Didi and Kuaidi geared up for competition, Uber also doubled down on its localization efforts. Uber had not done greatly to localize the product when it first started in China. Its ride-hailing app only support credit cards and did not allow consumers to connect it with mobile payment. Anyone who has spent time in China knows that credit cards are not popular. Unlike the U.S., China leapfrogged from a cash society to a mobile payment society. Uber's original interface was also hard to navigate for Chinese-speaking users, for a lot of the addresses were not shown in Chinese characters but in English alphabetical/Pinyin forms. When I used Uber in the summer of 2014, the driver told me that the majority of his clients were *laowai* (expats).

However, in 2015, Uber started to transform itself by localizing its services. This trend, partially, began at the top. “I have been to China so many times I could get a Chinese citizenship,” said Travis Kalanick in an interview with *Caixin*, one of China’s leading financial magazines. Uber’s co-founder and then CEO visited China eight times and stayed in China for 50 days in the first half year of 2015.<sup>11</sup> Travis emphasized that it is very important for Uber to find Chinese partners, Chinese shareholders, and run Uber China as a Chinese business.

“You know, we could have continued to run Uber, sorry Youbu, as a part of Uber global, but it is important for us to make it a Chinese company.” The self-correcting moment from saying Uber’s English name to its Chinese name “Youbu” showed that Travis realized the importance of localization.

In October 2015, Uber registered an independent company for its China branch in Shanghai Free Trade Zone, so it legally became an “authentically and thoroughly Chinese company.”<sup>12</sup> Travis wanted a completely Chinese company with separate management and separate headquarters because he thought that “China is so different than the rest of the world.”<sup>13</sup> Also, based on governmental requirements, all Chinese tech company have to set up their servers in China. Therefore, Uber re-located its server from Hong Kong to Wuhan.

Another crucial step of localization for Uber was entering the alliance with a powerful Chinese partner: Baidu.<sup>14</sup> Baidu was one of the BAT triad and among the most powerful tech companies in China. It is often known to people via Baidu Search, the most popular search engine in Mainland China. Later to the ride-hailing game than the other two tycoons Tencent and Alibaba who joined the ride-hailing boom as early as 2013 (they each invested heavily in Didi and Kuaidi), Baidu was itching to get into this fast-developing industry. So, it took the hands of Uber, the last promising candidate that could rise as the winner of China’s ride-hailing disruption. From this alliance, Uber gained a strong local partner who could boost its business with China’s biggest search engine and one of the most popular mapping systems, Baidu Map.

After the partnership was established, Uber incorporated Baidu Map into its system. However, this move caused some frustration among drivers. Most drivers I interviewed found Baidu map “shitty.” They would usually put the addresses into a different navigation app (usually Gaode) for direction.<sup>15</sup> When the journalist of *Caixin* told Travis that “Baidu map sucks, whenever I tell an Uber driver where I am, the location is always wrong.” He tactically averted the topic by saying, “I have a different experience,” and went on to stress that by partnering with Baidu, Uber will allow millions of Baidu Map users to simply tap a button and get a ride. The fact that Uber did not choose to work with the best tech company but one that can help it rapidly expand its network reflected on China’s tech sector. For most start-ups, the mentality is to go big or go home. Many seasoned tech experts told me that if a start-up does not ally itself with one of the BAT companies and get big very fast, it would probably die very soon. That is because, they claimed, BAT would copy the business models of small enterprises and make them work better with their huge customer basis. There are perhaps only a handful of sizable tech companies in China that established themselves without being integrated into the BAT eco-systems. It is safe to say that the ride-hailing revolution in China was heavily shaped by the big players behind them, in particular BAT, who provided not only massive financial investments but also digital, economic, and political networks that made ride-hailing start-ups go big overnight.

Uber’s proactive localization strategies resulted in great successes. In mid 2015, four of Uber’s top ten cities measured by daily trips completed in the world were in China. Chengdu, a second-tier city in Southwest China that was unheard of by most western citizens, was the No.1 city on that list.<sup>16</sup> For Travis, the potential of China’s ride-hailing market was unparalleled. In 2015, China has over 200 urban centers with populations over one million. In comparison, US only has twenty metro areas that passed the million people thresholds. It was estimated the size of ride-hailing market in China was equal to all the other markets in the rest of the world combined. More importantly, Travis thought that Chinese citizens were more interested in embracing new technologies. Social network platforms

such as WeChat allow Chinese people to interact with and chat about emerging technologies, making them spread much faster than they do in other societies. Such technology-human interaction speaks to what the future might look like, Travis commented.<sup>17</sup>

However, to fully take advantage of this gigantic and insatiable market, Uber still has a lot of obstacles to overcome. Expectedly, local governments pushed back and started cracking down on ride-hailing. Under existing rules of most municipalities, driving private cars without commercial licenses to make profits were illegal. Many local governments devised strategies to prosecute both drivers and companies. Sensational videos showed that government officials in Chengdu rushed into Uber office and confiscated dozens of iPhones that were supposed to be given out to drivers, and Guangzhou officials unsettled the Uber office in their city.<sup>18</sup>

But the leaders of Uber remained positive. Travis did not think the expansion of Uber harmed taxi industry in any city. “If you look at a number of cities, the number of taxis has stayed the same even though the cities have grown a lot. To give you an example, in New York, there are 13, 250 taxis today. Seventy years ago, there were 13, 250 taxis.”<sup>19</sup> At the same time, they swiftly put together strong teams to cope with these tricky situations. They established Government Relations departments in major cities. I interviewed Ms. He Jia, the former public policy officer at Uber’s Beijing headquarter. She was then on a trip with Ms. Liu Zhen, the former CEO of Uber China, to Harvard University in spring 2017. Ms. Liu was invited as a VIP speaker at the Harvard China Forum.

Jia said that her main job at Uber was “putting out fire” for the company. The start-up was surrounded by troublesome things in 2015, she said, such as taxi drivers protesting all over, on-demand drivers committing fraud and, when being punished, rushing to Uber offices to appeal their cases. She was approached by Uber at that time and joined the team of a dozen full-time workers in Government Policies/Relations department. “Our department received close to zero budget,” she said. Most of Uber’s marketing budget has been spent on cash subsidies to drivers and users. Despite that, everyone

in the department was still “super pumped” to contribute (she emphasized that being super pumped all the time is one of core cultural values of Uber). They approached Ministry of Transport in Beijing among others and successfully got ride-hailing legalized in 2016. Furthermore, they prepared talking points and arguments for policy change, and had local managers deliver them to municipal governments.

On the other hand, there was also harsh competition with incumbent competitors such as Didi. When asked about competition with Didi, Travis said that if Uber does a good enough job, consumers would naturally come.

“The way we think about this is it comes back to the experience, it comes back to the product, it comes back to the marketing, and letting people choose and have a choice. If we do our job well, more people come our direction.” That being said, Travis was not against giving out subsidies and believed that it gives drivers a sense of confidence about the business.<sup>20</sup> And that was exactly what they did: commencing a subsidy war against Didi that would disrupt thousands of people’s lives.

### **The Invisible Interns**

The summer of 2015 was a glorious time for Uber China. Hailing a ride on its mobile app became arguably the most fashionable way of getting around for urbanites. Many white-collar workers no longer took subways or taxis to work. People loved the wonderful experiences of ordering rides while still sitting in their air-conditioned offices, and then casually strolling out the revolving doors as the rides arrive. Drivers were taking up Uber more enthusiastically than Didi, commenting that it was a far superior platform with higher-quality consumers and more human-centric designs. All in all, Uber was perceived to be more western, fashionable, and high-end than its domestic equivalences.

Hailing rides for many users became something more than getting around. It was also a way to socialize, to meet new people, and to have serendipitous encounters. One driver told me he met his girlfriend while driving Uber. Another driver said that he took up Uber driving because driving around the city always relaxes him after his high-pressure day job. Many of my friends shared with me their experiences as consumers of Uber: someone hailed an Uber that turned out to be a luxurious experience with shiny Mercedes Benz, and someone met an Uber driver who was a successful entrepreneur. These beaming social scenes promoted the brand of Uber to a wider market.

But how was Uber and its vast digital network being operated? Many managers insisted that Uber's platform was so powerful and scalable, that it barely needed people to manage it. According to the company's model, to break into any new city, the platform only required three people, one city manager, one operations manager, and one marketing manager. However, in reality, this managerial lightness was achieved only through the support of an invisible army of interns, who were willing to work long hours for little pay. During Uber's peak expansionary period, the Shanghai office maintained a ratio of five interns for every one of its full employees. And these interns were not just doing basic office work—they were resolving disputes with drivers, carrying out high-level operations, and even handling sensitive data from Uber's American headquarter.

Although they were lifting heavy weight for the company, Uber interns worked on extremely low pay. And most of their compensation came in the form of Uber coupons. In 2016, a college student publicized a text exchange between him and a recruiter from Uber.<sup>21</sup> Like many college students aspiring to work in an upcoming tech company, he submitted his CV to Uber. Then one day, he got a message in his WeChat account (the underlined part is in English):

“Hello, our offer is half a year contracted internship. ¥1000+1500 Uber coupon+ lunch + team building/retreat events + full time job opportunity. Compensation will be adjusted every two months depending on performance. We will decide if we hire you full time after the internship, if Ok, start working tomorrow. If no reply in three minutes, I will consider its a rejection, thanks.”

This is an internship offer that requires him to work full-time, more than 10 hours a day, five days a week. Even counting the Uber coupon, he will only be compensated ¥12/hour, that is less than two dollars an hour. At that time, the minimum hourly wage in the city of Guangzhou is ¥18/hour.<sup>22</sup> Though the compensation package does not sound that enticing. Young people were drawn to Uber—to its fabulous western culture, and to its potential to be the next Amazon or Facebook.

As soon as the student got the message, he hurried to reply: “I am still in class, can I reply to your message in the evening?”

The recruiter simply replied: “No”.

When the student inquired about the specific address of the office to make sure he could commute there from school every day. The recruiter got annoyed and said: “If you don’t like it, just reject it.”

Confounded, the student rushed to explain that he just wanted to know how long it will take to commute. The recruiter then ended the conversation by saying, “This [exchange] is a test for how intensively you want to join us, I can see your intensity is not that strong. So, let’s call it an end.”

This exchange between the Uber recruiter and the student highly resembled Ms. Tan Jing’s interview experience in 2013, when she was hired as one of the first managers at Uber. In her book *Chongxin Dingyi Fenxiang*, she depicted that during her interview with Sam Gellman, Uber’s then director of Asia, Sam looked “impatient” (*bunajfan*; 不耐烦) every time her answer was not on point. Then she was asked to conduct a “market research” in 40 minutes and come up with an entire proposal to incentive drivers in 24 hours.<sup>23</sup> Both of these recruiting experiences showcased the aggressiveness of Uber’s corporate culture. The shared corporate belief is that if one cannot accomplish something, it is because one does not want it hard enough. The shared goal is to achieve the impossible. Such a corporate culture cannot help but reminds me of that was depicted in Steve Jobs’ biography and Elizabeth Holmes’ *Bad Blood* story.<sup>24</sup>

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Although this particular student missed the opportunity to join Uber, many did succeed. I met Eddie, a college student from southern China, in that glorious summer of 2015. In my memory, Eddie was always wearing a clean button-down shirt, black nerdy glasses, and an affectionate smile. He did not go to a famous university, so he was very self-conscious that he had to work extra hard in order to survive in a competitive place like Uber.

Eddie's first choice was to join the marketing department of Uber, which plans fancy events such as ice cream delivery or helicopter hailing. Unfortunately, he was assigned to the polar opposite, department of operations management. Specifically, he was put in charge of driver complaints. When I visited him in the Uber Shanghai office, he was using a work station that was essentially just a makeshift plastic table. There, he received many angry and frustrated drivers.

Only a few weeks into his internship, he had already realized that the drivers' anger could escalate into physical assaults very fast. He had been hit, choked, and poured water at. "Most of the times they just yelled at me," he laughed. But sometimes things went south. For instance, one day a driver came to appeal a case. He was not satisfied the first day, so he came back again the next day. Eddie's colleague got frustrated by his persistent complaints and snapped at him. The driver was inflamed by the comments started yelling loudly to everyone in the office. While he was lashing out verbally, a cup of water also splashed out of his hands. And it landed exactly on Eddie's face.

Eddie told me these stories over a hotpot dinner at a popular Japanese restaurant. While I was stunned by the details, he seemed no longer emotionally affected by these violent incidents. He casually mentioned words like "choking" and "hitting" while adding cabbage and tofu to the boiling soup, as if he was telling a friend about another ordinary day at work. As his stories continued, I started to

understand where his calmness came from. More often than not, these violent episodes in his work ended with some form of peace-making.

“Many drivers who have beaten me actually came to apologize to me afterwards,” he said, “they told me that they were angry at the platform, not angry at me” (*Zhendui pingtai, bushi zhenndui wo*; 针对平台，不是针对我).

For instance, one time he was in an arbitration meeting with his colleagues and some drivers who were accused of committing fraud. Eddie was hit in the middle. But after the meeting was over, the driver who beat him came over and said, “little fat boy (in an affectionate way), I have some experience to teach you, some experience about negotiating.” He tapped Eddie on the shoulder and passed on his wisdom. Another time, a female driver came to appeal her case, with a legion of supporters following her. She stormed from one room to another, stating her case while pounding tables. After a whole day of “appealing,” she got tired as the employees were about to get off work. She walked over to Eddie and asked if she could add him as a friend on WeChat. “Sometimes I don’t know if I should laugh or to cry at these moments,” he said.

The bursts of violence and the sudden peace-making seem to be surprising at first glance. But it makes a lot more sense if one stopped seeing these two parties as managers and those being managed, but two groups of individuals each performing to their ultimate boss—the platform. The drivers’ frustration and anger were caused by the mistreatment of the platform. In the early days of Uber’s development in China, its technological stability was far from satisfactory. Since its nearest server was in Hong Kong and its engineering team was in San Francisco, the app often miscalculates trip distance (for example the signal might be lost for a while or failed to log whole trips), which leads to the loss of income on the drivers’ end and the lowering of their service scores (the app thinks they failed to accept assigned trips). If their trip-acceptance rates are too low, they could get punished by the app with de-prioritization or even suspension.

When the drivers went to the Uber office to appeal these cases, they first saw Uber employees as the managers of the platform. They lashed out their anger onto these human actors, believing that the platform follows their decisions. But soon they realized that the managers also do not know much about how black-boxed algorithms work and struggle to make the technology work. “Our server crashed twice during my time there,” another intern told me, “all the trip information was lost. We had to log them manually one by one.”

Especially when drivers realized that most of people they saw in front of service desks were merely interns who just graduated from college (or even juniors and seniors in college), they came to understand that the people they just yelled at or swung their fists at have little power to change the decisions of the platform. Sometimes they even started to tell other drivers, “They are just college students! There is nothing they can do!”

After working in department of operations for months, Eddie was very disappointed by his dream company. Somehow, he felt, that the platform has brought out the worst aspects of human nature. But his despair was sometimes uplifted when he took Uber rides himself. Almost every day, he ordered rides with the coupons given to him as part of his compensation. On these trips he met all kinds of drivers, and he started to experience the beauty of the platform first hand. I took a few Uber rides with Eddie. As I sat in the car listening to his conversations with the drivers, I came to realize that the antagonism between managers and drivers in the office was situational and transitory. When they encountered one and another as equals, they chatted and laughed just as normal acquaintances. Although the drivers knew he was an Uber employee (they picked him up in front of the office and they often asked him to confirm), the atmosphere in the car was always amiable.

One time, an Uber driver Eddie and I met started to complain about how the platform miscalculated his trip acceptance rate. “I only got 64% last week! (i.e. The platform thinks he only accepted 64% of the trips assigned to him) I was going to go and complain in your office,” he quipped.

Eddie admitted that technical errors might have affected that. He shared some knowledge that could help the driver improve his acceptance rate, “Android phone and 4G China Unicom are golden partners, iPhones used to be good but now got much worse, China Telecommunication is also not doing well.” He told the driver as much as he knew to help him make the best choice for phones and networks.

“So, it’s the machine’s problem not mine!” The driver hit a sudden revelation. “Can you change it for me then?”

Eddie shook his head and said there was no way they can modify the data collected by the platform.

The driver got a bit frustrated, “That is the reason why your office is stormed by drivers all the time! And your customer service line never picks up in a hundred years.” The driver spilled his complaints to us.

Listening to the emotional individual stories from drivers helped Eddie to understand that the drivers who had been violent against him were not vicious people. From their perspective, the platform has treated them unfairly and they lack the access for recourse. And it also made him realize that his mediation role in the middle was very crucial. “Without us interns, Uber cannot run properly,” he said frankly, “Every company needs people who function as cogs in a big machine. I am proud to say, I am that cog.”

### **The Reality of Savage Growth**

During its expansionary time of 2015, Uber’s Shanghai office was located in a creative complex called EGO. Located slightly north to Shanghai’s downtown area, this creative park was a new establishment

that aimed at housing start-ups in the area. On the floor directory, a collection of tech companies were listed, with fancy names such as “Touch Future” and “PrizExpress.” However, the appearance of the complex showed that the companies there might not have been very successful. The complex was sparsely occupied, with many rooms sitting empty (some seemed to be occupied before but the tenants moved out). And the public space was not well maintained, with doodling on the wall and cigarette buds on the ground.



**Figure 1.1.** The hand-written signs explaining subsidy structures on the door of Uber Shanghai office.

Uber Shanghai office occupied a significant portion of this complex. On the first floor close to the entrance was the driver registration and training space. All of the workers there were not affiliated

with Uber. They were contracted on daily basis. At the entrance, a few of them were usually busy registering a dozen drivers. After filling out a few questions, they took profile pictures of the drivers against a plain wall with iPads. Finally, they would shepherd the drivers to a big lecture room for a brief training session. Every time when there were about a dozen drivers gathered, a young woman would come on the stage and play a PowerPoint. The slides briefly introduce the perks of being an Uber driver and also show some warnings.

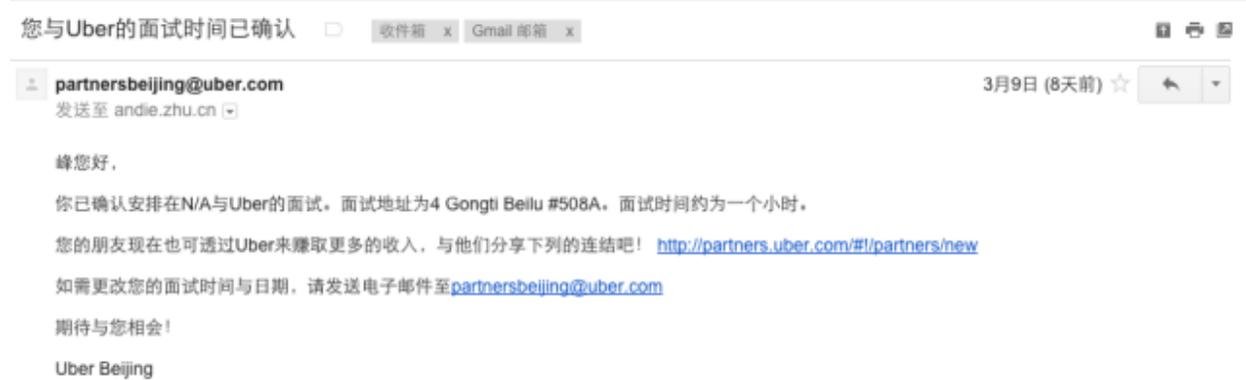
Drivers were instructed that, after arriving at the pick-up places, they should wait for a few minutes and then contact the customers. If they do not pick up, drivers should send text message reminders and wait patiently. “Do not hurry the customers,” the woman said with a soft voice. During the trip, drivers should never solicit five-star rating from the customers. It might cause consumer complaints. Drivers were also warned that canceling assigned orders will lower one’s trip acceptance rate. Trip acceptance rate means the percentage of orders accepted by drivers out of all the orders that the platform assigned to them. Drivers are only allowed to reject a small percentage of orders out of uncontrollable circumstances. The acceptance rate is very important for Uber drivers. Once lower than a certain threshold, one can be suspended by the platform.

After the slide show, the young woman started to recap the important points of the PowerPoint. One thing that was emphasized again and again was “fraudulent activities.” Drivers were warned in stern voice that as soon as fraudulent activities are detected, their accounts will be banned permanently. A few other activities are also on the black list, such as taking cash from customers, having other people on the car, appearing tired and sleepy, and contacting customers after the trips. This 20-min training session was full of warnings rather than knowledge or skills of driving. And this is all the training that drivers receive before they go on the road.

I was quite shocked by the absence of driver training in the Shanghai office. But after some online research, I found it was not an exception. Mr. Zhu Feng, an IT worker/blogger, detailed his

own experience in Uber Beijing office in a long blog post.<sup>25</sup> After online application, he first received an email from Uber in regard of registration and training. The first thing that struck me was that Uber used emails to communicate with drivers. Do they not know that the majority of working-class Chinese do not use emails? Secondly, in the email, the company's address was written in Pinyin instead Chinese characters. It seemed that Uber still had room to improve in the localization department.

In a few days, Mr. Zhu arrived at the Uber Beijing office, which was in a seemingly deserted office compound (what a resemblance!). Since the office only opens three hours every week for customer service, the room was packed full of prospective drivers. After waiting and being shuffled between the employees for hours, Mr. Zhu finally reached the final step “new driver training” in a room with over 100 other drivers. To his surprise, the only training was watching the PowerPoint that he had already watched online. I thus confirmed that my experience in Shanghai was not an anomaly.



**Figure 1.2.** Official corresponding email sent to prospective Uber drivers<sup>26</sup>

Back to the Uber Shanghai office, on the third to fifth floor of EGO creative complex were Uber's main office. It was a big open loft-style space with barely any office furniture. The floor was still left in its rough concrete finish. For some “soft touches,” there were colorful sponge floor mats scattered

in some parts of the room. One often sees these sponge floor mats in kindergartens. Seeing them in a tech company was rather odd.

One time I walked into one of the smaller meeting rooms, which barely accommodated a small meeting table, five or six chairs, and a white board. Two young women were working on their laptops on the meeting table, which was cluttered with documents. In one corner of the room was a small cupboard, which had dozens of iPhones stacked in one drawer. I was told that iPhones were often given to high-performing drivers as rewards. Another corner of the room was littered with empty containers of take-away food. There were a lot of them.

Rough office space, disorganized operations, and bumpy technologies— all of these characteristics are rather commonplace for start-ups. But Uber was an ordinary start-up. It was already valued at \$45 billion in 2015. It was operating in hundreds of cities across the world, disrupting industries, regulations, and thousands of people's livelihood. For disruptive technologies and their disruptive companies, there is no time to mature. They have to plan strategies for world domination while setting up office spaces, and recruiting college students to do the jobs of veteran managers. But such chaotic practices finally came to an end with drastic market consolidation.

### **Born to be Proud**

August 1<sup>st</sup>, 2016. It was a date that anyone who is interested in China's ride-hailing industry would remember for years. It was on that day, Didi and Uber China announced their merger. Precisely speaking, Uber China was bought out by its domestic competitor Didi. Didi invested \$1 billion in Uber (at 68 billion valuation), and Uber gained 17.7% of Didi's corporate share. Starting that day, Uber China became a subsidiary of Didi and slowly faded into history.<sup>27</sup>

Many Uber employees, including some of my informants, recorded this historical moment on their social media. One person wrote, “in the early morning of August 1<sup>st</sup>, without any notice or sign, the internal system [of Uber China] rejected our logins. Extreme rage, gloomy sadness, endless eating and drinking, after going through a whole host of complex emotions, I became calm and resolved...”

A wide range of reactions soon were distilled into a set of curated voices. A few hours after the announcement, many Uber employees started to share a collage of nine photos on their WeChat accounts, highlighting phrases such as “super-pumped,” “celebrating the cities,” “always be hustling,” “Champion’s mindset,” “Born to be proud”—all the elements that they believed to be the core values of Uber. For most onlookers, these words sound too much like empty slogans. But for Uber employees who have been through the revolution, these words have material and experiential manifestations.

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Few people illustrate these concepts better than Yangzi, who embodies the ultimate Uberness. Let me start his story with some of his own writing. One year after joining Uber, he reflected upon his journey in one of his WeChat posts:

“I flew over 30 times in a year. I have been to cities that I have never been before. The Sakura in Wuhan, the mist in Chongqing, the ocean wind in Shenzhen, the night market in Guangzhou, the beer in Qingdao, the gastronomy Xiamen, the hills in Hong Kong, the ancient temples in Thailand, and most frequently Sanlitun and Wangjing areas in Beijing. I will always remember how the whole company floated on the clouds: we worked intimately and cooperated efficiently, while transcending the boundaries of physical space and national borders. Everyone was so busy, but also so free.”

Yangzi was an old acquaintance. We knew each other since our college years in Shanghai. After graduation, we both chose to pursue master’s programs in New York City. He was in NYU, and I was in Columbia University. We even coincidentally booked the same flight from Shanghai to New York. I remembered we talked about our dreams and visions in the futuristic terminal of the Pudong Airport.

As a student of M.P.P. (Master of Public Policy), he was rather open-minded about his career in the future. He said he was open to work either in private or public sector. Only sky is the limit.

Our plane soared into sky. Fifteen hours later, we parted ways to be submerged in uptown and downtown NYC. Upon graduating from his master's program, Yangzi took a job in the municipal government of New York City, which was quite an unlikely career choice for someone fresh-off-the-boat from China two years ago. He said he was the only non-American employee in his whole department. One year after that, he left the “too steady” work environment and took a consulting job in NYC. He rented a one-bedroom apartment steps away from 34th street, Penn Station. It cost around \$3,000/month, but he was rarely there. Half of the year he was traveling around the U.S. with a suitcase. He kept the apartment because it was convenient for traveling.

Another year passed, he was again bored with his consulting job. He felt that his company was too provincial (only taking projects in the U.S.) and its focus on education made the growth very slow. What was even slower was the pace of life in his company. “I was surrounded by ‘grannies’ who talk slowly, and act even more slowly,” he quipped, “I asked them for an appointment and they told me let's do it two weeks later!” He complained that all of his colleagues browsed Instagram all day and asked him ‘why are you working so hard?’”

So he left. In 2015, he took an opportunity of a life-time— joining Uber China. “If you get on the Uber ship, you will instantly fly high.” Even when reflecting upon his experience years later, Yangzi still could not believe how high he soared with the company.

Only two months after joining Uber Chengdu, Yangzi was chosen to lead the development of UberPool, or People's Uber Plus (*Renmin Youbu Jia*; 人民优步加). He remembered somewhat anxiously asking his boss, “I have only been here for two months, are you sure you want me to be in charge of UberPool, in the entire China market?”

“Yes, you!” They responded. And then he was sent to Las Vegas, where he was led into a small room filled with high-level executives of Uber, who tapped on his shoulder and said, “Yangzi, we think you are the most suitable person to lead UberPool in China.”

Soon he was rolling out UberPool in fifteen cities in China, traveling and meeting all kinds of people. A third of his year was spent on the road. “I slept in hotels everyday— it was very comfortable,” he said. Most days, he and his team worked 18 hours a day, leaving little time to sleep. A lot of the weekends were spent on working as well, since “every week was a battle and every battle was different.” In this fast-changing arena of ride-hailing, he and his colleagues had to spend all their time in the company in order to keep up. If a female employee happened to get pregnant and have a child, she would definitely leave the central circle, he said.

Maybe it was because of the fast-paced rhythm of Uber, Yangzi’s speech pattern also changed a lot since I last met him in New York. He jammed a lot of information in one sentence, often highlighted with numbers and fancy terms. I often felt that much of our conversation was like business pitching sessions. Also, following the common practice in foreign companies in China, he mixed English with Chinese as if they are one language. For instance, he would often say very simple words such as “chill,” “manager,” “belief,” “value,” and “year review” in English. The language he adopted reflected his attitude towards work and future: time is ultra-compressed, number is magnified, and the future is in a rush.

Such hastiness in Uber’s corporate culture was to a large extent dictated by the circumstances of “the war”— their competition with Didi. Between May 2015 and July 2016, Uber and Didi engaged in a brutal marketing war in which each company burned through billions of dollars.<sup>28</sup> In addition to those above-the-board strategies, they also engaged in a lot of grey practices.

For instance, I was told that Didi and Uber sent “spies” to each other to steal inside information. “We have a lot of spies between us,” Yangzi casually confirmed the rumor I have heard.

He even recounted in detail how it was done. For instance, Didi would find some interns, pay them a decent amount of money, say ¥30,000 a month, and then send them to interview for Uber. Once they are hired, they would get secret information and report back to Didi. Because of the shortage of staff, Uber tasked their interns with important jobs and granted them a lot of access. Some of them can even access data from the U.S. Headquarter. The spies would make some screenshots and send them back to Didi.

Stealing inside information allowed Didi and Uber to be updated with each other's moves and to devise counter strategies. While Yangzi and his teammates were developing UberPool secretly in Chengdu, their activities were leaked to Didi. It took Didi only two months to copy them and to launch their own carpooling platform.

As a revenge act, Uber launched an investigation into Didi's computational algorithms. They paid a large group of people to order trips on Didi's platform and then report detailed information to them. After collecting countless data points, they then reverse engineered Didi's pricing algorithm. In the end, they found that Didi was employing "personalized pricing algorithms," i.e. setting different fares for different users based on their individual traits and consuming habits.

During this brutal marketing war, one question that always baffled me was, why does it have to be a war? Wars aim to destroy enemies. And very often, it is a process of mutual destruction. Market competition, on the other hand, should be a process that produces innovations and benefits. So, why can Uber and Didi not compete in a more productive way? I posed this question to many of my interviewees, including Yangzi.

"No! We cannot co-exist!" His affirmation slightly shocked me. "If you do not kill your opponent, your opponent will kill you. It is a zero-sum game."

But still, even if you have to drive your opponent out of the market, do you have to do it in such a disruptive way, doling out billions of dollars in subsidies and distorting market order? I followed up with the question that was pestering me.

Yangzi smiled, and replied with a favorite metaphor of Travis Kalanick. “Say you are in a boxing ring. If you could use 120% of your strength to knock your opponent out with a single punch, would you even consider using 80% of your strength? No!”

“Look, maybe if we only burned through half of our funds, we could already achieve 80% of the effect. But why save money? Nobody knows what tomorrow will be like. If you have 20 million dollars, you should spend it all today.”

### **The Swan Song of Uber**

The mutually destructive subsidy war between Didi and Uber China resulted in the merger of the two in August 2016. Many of the Uber managers lamented the buy-out with sentimental messages and highly curated images. But the majority of them left Uber immediately. They were hot hires on the market. Yangzi joined one of the emerging electric car company that wanted to be the Tesla of China. Jia, as well as the CEO of Uber China Liu Zhen, went to ByteDance. Today, ByteDance is valued at \$75 billion, the most valuable start-up in the world.<sup>29</sup> Its popular video-sharing app Tik Tok surpassed Youtube and Instagram in downloads on Apple store.<sup>30</sup>

Davis left Uber in 2015. He then co-founded Mobike, a bike-sharing company. Mobike later became one of the two biggest bike-sharing platforms in China (the other one was OFO). Its signature red bikes appeared in hundreds of cities in China and around the world, including Sydney, Tel Aviv, and Osaka.<sup>31</sup> He hoped that biking, a much more environmentally friendly way of transportation,

would transform cities. In his personal WeChat account, he posted cheerful news about Mobike almost every day for a year, often with himself posing with a red bike with hopeful smiles.

However, because of the overly aggressive expansion of their business, thousands of bikes were produced in excess of actual demand. They congested the sidewalks of cities and populated urban spaces that were not designated for bike parking. Soon regulations kicked in and the colorful bikes were removed from city centers. At the same time, aerial photos showed mountains of unused bikes became piled up in junkyards on the outskirts of cities, a rather dystopic scene for all those who once believed in bike sharing.<sup>32</sup> After a few years of market frenzy, both OFO and Mobike were on the brink of bankruptcy and were eventually bought by other tech companies. In August 2018, after Mobike was acquired by Meituan for a whopping \$2.7 billion, Davis left again.<sup>33</sup> Now his WeChat page is much quieter. Instead of soft advertisements for Uber or Mobike, he occasionally posts photos of overseas ski trips with son, or a calm afternoon on the beach.

The other stakeholders in this game were not as mobile and lucky. Almost every taxi driver in China lost significantly during this battle. Due to the heavy subsidy for customers, taking on-demand rides became significantly cheaper than taking taxis. Many taxi drivers I spoke to lost about a third of their daily revenue. After paying the dues to taxi companies, they could barely make ends meet. Pain and struggle soon turned into anger. Almost every few days, there would be news about taxi drivers taking to the streets, blocking streets with their cars to protest the unfair competition of ride-hailing industry. As communication scholar Chen found out, since the emergence of ride-hailing, collective actions among taxi drivers climbed to 15.9 times a month, comparing to 4.3 times/month before.<sup>34</sup>

Taxi drivers were not the only losers in the war. Because of the lucrative subsidy structure offered to drivers on ride sharing platforms, thousands of migrant workers flooded into big cities to become on-demand drivers. Many of them had little experience driving in the city and barely knew the traffic rules. The sudden increase of new drivers and new cars on the road worsened the already

horrific traffic situations in Chinese cities. Gaode map, one of the leading mapping companies in China, reported that the introduction of ride-hailing worsened traffic in many cities based on their big data.<sup>35</sup> During my interview with Yangzi, he also admitted the hypocrisy of Uber's claim of improving urban traffic, "On one hand we touted words such as 'environmental' and 'low carbon,' but on the other hand, we encouraged a lot of migrant workers to come to the cities to become on-demand drivers, which created a lot of congestion for the cities."

I met Yangzi again in 2017, a year after his time at Uber. After the dusts of ride-hailing war had settled, I was hoping that we could reflect upon what happened. I asked whether he or his colleagues have ever questioned these aggressive and even destructive methods Uber took during its expansion, and I was interrupted before I even finished the question. "No! Not even one bit!" He described the corporate culture of Uber as a "cult." Before joining Uber, he regarded himself as a citizen with neutral points of view toward Uber's disruptive activities. But after entering the company, he completely bought into its corporate value.

If the corporate managers of Uber are compared to revolutionists, it seems to me that they care little about the specific cause of each revolution, while care mostly about the ceaseless struggle of it. One after another, their causes fail (or succeed), but they continue to make revolutions. They believe that is the true way to achieve progress. If Schumpeter were right about the ceaseless churns to be the essential character of capitalism, then the Uber dreamers in China are perhaps the most passionate revolutionists of capitalism.

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- <sup>1</sup> “Uber Dache Ruanjian Denglu Zhongguo (Uber App Landed in China)” 2014.
- <sup>2</sup> Ren and Xu 2015. The quotation is from the full transcript of interview the journalists shared with me.
- <sup>3</sup> Kirby et al. 2016.
- <sup>4</sup> Sanjieke 2016.
- <sup>5</sup> Qu and Liu 2016.
- <sup>6</sup> Feng 2016; Xinhua Net 2016c.
- <sup>7</sup> Weibo is a public-facing social network platform created by Chinese tech company Sina Corp.
- <sup>8</sup> Quoted from Davis Wang’s Weibo post, Nov 24, 2014.  
<https://www.weibo.com/p/1001603780935551160767>.
- <sup>9</sup> Xuan Paper, 宣纸, is a type of thin grass-based paper often used for Chinese painting.
- <sup>10</sup> Ries and Ryall 2014.
- <sup>11</sup> Ren and Xu 2015.
- <sup>12</sup> CNET 2015.
- <sup>13</sup> Ren and Xu 2015.
- <sup>14</sup> Harrer 2014.
- <sup>15</sup> Gaode Map (高德地图; AutoNavi) is a Chinese mapping and navigation service provider. It was acquired by Alibaba Group in 2014.
- <sup>16</sup> Kirby et al. 2016.
- <sup>17</sup> Ren and Xu 2015.
- <sup>18</sup> Hangzhou Net 2015.
- <sup>19</sup> Ren and Xu 2015.
- <sup>20</sup> Ibid.
- <sup>21</sup> These materials were collected during my online ethnography on Chinese website *Zhibu*.
- <sup>22</sup> *Dayuengewang* 2015.
- <sup>23</sup> Tan 2016.
- <sup>24</sup> Isaacson 2011. Carreyrou 2018.
- <sup>25</sup> Quoted from Mr. Zhu Feng’s blog, Mar 17, 2015.  
<https://mp.weixin.qq.com/s?biz=MzA5MDA0MjY5Mw==&mid=203607433&idx=1&sn=8d98ba73430dc761d86647445949cd88&scene=1&key=fbe9f9f4b565962>.
- <sup>26</sup> Ibid.
- <sup>27</sup> Lu Frost 2016.
- <sup>28</sup> Kirby et al. 2016.
- <sup>29</sup> Didi ranks second with \$56 billion in valuation. “The Global Unicorn Club,” n.d., *CB Insights*,  
<https://www.cbinsights.com/research-unicorn-companies>, accessed May 10, 2020.
- <sup>30</sup> Perez 2018.
- <sup>31</sup> Eu 2017.
- <sup>32</sup> Taylor 2018.
- <sup>33</sup> Cadell 2018.
- <sup>34</sup> Chen 2018.
- <sup>35</sup> Tencent 2015.

Chapter Two

**Hacker Drivers**

In 2014, Uber landed in China, eyeing at its gigantic urban transportation market with a booming middle-class and an urban population of over 700 million. In an effort to compete with the local incumbents such as Didi and Yidao, it doled out massive subsidies to its drivers and customers; Drivers on ride-hailing platforms were rewarded with cash subsidies two, three, or even seven times the fares that were charged to customers. In the year 2015 alone, it is estimated that Uber spent \$1 billion in the form of subsidy payments.<sup>1</sup> The domestic giant Didi responded with equally aggressive marketing strategy with matching subsidies, making the competition for China's ride-hailing market an unprecedentedly expensive war of cash burning.

During Uber and Didi's protracted subsidy war, on-demand drivers enjoyed thick profits. At the peak of irrational spending, for every trip a driver fulfilled, they could earn three or four times the base fare in cash subsidies. That meant that if a customer paid 50 yuan for a trip, a platform like Didi or Uber might pay the driver 150 yuan or more. This gap created interesting opportunities for arbitraging. Drivers started to realize that it might be more profitable to fake long and expensive trips (for which they only earn subsidy, because fare has to be paid back to the faker) rather than actually drive short and disconnected trips (for which they get to keep both subsidy and fare).

In such a way, this system of rewards inadvertently gave rise to an enormous shadow economy. Within months of the campaign's launch, thousands of drivers, hackers, fraudulent accounts peddlers, and other informal actors congregated around the ride-hailing industry. By coordinating their activities in hundreds of online techno-communities, these individuals identified technological and managerial loopholes in Uber and Didi's platforms and devised strategies for faking trips.

Trip-faking became a massive phenomenon. Drivers I spoke with commonly invoked the idiom "nine out of ten drivers fake trips, and the other one just doesn't know how." This quip might not be far from the truth. As of May 2015, an investor of Uber disclosed that fake orders made up 30-40% of the company's total business in China.<sup>2</sup> And given that most drivers drive simultaneously on

multiple platforms, it is safe to estimate that the percentage of fraudulent trips on Didi, Yidao, and other platforms around that time were about the same.<sup>3</sup> And my conversations with both Uber and Didi managers confirmed that trip faking was a prevalent phenomenon; even a Uber manager I interviewed in Boston told me that China’s hacking phenomenon was so well-known that his American colleagues referred to China as “the hub of fraud.”

Uber condemned such behavior as “fraud” and launched a counter-offensive; It developed both human and computational methods for detecting illicit activities and punishing users who are suspected of involvement. While such activities were characterized by corporations as acts of “fraud,” the people engaged in trip-faking did not see it that way. Hacker-drivers referred to the process as *shuadan* (刷单), literally “multiplying orders,” a phrase that describe their practice as a simple extension of the incentive structure created by ride-hailing platforms. Indeed, many drivers were proud of disrupting the disruptors. In a community I studied, each Monday, when the weekly earning summaries were released, many drivers share their paystubs and show off how much they cheated from the platforms.

In the local communities of hacker drivers, we find yet another set of distinct moral values. Like Uber managers, drivers also view themselves as clever disruptors. But in sharp contrast, they make no pretense of working toward a larger moral end. For them, making money and getting wealthy is the main goal of their disruption, and it needs no justification at all. But unlike Uber managers who loved to vocalize their moral values towards ride-hailing and constantly did so through various forms of media, on-demand drivers tend to amoralize their actions, i.e. decoupling their actions from socially accepted moral values— Morality with the capital M. But through their mundane and seemingly amoral practices, they nevertheless showcased what they truly care about.

Although hacking practices may seem on the surface unproductive or even destructive, they fundamentally shaped the technologies of ride-hailing platforms and affected their developmental

paths. These drivers are not merely users of ride-hailing platform. Instead, they are both users and producers, or as some media scholars call them “producers.”<sup>4</sup> Just like the economic tools described by Peter Miller, computational technologies also are “plastic, open, reconfigurable and, moreover, constantly reconfigured.”<sup>5</sup> During the ceaseless war between drivers who are trying to exploit technological loopholes and Uber’s IT workers who are trying to develop new technologies to detect these activities, drivers exercise their agency by becoming the producers of computational technologies.

These producers form a disruptive and collaborative relationship with digital platforms. In *Smart Cities: Spatialised Intelligence*, urban scholar Antoine Picon stated that the making of smart cities today is composed of two seemingly oppositional projects: a neocybernetic project that could trace its origin back to cybernetics in the 1950s and 1960s, and a bottom-up urban revival project emphasizing the voluntary collaboration of ordinary citizens.<sup>6</sup> Ride-hailing is an excellent example of combining these two projects. In order to have a large, efficient, and smart on-demand car service, ride-hailing firms such as Uber and Didi adopted a combination of neocybernetic engineering technologies and bottom-up economic incentives. As a result, passionate collaboration from ordinary urbanites contributed significantly to the rapid growth of the platforms around the world. But spontaneous collaboration doesn’t always go as designed. In recent years, we have seen countless Uber drivers’ protests, DeleteUber movement initiated by consumers, and a lot of dissenting voices about the companies’ controversial practices. In China, ride-hailing encountered another version of disruptive collaboration— hacker drivers.

This chapter aims to depict the everyday life in online hacker-driver communities and the complex moral world members inhabit. In particular, it zooms into several important kinds of social practices, such as the admission of new members, the circulation of red packages, and the consumption of sexuality. Hacker-drivers were a group of actors constantly navigating the boundaries between licit and illicit, both in regard of corporate regulations and governmental laws. To outsiders,

they are indisputably rule-breakers; But inside of the community, they established their own rules, conformed to them, and disciplined others to follow the rules. They respected those who were willing to share their knowledge and wealth, and contributed to the strengthening of social relationships in the community. I hope that my detailed descriptions of their social interactions would implicitly and explicitly shed light on the deeper values held by community members.

Furthermore, I address the mutually indispensable yet contentious relationship between hacker-drivers and ride-hailing platforms. On one hand, hacker-drivers refused to follow the designs of the platform and act as mere extensions of digital platforms; they disrupted platform operations through constant hacking and rule-breaking. On the other hand, they were also active participants of ride-hailing revolution, who made significant contribution to the surge of ride-hailing business in China. Their complex relationship with one and another might help us rethink: what is the definition and forms of platform participation?

Lastly, I trace the history of hacker-drivers to the early days of taxi-hailing and explore how taxi drivers, a group of actors who saw themselves as lawful players in the transportation industry, also actively engaged hacking practices. I show how they justified their practices by stressing the intrinsic unfairness of the digital platforms in older dispatching technologies.

Data-wise, I mainly drew upon the ethnographic data I collected during my four-months' observation in an online community called the "L Tribe."<sup>7</sup> During this time, I conducted daily observation of the social interactions among L Tribe members and recorded hundreds of messages posted in the group chat. In addition to L Tribe, I also conducted observation in two other online communities of hacker-drivers, which provided important data points for cross reference. Since I did not conduct interviews with members of L Tribe, I added questions related hacking into my in-person interviews with taxi drivers and on demand drivers during ride-alongs from 2014 to 2018.<sup>8</sup> From over twenty in-person interviews, I further contested the hypotheses I formed during my observation in

the L Tribe. Lastly, I asked many Uber and Didi managers I interviewed how they dealt with and thought of hacking practices. Hopefully, these multi-faceted ethnographic data will provide the readers with a comprehensive and vivid picture of how hacking practices were performed on ride-hailing platforms and what are the collective values held by hacker-drivers as a community.

### **Entering Hackers' World**

My entry into L Tribe in the summer of 2015 was an incident.

During my previous summer fieldwork in China, I have heard a lot about online groups for ride-hailing drivers. I heard that all kinds of people— drivers, professional hackers, and even policemen— congregated in these groups, devising ways to profit from the technological and organizational loopholes of emerging platforms. Unfortunately, a few of my earlier attempts to join such groups all ended in failure. Organizers of these groups were extremely cautious about admitting new members, worrying they might be undercover state officials policing ride-hailing or undercover corporate employees investigating fraudulent activities.

But one evening in the summer of 2015, an opportunity presented itself. After spending a night hanging out with my friends at a chic district in downtown Shanghai, I called an Uber around midnight. Shortly after, a black Roewe550 pulled over.<sup>9</sup> I got into the passenger seat— a habit from doing research. The driver was a guy in his thirties, casually dressed, with a local Shanghaiese accent. I tried to strike a friendly conversation with him, commenting on how hardworking he was laboring on a Saturday night. He laughed. He said that he was just leaving a social gathering with some other Uber drivers from “his group.” My tired eyes suddenly lit up. I started to devise ways to gain his trust.

A few minutes of chatting later, I found out that he was actually the organizer of a drivers' group. During the day, he worked as a delivery man for an International logistics company. As he drove around Shanghai, he would ask members from his group to place fake orders for him. If his GPS was moving, he said, he was “completing orders” as far as the platforms are concerned. He accumulated a lot of tacit knowledge about faking trips through thousands of hours of practice. He enthusiastically shared some tips with me. For instance, for those who place fake orders, it is always more accurate to set the addresses on the crossings than street numbers; One should always try to alternate between different platforms to reap the most subsidy; And one should try to complete some real orders in between the fake ones in order to avoid suspicion.

His enthusiasm toward making as much money as possible from the booming ride-hailing industry attracted many likely-minded comrades. They formed a group called “Enthusiasts of Leisure Tribe” (*You Bu Da Ren*; 悠部达人). For non-Chinese speakers, it might be a puzzling name. But a Chinese speaker can immediately tell that it is a classical homophone camouflage. *You Bu* (悠部, meaning “Leisure Tribe”) is pronounced exactly the same with Uber's Chinese name—*You Bu*(优步). Their innocent name was simply a clever cover-up for their real identity as ride-hailing drivers.

“I also want to be an Uber driver,” I tried to show some genuine motivation before I ask to join the group.

“Really?” He looked at me, up and down, from my black pointed toe heels to the tight-fitting summer dress, and to my heavily painted face. I slowly realized that he has taken my eagerness for conversation as an invitation for flirting.

“We also have a girl like you in our group, but she is not as pretty,” he said, “You know, if you want, you could start a new life with your look.” He hinted that I could exchange my sexuality for money.

Under normal circumstances, I would probably have already jumped out of the car by then. But this opportunity was too important to miss. I recomposed myself and asked if I could join the group.

“We usually don’t accept unregistered drivers, but... I will make an exception for you,”

I again assured him of my enthusiasm toward being an Uber driver and gave him my contact.

“I will add you to the group. But,” he stopped me from exiting the car, “We have some rituals for new members. Please don’t embarrass me.”

Minutes later, I found myself granted access into the L Tribe. Quickly scanning the surroundings, there were 103 members in the group, out of which 76 were active at that moment. I noticed the driver I just met. In his profile picture, he was holding two twin babies. He looked like a perfect family man. He named himself *Qian Nv Wei Hun*, cleverly inserting his real name *Wei* into the title of a famous Chinese ghost film (*Qian Nv You Hun*; 倩女幽魂). If translated literally, his name would be “Beautiful women with a brave soul.” But people in the group refer to him as *Qian Nv* for short, so I will just call him *Beauty* in my article.

*Beauty* introduced me to the group members, with description such as “pretty chick.” Suddenly, I was swarmed by greetings — “welcome to the group beautiful,” “you are invited to our next gathering,” “no, not just invited, you must come” ... I felt completely overwhelmed and slightly irked that night. But I would soon find out that what I experienced that night was not even the tip of the iceberg of sexism and sexual harassment in the L Tribe.

One of the senior members explained to me the rules of admission: I could either give some digital red packages for the existing members, or, since I was a girl, I could sing a song or share some of my personal photos. I immediately opted for red packages. I put 50 yuan (\$7) into ten digital red packages and sent them to the group members. Ten members who grabbed the packages would get random amounts of money that add up to 50 yuan. It is like lottery with very small amounts of money.

The first night's experience in L Tribe was full of shocks and uneasiness, but I was also deeply amazed by the richness of social life in the community. In the group chat of L Tribe, dozens even hundreds of messages were being exchanged every hour of every day, except for a short period in the early morning. If I close the chat window for a few hours and then return to it, I would have missed so many messages that I would not know where the conversation was going. In order to follow the quick-fire conversations, I had to keep browsing the messages as frequently as I could. At the end of each day, I would summarize the most interesting exchanges that took place in the community. After a few weeks of observation, I started to realize that some social practices in particular served as binding forces of the community. They were, first, the circulation of digital red packages, and second, the consumption of female sexuality. It was through these two activities that group members of L Tribe establish and maintain shared principles, and these principles underpinned the hacking practices on ride-hailing platforms.

### **People of L Tribe**

Let me take a moment to introduce you to some of the key figures of L Tribe. Besides *Beauty*, the group leader whom you have already met, the most central character was *Double Happiness*, a slim and pretty young woman in her early twenties. *Double Happiness* also came from a wealthy family. Sometimes, she cruised around Shanghai in an Audi to pick up Uber trips. But most of the time, she could be found enjoying meals and drinks in some of Shanghai's most high-end restaurants and clubs. When she was not too busy doing that, she ran a boutique bakery.

*Double Happiness* was *Beauty*'s goddess. He actually wrote it into the community rules that every member must love and worship *Double Happiness* in order to remain part of the tribe. Everyone was

happy to play along. They showered praises on her whenever she posts a selfie or shares a picture of her delicate cakes. The goddess was kind to her worshipers too. At the end of the day, if any of her cakes had not been sold, she would ask if anyone in the group want them. She would even pay the fee to have the cake delivered to them.

*Mandy*, another female member in the tribe, was the opposite of *Double Happiness*. A middle-aged Shanghaiese woman with a penchant for colorful swearing, *Mandy* filled the group chat with her earthy wisdom and humor. Almost every day around mealtime, she would ask if anyone from the tribe want to grab food together. She was like everyone's big sister.

Then there were the guys— *Bandit*, *Mountain Creek*, *Old Ox*, *The Knife*, and others. *Old Ox* was in his fifties, rich, and generous. He drove a BMW to pick up his Uber customers and always topped the list of members who gave out most red packages. *Mountain Creek* was a lady's man: He was always the first one to comment on pictures of pretty women. *The Knife* worked in state-owned institute. He often snuck out of his laid-back job to do Uber driving.

Indeed, the vast majority of L Tribe members were local Shanghaiese men. The men often bantered in their local dialect and bonded through their shared disdain for migrants. One time in the group chat, the locals got into an altercation with two migrant drivers in the tribe. *Beauty* ended the fight by kicking the migrants out of the group and posting the following comment: "Migrants are less civilized and have low Suzhi. I truly despise them deep down in my heart." This incendiary remark incited further debate.

L Tribe was truly a small world. Members in it not only collaborate to hack the platforms, they also shared many aspects of their everyday lives. They talked about what they like to do as hobbies; They complained about their family troubles; They exchanged opinions on current events; so on and so forth. Most importantly, their online friendship also spilled into offline world. Members liked to use the build-in function of QQ to see the physical distance between each other; if some members

happen to be in close proximity during meal time, they would ask if the others want to have meals together. And once in a while they would have big get-togethers over a whole table of food and drinks.

### **The Competitive Sport of Red Packaging**

“A state has its laws. A family has its principles. A gang has its codes. And a tribe has its rituals!”

Every time a new member was admitted to L Tribe, existing members would explain the rules of initiation and demand either monetary or sexual tribute. If the initiate expresses shock or unwillingness, then they would immediately be asked to leave the group. If the new member completes the rite of passage, they were then believed to have bought into the social agreement of sustaining these rules as fundamental principles of the group.

Sharing red packages and fighting for red packages were an essential everyday ritual in L Tribe. Members circulate red packages for all kinds of reasons: Someone got a big paycheck from Uber, someone was found to be rich (driving a BMW), someone was in a good mood, etc.



**Figure 2.1.** A ranking of group members who gave out the most digital red packages.

The culture of sharing red packages is interlinked with the worshipping of wealth. Contrary to Muslim businessmen who are afraid to be obviously richer than their neighbors and attract the evil eye, members of L tribe put those who earn most on a pedestal.<sup>10</sup> Everyone understands that those who make most are probably committing the most fraud, because per hour earnings of Uber drivers are pretty similar based on algorithmic distribution. Nevertheless, drivers were proud of how much they could cheat from the platforms. Every Monday when the previous week's earning summaries came out, many drivers would share their income with the group. Sometimes ride-hailing platform would detect fraudulent activities and deduct the earning suspected to be the result of fake trips. And those

items will be specified in their earning summary. But drivers still share them with pride, displaying no moral quandary. Drivers would even congratulate those who successfully cheated money from the platforms without being detected. In the picture showcased below, *Beauty* posted his weekly paystub, after which he proudly claimed that all his income came from hacking besides two trips. Another member commented: “Add oil comrades!”

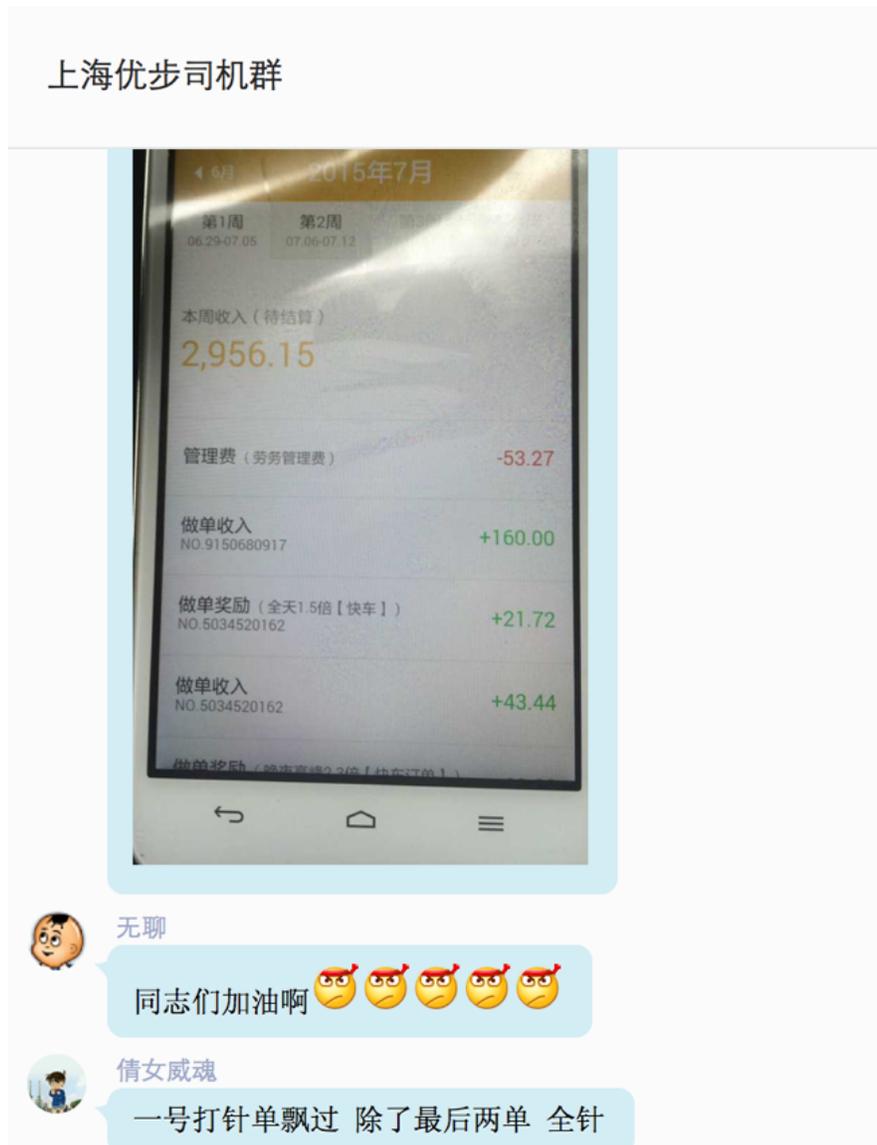


Figure 2.2. Beauty shares his weekly income.

## It is All About Sex

In the L Tribe, many sexual exchanges are made every day. Women produced materials such as pretty photos and sexy voice messages, while men made flirtatious comments and inappropriate jokes. Some members might not actively participate or even secretly detest these activities, but no one has ever openly protested these practices.

Consumption of female sexuality was not only limited to the group members. Some drivers would secretly take pictures of their attractive female customers and share them in the group. On summer days, the group chat was full of pictures of fair-skinned thighs and “drooling” emoticons. Some drivers would also share tales of their promiscuous encounters with ladies, like spending hours chatting with a lady customer who was, according to them, “too reluctant to get off the car.” Sometimes, these everyday sexual harassments would plunge into danger.

One day around midnight, *Beauty* got an order from a ride-hailing platform that a Ms. Zhang in Pudong district needed a car. When he arrived, however, Ms. Zhang was nowhere to be found. He called her cell many times and no one picked up. *Beauty* left, begrudgingly, cursing in the group about his wasted time. About 10 minutes later, he received another order from the same Ms. Zhang. “Motherfucker!” Another stream of abuse came from his account. Others joined in to curse this “fucking woman.” *Beauty*, again, arrived in front of Ms. Zhang’s apartment building. As he was waiting, he typed, “if she is not coming in the next few minutes, I am going up to her apartment to rape her!” On the other side of the screen, I felt chilled to the bones.

In *Anxious Wealth*, John Osburg found that the new rich in Chengdu, China, often establish trust and friendship with their business partners through collective sexual consumption.<sup>11</sup> When they went the night clubs, they would hire sex workers and engage in intimate interactions in front of everyone. The slight moral and legal transgression made them accomplices in crime who were in

possession of each other's "dirty secrets." It was slowly revealed to me that the offensive sexist comments in L Tribe functioned in a similar way. They helped the group to filter new members—taking in those who were tolerant of slight moral transgressions and weeding out those who were not. Since a lot of activities in the group such as faking trips and manipulating subsidy structure bordered commonly accepted moral standards, it was important for the group members to identify morally flexible new admits. Furthermore, these sexist jokes produced and reproduced the mainstream moral discourse in the group, creating a socially acceptive space to conduct all kinds illicit activities.

### **Rule Breakers**

"One time we caught a driver doing *fraud*. The fare of one of his trips is 8,000 yuan! He probably kept that trip running for days and nights!" Will gasped.

Will was an intern in Uber Shanghai office in the summer of 2015, while the platform was engulfed by fake trips. Like many college graduates who work in foreign firms in China, he would insert at least three English words into one Chinese sentence. One English word he and his colleagues at Uber loved to use was *Fraud*.

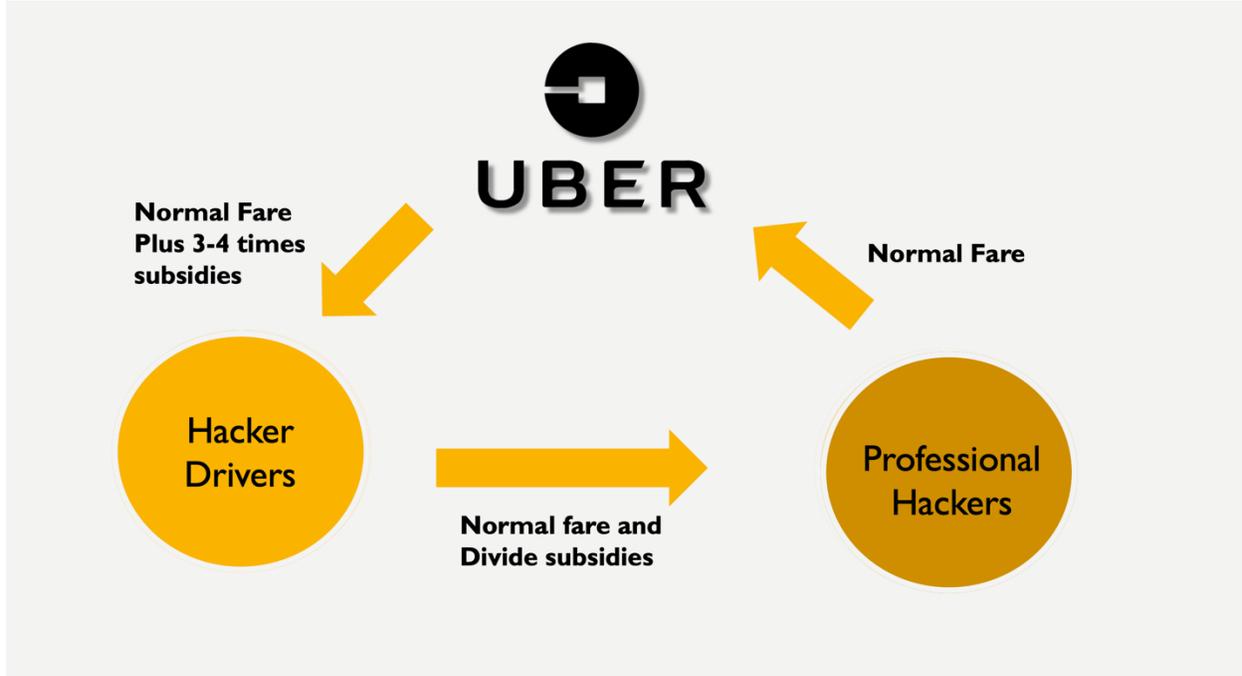
*Fraud*, defined by Uber, is any activity that attempts to manipulate the process of pairing between drivers and customers. For example, if John's uncle places an order at the intersection of Avenue F and First street with the knowledge that Uber driver John is there, his action will be considered as *fraud*. All the decisions on the platform have to be made by the algorithms. Drivers and customers could only act as rational economic actors according to the designs of the platform.

Low level *fraud* is often conducted among friends and relatives. A driver could ask one of his friends to place an order at his location. If matched up, the driver would complete a random trip,

refund the basic fare back to his friend, and keep the subsidy for himself. If not matched up, the friend could make up some excuse and cancel the trip. Such techniques are useful for many situations, for instance, the last trip back home at the end of day. If following the orders of platform, the driver has no control of his destination. He could end up half a city from home at the end of the day and has to drive home without pay.<sup>12</sup>

Medium level *fraud* is mostly conducted among groups of drivers. They take turns to place fake orders for each other when business is slow. One of the most common scenario when a driver would demand a fake order is that the last trip took him somewhere far away from city center where he is unlikely to get business anytime soon. With a fake order from a fellow driver, he could drive to the city center with some income on the way. Another form of medium level *fraud* takes place between drivers and real customers. Some drivers told me that, once in a while, they would ask customers who ordered their trips on one platform (say Uber) to place another order on another platform (for instance Didi, Yidao, etc.). Since they were already on the same car, it is very likely that they would be matched up again. In this way, they could earn subsidies from two different platforms while completing one trip. At the end of the trips, they would offer those customers some cash reward as a “thank you.”

Finally, high level *fraud* involves professional trip fakers called “nurses.” For drivers who are not satisfied with making a few extra bucks, working a few friends or a dozen other drivers is simply not enough. Restrained by the regulations of the platforms, customers could only place “non-local” orders once in a while. Non-local orders mean the orders that are not placed at the customers’ current location. A function that is supposed to be used for instance when someone wants to place an order for their elderly parents. To get frequent fake trips, drivers have to rely on “nurses,” professionals who could surpass this technological hurdle with hacking software/hardware, multiple customer accounts, phone numbers, and bank accounts. These professionals got the nick name “nurse” because they use needle-like pins on ride-hailing interfaces as “tool of the trade.”



**Figure 2.3.** Illustration of cash flow among drivers, professional hackers, and the platform.

“Our hardworking fellow Chinese citizens truly have a knack for exploiting loopholes— it is like encoded in their genetics,” sighed Will.

Every time I brought up the topic of fraud or *shuadan* with corporate managers, they always chuckled and shook their heads; without exception, they recognized the prevalence of this phenomenon. Even when I spoke to Uber managers in the U.S., they refer to China as the “hub of fraud,” commenting that fraudulent activities at this level of sophistication was rarely seen in the U.S. or anywhere in the world.

These fraud-committing drivers, I argue, play a disruptive yet vital role in the ride-hailing platforms’ rapid expansion in China. Although their disruption of the normal functioning of the platforms was quite a nuisance for the companies, in the end, their disruptive mentality was in line with the disruptive mode of development adopted by ride-hailing companies.

Uber's global empire depended on the belief in disruption—the disregard of existing laws and regulations and the destruction of taxi industries with venture capital backing. In the moral world of tech industry, such disruption is not immoral. On the contrary, such disruption is believed to be the engine of economic and social transformation, which will eventually lead us to a better world. Being leaders of social changes, tech companies felt justified in breaking the outdated laws and outmoded industries. Managers in the ride-hailing industry even prided themselves as dissidents.

As proud rule-breakers, ride-hailing managers and illicit drivers share similar attitudes towards the state. In the L Tribe, members often cooperate with each other to avoid sporadic police raids on the streets.<sup>13</sup> They warn each other about the locations where the police set up stops, share tactics to deceive law enforcers if and when they get caught (e.g., ask customers to sit beside the driver and claim that they are personal friends), and spread information about the police officers who have been fishing so that other drivers know to avoid them.<sup>14</sup> They even recruited an officer who worked at the Shanghai municipal transportation department into the group in order to get inside information about law enforcement plans. L Tribe members went to such lengths to avoid policing not just because of the cash fines, but also because sometimes the police would contact the drivers' *danwei* (the companies they work for) and report their violations of municipal regulation. While the drivers who worked for private companies were less concerned, those who worked for state-owned enterprises were afraid that their employers might get upset that they were involved in the illicit ride-hailing business.

“It would be even more problematic if my employer looked at when I was driving Uber” *The Knife*, an employee of a public institute who often sneaks out during working hours to complete a few trips.



**Figure 2.4.** A picture of police raiding shared by driver in L Tribe.

On-demand drivers and their trip faking activities not only share the spirit of disruption with Uber and Didi, but they also directly contributed to the growth of the platforms. In the popular HBO series *Silicon Valley*, a satire of the US tech sector, a start-up named Pied Piper hired illicit ‘clickers’ in Cambodia to boost their user numbers. When their growth curve showed an ‘uptick,’ venture capitalists swarmed in to fund the company, and with these investments, Pied Piper managed to achieve actual growth. Reality often imitates fiction. Last year, when I spoke with a corporate manager at Didi, I learned that the ride-hailing companies was not unhappy with hacker drivers back in the day. What the companies needed then was steep growth curves to attract venture capital investments, and all those fake trips helped with that, she winked at me.

Julia Elyachar argued that the channels through which informal economic activities are conducted should be treated as an integral part of economic infrastructure— a type of collective resource or public good that people can utilize in their economic life.<sup>15</sup> To some extent, the social relations of illicit drivers should be recognized as integral parts of platform-based infrastructures. The illicit drivers and the informal networks they built, as shown in the ethnography in this chapter, are socio-technological infrastructure of ride-hailing platforms. The networks drivers formed outside of the purview of the corporations and the state provided them with channels to exchange tacit knowledge, spaces to voice dissents, and communities to seek social belonging. They have been vital to the quick expansion of ride-hailing platforms in China.

### **History of Hacking Technology**

The fraudulent activities I have witnessed in L Tribe was only a small slice of ride-hailing history. Hacking to gain profits from taxi-hailing platforms started as early as 2013 on Didi and Kuaidi. During those days, trips on platforms were not automatically distributed through central algorithms. Taxi drivers would listen to the broadcasting of nearby orders and grab whichever orders they prefer. In order to get more desirable trips, such as long trips to airports, train stations, and suburbs, taxi drivers would employ a set of hacking software called “accelerators.” Although they come in different forms, the basic principle of these hacking software the same: They allow users to access orders before other drivers could. In such a way, users of accelerators would always have an edge over ordinary drivers when it comes to grabbing orders.

These practices first started with some drivers who casually used gaming “accelerators” on taxi-hailing platforms. Gradually, more and more sophisticated software was developed specifically for ride-hailing and the advantage of hacking software users became quite significant. Soon, organic communities started to form around experienced hacker-drivers: Those who have hacking software would grab as many desirable trips as they can, and then they share/sell their excess orders to others. Hundreds of taxi drivers congregated in each of these communities, exchanging orders with one and another. They almost monopolized long-distance trips on digital platforms. Then, specialization of labor started to happen. Some drivers realized they could make more money if they just stay at home, grab orders with hacking software, and sell them to fellow drivers, so they gave up driving altogether and became professional hackers.

In the summer of 2014, hundreds of such grassroots taxi communities popped up in Shanghai when I was conducting preliminary fieldwork. Almost every driver I talked to knew the existence of such groups. I was told that if I ever order a cab to go to the airport on digital platforms, nine out of ten times my order would be grabbed by one driver and then be picked up by a different driver. I decided to try it out.

One night in the summer of 2014, I booked a cab on Didi to go to Pudong Airport. Almost immediately, my order was grabbed by a Mr. Song of the Qiangsheng Taxi Company, light blue Volkswagen, license plate no. 沪G12345, cell phone #1888888888.<sup>16</sup> The next morning, about fifteen minutes before my trip, I received a series of phone calls from an unknown number (a number different than the one listed on the platform). I picked up. A man told me that he was my ride. He confirmed my exact location and said that he would arrive there in a few minutes’ time in a green Volkswagen, license plate no. 沪 G54321. I wrote down the information he provided and doublechecked it against the driver info on the platform. Everything was completely different!

By the time I had made it downstairs, my green Volkswagen was already waiting. The driver hopped out of the car, opened the trunk, and helped me place my luggage inside. He was a young man in his thirties. He wore a pair of dark sunglasses and a crisp white shirt. He had a cool vibe. After I got in the cab, I pulled out my phone and checked the picture of the driver on the platform. It was a balding, middle-aged man with comb-over. Clearly different guys.

Pretending to be surprised, I said to the driver: “I thought my driver is Mr. Song?”

The driver casually replied, “Oh, he and I are in the same group. I was closer to your location this morning, so he gave his trip to me.” He offered no further explanation, nor an apology for changing things without notifying me or the platform. He acted as if order swapping was a well-established and universally accepted practice.

During our hour-long trip to the airport, I probed the driver for more information. At first, he held to the story that the trip had been freely shared, but as soon as I mentioned that I was researching “accelerators” (along with the fact that I was not working for Didi), he opened up and began speaking frankly. The driver told me that he belonged to an informal group of fifty or so young, tech-savvy drivers who bought and sold orders that were picked up using accelerators. The group focused on the highly lucrative, pre-booked trips to the airport. Whenever a driver secured such an order, but was too far away from the pickup location, instead of rushing across town, he would instead resell it to another driver in the vicinity of the booking for a fraction of the total fare. A 150 yuan fare, for example, might fetch 10 yuan in this internal market (and that is 10 yuan of pure profit for no services actually performed). Indeed, this remarking of orders proved so lucrative, that some drivers would earn a profit sitting at home, grabbing orders using illicit software during their time-off, and reselling them to other members in the group. The driver told me that his group was just one of a few dozen such groups in Shanghai.

When I asked the what he thought about the morality of hacking, he stressed that hacking is just business (*shengyi*; 生意), part of the pragmatics of life in an unequal society like China.

“If they (the platforms) really want to block us, then they can block us. But we still have to do whatever we can to increase our *shengyi*. . . . Society is just that way. People talk about fair competition, but how much of it is really fair? If we don’t study [how to exploit] technologies, then other people will. And besides, even Didi and Kuaidi engage in shady practices.”

“What shady practices?” I asked.

“I know some employees at Didi who intercepts lucrative orders on the platform and distributes them to drivers they know! And the drivers pay him ‘benefits’ in return. It is all part of business. The best orders go to drivers who pay, and the employees at Didi make extra money each month.”

According to the driver, since the ride-hailing system was already corrupted from within, it was morally justifiable for drivers to use any backdoors available to them to increase their business as well.

I then pressed the driver, “But isn’t this unfair to other drivers? Does it not concentrate wealth in the hands of the technologically proficient and deprive older drivers of their incomes?”

The driver disagreed. “Do you know which technology has most shady business?” he asked. “The telephone dispatching system! Those dispatchers have relationships with the older drivers, and they always ‘cooperate’ with them. The whole system was rife with nepotism, and younger drivers were at a huge disadvantage. And despite all of that, we were forced to pay dispatching fees every month!... The older drivers reaped profits from dispatching system. Now it’s our time!”

As our discussion deepened, I realized that the young driver shifted his original attitude of seeing hacking as a compulsory action in an unfair market economy to arguing that hacking brings a welcomed power shift from older to younger generation of drivers. In his opinion, using hacking

software to get ahead was a normal part of market competition. The fact that today technological savviness rather than personal connections could help drivers make more money was just a result of the natural course of socioeconomic evolution.

As my research progressed, I also grew extremely curious about these hacking tools and began to wonder: who makes them, who sells them, and who constantly updates them in response to the ever-evolving countermeasures of ride-hailing platforms? My breakthrough came in the summer of 2014, when I was finally accepted into a hacker forum on QQ where people traded information about purchasing and using hacking software.<sup>17</sup> While communities such as L Tribe tried to operate beneath the radar and adopted measures to conceal the real identities of their members, this was not the case with the hacker forum that so brazenly called themselves the “Accelerator and Order Grabbing Group.” The screenname of the group organizer was “Find-Me-If-You-Want-to-Buy-An-Accelerator.”

Mr. Find-Me sells “accelerators” for a flat rate of 85 yuan plus an additional 5 yuan monthly subscription fee. The 85 yuan payment gives them a single-access download link to the software, and monthly subscription enables drivers to update the software with the latest patches. According to Mr. Find-Me, this technology delivers “extraordinary economic value” (*wuchaosuo zhi*, 物超所值), because it operates at speeds that no human hand can match. But at the same time, Mr. Find-Me emphasized that one needed to use this power wisely. If a driver set the speed of his accelerator too much beyond the limits of human capability, then its activity would surely get detected by Didi’s system. Therefore, a driver needed to tweak the accelerator such that it was just fast enough to edge out other human drivers, but not so fast as to get caught.

A lot of conversations in the hacker forum revolved around identifying the “magic number” at which to set the accelerator. Drivers experimented with different values, collected information about what did and didn’t work, and reported these findings to their peers. For instance, one conversation went:

“What speed do you set in Shanghai?”

“I use 5.0 for Didi, and 4.8 for Kuaidi.”<sup>1</sup>

“No, no, no, that is way too fast. You will get blocked right away!”

“Yes, haha... I was blocked five times in a single week!”

“I set it at 1.8 for the past two months and have never been detected.”

“I agree. Any speed below 2.0 will not be detected.”

“Hmmm, I doubt that. My friend in Shandong said that he got permanently blacklisted after having set the speed at 2.0.”

As the above conversation reveals, there was no single right answer for setting an accelerator. Optimal values varied both by city and by platform. What might work well on Didi might not work on Kuaidi or Big Yellow Wasp. And what one might get away with in a big city with a lot of activity (where a lot of drivers are using accelerators) might get you detected and blocked somewhere else. Optimal values also change over time as taxi-hailing companies developed newer and more sophisticated detective strategies. Therefore, it was incredibly important for drivers to keep abreast of the most up-to-date information and to modify their behaviors accordingly.

Despite the vibrant interactions between vendors and drivers, the hacker forum was not a community in the same sense as L Tribe. Profit maximization was clearly the draw and the singular bond that held people together. This focus was inscribed in the names of its leaders, such as Mr. Find-Me, and it was reflected by the fact that users talked about little except the hacking software itself.

Furthermore, unlike L Tribe, whose membership was based in Shanghai and sustained interactions outside of the platform, the “accelerator” group had no physical corollary. The forum drew drivers from cities all over China, all of whom remain mutually anonymous.

After discovering how users purchased and used hacking software, I wanted to learn more about the people who developed it. But when I began putting out feelers in the forum to connect with developers, I hit a wall.

“They will never talk to you directly or show their face,” explained one member of the group with whom I spoke. “We can only purchase the software through middlemen who play no role in its development.” Though unwilling to reveal the source of his information, the informant did tell me that some hacker-engineers actually work for Didi and Kuaidi. “During the day they are in-house engineers. By night, they are hackers who know exactly how to crack the system. One night they design some hacking software to sell to middlemen. The next day they go back to their corporate office to close those loopholes. But they always make sure to leave a few new holes that can be exploited. The next night, they return home to ‘update’ their hacking software.”

Despite the technological sophistication of hacking software, in order to fully explore the profits of hacking, drivers had to dive deeper into “black industry” (*bei chan*; 黑产业) to acquire multiple user accounts, so that they can rotate to another when one of their accounts are unfortunately suspended. Here let me briefly introduce the so called “black industry” in China. Inferring from its name, one could already guess that this is an industry prosper in the shadow economy— it includes faking bank/credit card accounts, congregating unused phone numbers, stealing personal information, etc. With all these products, the entrepreneurs of black industry could provide any product you wish to acquire in the digital world — Didi accounts, Airbnb accounts, etc.

The screenshot shows the Taobao.com search results for 'Uber' accounts. The search bar at the top contains '宝贝' (Items) and '优步' (Uber). The results are listed in a grid format with four items:

Item Description	Price	Shipping	Payments	Reviews	Location
优步账号折扣优惠券无90空白帐号没有使用限额全国通用	¥ 10.00	包邮	13人付款	0条评论	广东 广州
【自动发货】ub优步账号 优步白号 er 优步 全国可用 全新号已激活	¥ 8.40	包邮	0人付款		江苏 无锡
优步账号 优步帐号 优步白号 优步注册 电话可通 无需验证码	¥ 12.00	包邮	0人付款		广东 深圳
uber 全国免验 到手即用 注册 免验证	¥ 9.00	包邮	75人付款	32条评论	四川 成都

Figure 2.5. A list of retailers on Taobao selling Uber accounts.

A specific product of “black industry” that helped hacking ride-hailing platforms are untraceable phones. Ordinary cellphones have unique IMEI number. These numbers cannot be changed nor erased. Once a cellphone is detected of being engaged in hacking activities, companies can ban this number in their system. This makes the cost of hacking extremely high. But hacker-engineers in China invented cellphones that can constantly generate new IMEI numbers, making it impossible to be detected and banned. A simple search on Taobao, China’s largest E-commerce platform, one can find countless sources to purchase these devices.

By tracing the history of hacking, we can see that the platform technologies co-evolved with the hacking technologies. Though the evolution of platforms is often spoken of in teleological terms—a series of cumulative innovations that generate efficiencies by replacing human decision-making with

centralized technologies—the way in which platforms developed was in fact highly contingent and shaped by local practices. Since the creation of the industry, platform companies and hackers have been locked in a ceaseless struggle that influenced the trajectory of technological development.

The first clear example of a company changing the design of its platform in response to hacking practices was Didi's launch of DiMi (which directly translates as "Didi Rice"). To mitigate the distortionary effects of accelerators, Didi created an ingenious virtual credit system for all the taxi drivers operating on its platform. Whenever a driver completed an undesirable trip, i.e. a short trip or a trip during peak traffic hours that was unlikely to yield much profit, a pre-specified amount of virtual "rice" would be deposited into his or her account. Once a driver accumulated a sufficient store of rice, he or she would be given the option to spend a portion of it to acquire a more lucrative trip. Thus, even if drivers were using accelerators, they would be unable to grab the very best trips, unless they first accumulated and spent the requisite quantity of "rice." The DiMi system thus effectively dampened the advantages of those using accelerators while better incentivizing all drivers to strike a balance between short and long trips.

Another counter-defensive strategy of hacking is to enforce the usage of the built-in online payment on Didi's platform. In early days of taxi-hailing, customers could pay drivers offline with either cash or with mobile payment systems outside of the Didi platform. One could often see taxis with a WeChat Pay or Alipay QR code hanging from the windshield. Given the separation of taxi-hailing and payment, drivers could freely share orders with each other in online groups. However, as the platforms matured, they increasingly encouraged customers to complete the transactions on their interfaces (i.e. linking their bank account to Didi, so the fare could be deducted automatically). This change significantly reduced drivers' willingness to share orders with each other and thus dampened hacking activities.

But there was one technological change that completely killed the use of accelerators: That was platform companies' decision to shift from an order-grabbing system to an automatic pairing system. It happened when they started ride-hailing services by private cars. Instead of allowing drivers to grab nearby orders according to their own preferences, the platforms opted to rely on centralized algorithms that would automatically pair drivers with customers. After first implemented on private cars, algorithmic pairing was then expanded to taxi drivers, greatly limiting their agency to choose preferable orders and arrange their own work schedules. Now the only decision the drivers can make is to either accept or reject the assignments of the platforms.

But as the technological systems evolved, so too did hacking techniques. The death of “accelerators” was soon followed by the rise of GPS manipulators on taxi-hailing platform. Since the mechanism of order pairing is now facilitated by algorithms that mostly based proximity, the new generation of hacking software enables drivers to maneuver their GPS location to wherever they think will get great orders. Even in V Taxi (see Chapter Five), a taxi group that pride themselves of higher professional standards, drivers did not have any moral qualms using GPS mover to get better orders.

“When I was waiting in line at the airport, I will set my GPS to the train station,” said one V taxi driver in Hangzhou, “If I get great long-distance trips, I will just share them with my ‘brothers’ in the group.”

This statement spoke to the fact that hacking activities very often are not directly self-serving. They have to be combined with collaboration in the local communities to be most effective. From L Tribe, to the accelerator groups, and to V Taxi, drivers benefit from each other's hacking practices, and they actively share the fruit of hacking to their community members. They draw a clear boundary between the local community they work and socialize in and the imagined community of ride-hailing drivers. While they are most loyal friends to the members of the former community, they care little about interests of the members of the imagined community.

## The Invisible Hand

18<sup>th</sup> century Scottish economist Adam Smith created the concept of “invisible hand” to describe the process in which market competition channels individual self-interest into unintentional benefits for the society.<sup>18</sup> This concept was later used to epitomize spontaneous market order, the idea that free market exchange is the best way to direct individual agency to desirable social outcome. It then became the central justification for the laissez-faire economic philosophy, and also neoclassical economics.

In many people’s eyes, Uber is one of the best realizations of the invisible hand. Using flexible pricing, the platform attracts drivers and deters customers when the demand is higher than the supply. Utilizing real-time mapping and price differentiation, it directs more drivers to areas where there is surplus demand. In this model, the supply and demand of car service in a city could reach a much better equilibrium.

But, are the economic activities on Uber’s platform purely channeled by the invisible hand in Adam Smith’s sense? Hardly so. Rather than a market facilitator, Uber acts more like a central planner: it coordinates the allocation of resources in the system, fixes prices through price-surfing algorithms, and sets the rules for competition. It has constructed a market simulacrum, in which its computational technologies engineer social realities and format the decision-making processes of economic actors. For instance, “supply-demand disparities” calculated by Uber’s algorithms is not so much true reflections of “the market” but rather the products of Uber’s market engineering. For a long time, members of the L Tribe thought the price surfing map is a true reflection of the demand on the ground. Until one day, a driver looked at the customer’s interface and the driver’s interface at the same time— he found the “realities” represented on the interfaces are completely different. It is a great example that shows the platforms are trying to use virtual abstractions, heat maps, to convince drivers that they are true presentation of reality. The plan is that slowly drivers who believed heat maps would

start following the instructions given by the heat map. Virtual reality thus began having real life effects. Virtual reality became *virtualism*.<sup>19</sup>

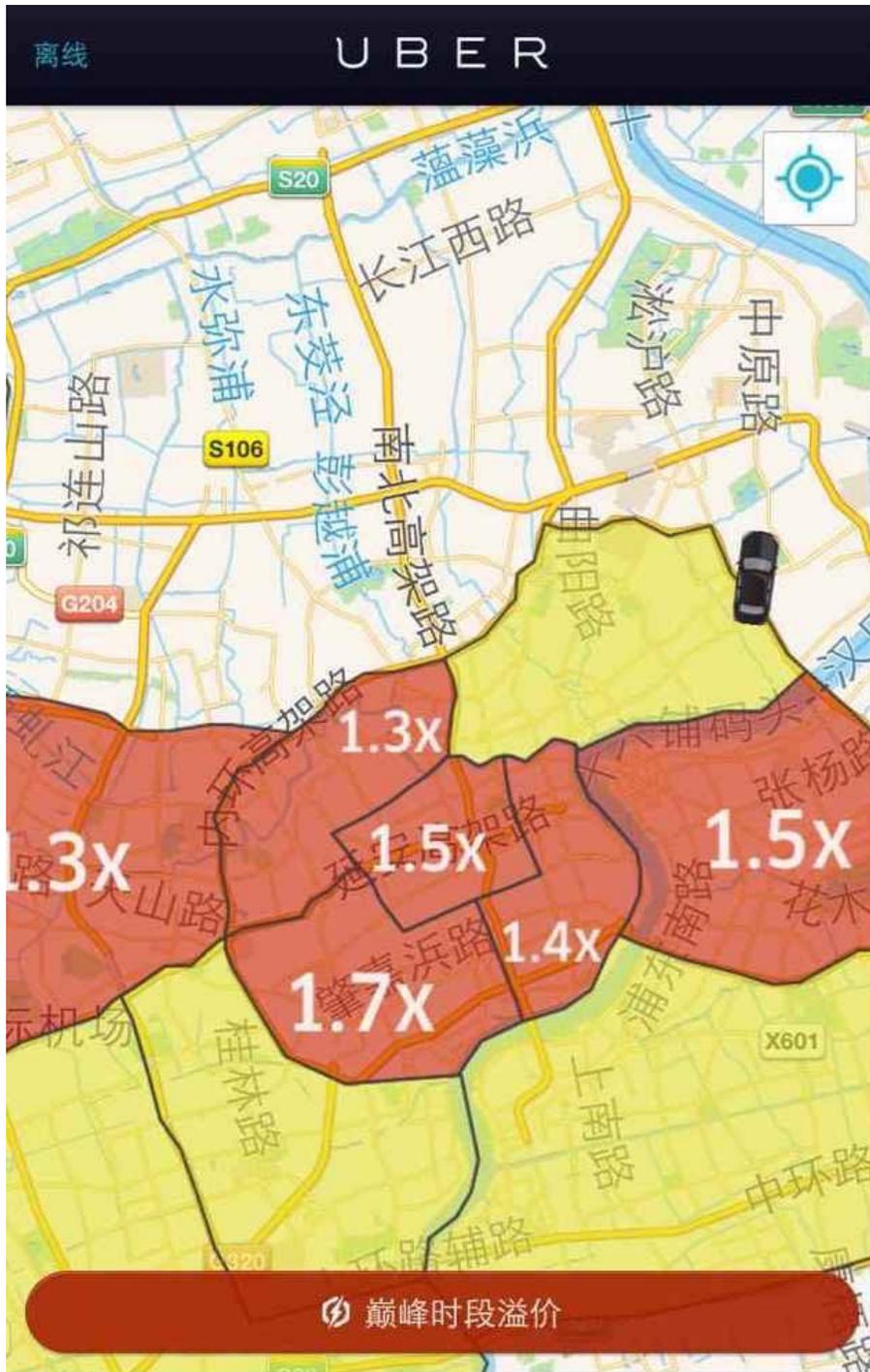


Figure 2.6. A map of surge pricing on Uber's driver interface.

The logics of the platform frame drivers' earning strategies (and consumer purchasing habits) in other fundamental ways. For example, at one time, Uber offered "peak hour subsidy" to encourage drivers to stay online during peak hours— any driver who stay online from 7-10 a.m. and complete one trip every hour could get certain amount of reward. Drivers later found that the best strategy is to drive the car to suburban areas where there is business is slow. In this way, they can both reap the "peak hour subsidy" and avoid being stuck in the center of the city (which will waste gasolines and energy). In this case, waiting in car became a more rational economic choice than taking more customers because of the design of the platform.

Customers also developed new ways of hailing. For instance, to counter surge pricing, they started walking around and trying adjacent blocks. It is because based on collective intelligence generated in online forums, customers discovered that Uber's algorithms map space into grids and the supply and demand ration is calculated differently in each virtual block. So the most updated New York "ride-hailing manual" will tell you that to get a slower price on Uber, simply try walk a block or two in any direction and tap on the app again.

Uber's algorithmic control extend way beyond individuals' economic activities. It is especially apparent in its anti-fraud efforts. In an emergency announcement about sanctioning fraudulent activities, the company stated that it had been tracking individual locations beyond trips, sifting through individuals' contact lists, and collecting in-depth personal information to combat fraud. In the emergency announcement below, Uber listed ten kinds of "atypical transactions," each type possessing indicators of fraudulent activities. However, in order to find these indicators, the platform has to exert its control to a much wider realm. Here I synthesized the key information the platform has been gathering from its customers and drivers:

1. Information Uber is collecting from its customers:

- Whether the customer accepted trips from a few drivers and canceled trips with all the other drivers.
- Whether most of the customers of a certain driver use a lot of coupons and gift cards.
- Are most of the customers have transaction with this driver new customers, if yes, did they cancel trips with other drivers.

2. Instances when Uber tracks the geolocation of customers and drivers outside of trips:

- Whether customers and drivers were together before they started the trip.

Find out the trip pattern of a certain consumer and a certain driver, whether they often receive and place orders in suburban areas. [Note: since there are fewer cars and customers in a certain area, suburbia is seen as prime location for fraud.]

- Whether the requesting end and receiving end of an order is in the same Wi-Fi environment.

3. Checking the driver's contact information. Find out if any order is from the drivers' existing contacts.

4. Cross-checking driver's and customer's contact list to see if they share many contacts. If so, this driver and customer might be involved in the same online "trip faking" group.

These controlling techniques of Uber showed us what a society of control could be like in real life: Being tracked when one is not using the app, having one's consumption habits scrutinized by algorithmic tools (whether one is using coupons, whether one has canceled many trips, whether one orders most of his trips in suburban areas), having one's contact list sifted through, and so on. All the data collected could be used to determine if one is a good consumer or a good producer.

### **Re-imagining Resistance in Control Society**

“The societies of control operate with machines of a third type, computers, whose passive danger is jamming and whose active one is piracy and the introduction of viruses.”

— Giles Deleuze, *Postscript in the Societies of Control*, 1990

In *Control and Freedom*, Wendy Chun argued that Deleuze's reading of control societies is persuasive, but also paranoid, because “it accepts propaganda as technological reality, and conflates possibility with probability.” Just as panopticism overestimated the power of discipline, she argued, so does “societies of control” overestimate the capability of control systems.<sup>20</sup>

Three decades after Deleuze's “societies of control” was published, the ethnography of ride-hailing platforms and the illicit drivers showed us that, even with the most cutting-edge computational technologies, there are limits of control and there is resistance in control system. The resistance of these illicit drivers is especially significant because their disruptive collaboration was an attempt to rewrite and reinvent the underlying rules of ride-hailing digital platforms, which are becoming

increasingly important urban infrastructure around the world. The local online communities formed by hacker-drivers and other illicit actors became vibrant social spaces in which knowledge and value are produced and shared. They are the rare spaces that are impregnated with potential for social actions in contemporary China.

However, these acts of resistance cannot be overly romanticized as well. Firstly, in the struggle of updating hacking technology and updating counter-hacking technology, corporations still possess much more capital, resource, and expertise to edge out. Over the years since I started researching ride-hailing, hacking platforms has become increasingly difficult every year. And once caught, individual drivers have to bear the harsh punishment of account suspension, cash fines, and even in a few rare cases imprisonment.<sup>21</sup>

Secondly, the fake orders as we can see didn't really harm the ride-hailing platforms. It even "helped" to boost their trip numbers and attract capital investments. And if we take a further step back, drivers hacked the platform not with the aim of taking down the corporations or harm the system; They hacked merely to maximize their profits. On the contrary, they probably hoped the industry would keep prospering so that they could keep sharing a slice of the pie. In the end, their actions are more collaboration than disruption.

All in all, the local communities of hacker-drivers provided us with a window to see the porousness of ride-hailing platforms. They showed us that through mundane practices of hacking, communities of drivers could also shape the development of digital technologies. Furthermore, these communities also revealed to us an interesting picture of self-fashioning in contemporary China. In these grey spaces, individuals took on distinct avatar-identities and negotiate shared rules and values with each other. The rituals of sharing digital red packages and consuming female sexuality reflected the broader social dynamics in Chinese society. But they also manifested in these online communities in distinct ways to support the social structure and hacking activities.

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<sup>1</sup> Asher-Schapiro 2016.

<sup>2</sup> Qu and Yu 2015.

<sup>3</sup> Please note, since the corporate part of fieldwork for this chapter is mainly conducted in Uber Shanghai office before the Uber-Didi merge, I will refer to the company as “Uber” instead of “Didi” when I discuss the corporate anti-fraudulent strategies in 2015. Today, Uber’s platform has already been subsumed under Didi and does not operate independently.

<sup>4</sup> van Dijk 2009.

<sup>5</sup> Callon 1998,26.

<sup>6</sup> Picon 2015.

<sup>7</sup> I conducted intensive participant observation from June to September, 2015. This is a period of time in which hacking activities are most widespread on ride-hailing platforms.

<sup>8</sup> Since hacking activities was in a legal grey area during my fieldwork, I took various measures to protect my informants. One decision I made was not to reach out to hacker-drivers I met online. Since they use avatars in online the community, I do not know their real identity. In this way, I could reduce the risk of their identities being leaked out. This method was informed by the consultation with IRB experts at Harvard University.

<sup>9</sup> Roewe550 is a model of domestically produced low-end plug-in hybrid sedan. Given Shanghai government’s preferential policy toward hybrid vehicles (such vehicles could automatically get local Shanghai plates, which are extremely hard to get), many aspiring ride-hailing drivers would purchase this make of sedan, making it one of the most popular types of cars on ride-hailing platforms.

<sup>10</sup> Elyachar 2005.

<sup>11</sup> Osburg 2013.

<sup>12</sup> Some drivers did use other carpooling platforms that allows driver to set destinations for the last trip home, such as Dida (嘀嗒). Didi also added the function that allows drivers to set their destination as home in recent years.

<sup>13</sup> Until July 2016, ride-hailing activities were in legal grey area in most cities in China (only carpooling was considered legal). Drivers who worked on ride-hailing platforms such as Didi, Uber, Yidao were often stopped by policemen on the streets, fined with significant amounts of money (ranging from ¥10,000-30,000), and subjected to suspension of cars and licenses. Although ride-hailing companies sometimes pay the fines for the drivers, drivers greatly fear the sporadic policing because the suspension of cars will cost them a lot of earning as well.

<sup>14</sup> “Fishing” (*Diaoyu Zhifa*; 钓鱼执法) refers to the tactic that officers pretend to be customers on ride-hailing platforms in order to identify and prosecute ride-hailing drivers. Drivers would blacklist the personal information of such officers and spread the lists so that other drivers could avoid being “fished.”

<sup>15</sup> Elyachar 2002, 2010.

<sup>16</sup> *Qiangsheng* (Johnson; 强生) taxi company is the largest and most reputable taxi company in Shanghai. The fact that the drivers in Qiangsheng were also actively engaging in hacking activities speaks to the prevalence of this phenomenon.

<sup>17</sup> QQ, created by tech giant Tencent, is one of the oldest and most popular social networks in China.

<sup>18</sup> Smith 2000[1776].

<sup>19</sup> Carrier and Miller 1998.

<sup>20</sup> Chun 2005, 9.

<sup>21</sup> Xu 2015.

## Chapter Three

### **Labor Contractors**

It is a little acknowledged fact that the ride-hailing industries of China and the US are predicated on radically different business models. In the United States, where most people own their own cars and work regular hours, the business model of Uber and Lyft centers on mobilizing latent labor and capital. The car ownership rate stands at 899 cars per 1000 individuals, making the U.S. one of the most auto-populated economies in the world.<sup>1</sup>

The same cannot be said of China, where automotive ownership is comparatively low and limited to upper-income households. As of 2018, China's car ownership rate was only 173 cars per 1000 individuals.<sup>2</sup> In other words, there is far less latent automotive capital in China. In urban areas such as Beijing and Shanghai, car ownership rates are even lower because of governmental control of car plates. The prohibitive costs of owning a car in a city— parking fees, tolls, and license plate taxes— pose even larger economic barriers to private ownership. Therefore, many car owners in these metropolitans have above average household income, and thus wouldn't be too interested in the opportunities of being ride-hailing drivers.

In order to make ride-hailing business work in China, companies like Didi and Uber will have access automobiles and drivers somewhere else. And this is where a group of invisible middle men— Labor Contract Companies (LCC)— came in. LCCs serve as middlemen between ride-hailing platforms such as Didi and illicit migrant laborers. They lease cars from all sources possible, from State-Owned enterprises, private companies, even individuals. LCCs helped platforms to congregate the dispersed resource of cars, but they also bridged the gap of between cars and laborers. Since its emergence in 2014, ride-hailing platforms attracted large number of migrants to flow into the city to pursue the jobs of on-demand drivers. But most of them cannot afford purchasing cars and getting local plates.<sup>3</sup> Therefore, many of them turned to labor contract companies.

Since late 2016, the new laws established by Ministry of Transport that was supposed to legalize ride-hailing industry drove more drivers “underground.” This is mainly caused by the strict

local regulations set up by first-tier municipalities such as Beijing, Shanghai, and Shenzhen; they uniformly required “local hukou” (household registration) status for on-demand drivers. Therefore, migrant drivers turned to LCCs again for special licenses and protection.

LCC functions as intermediary ghost organizations between the platforms and the consumers, making the platforms look much more digital and organized than they actually are. Their function resembles that of ghost workers described in Mary Gray and Siddharth Suri’s new work, *Ghost Work*.<sup>4</sup> Based on their five-year research on two continents, the book exposed a new type of labor created by Silicon Valley digital platforms: on-demand digital worker that do low-pay and repetitive tasks to make platforms look like they are fully automated. Although millions of people today engage in this line of work, they are deliberately made invisible from public view. It is because tech companies want users to believe that the seamless services they are enjoying are the results of technological marvels in AI and big data. In China’s ride-hailing industry, there is LLC is like an organizational equivalent of “ghost workers.”

### **Who Are Labor Contract Companies?**

First, let me explain the nomenclature. What I call labor contract companies in this chapter is actually referred to in Chinese public policy documents as “*qiche zulin gongsi*,” directly translated as “Vehicle Rental Company.”<sup>5</sup> This name describes part of their functionality— renting cars out to individuals who wish to drive for ride-hailing platforms. However, it conveniently omitted another very important part of their function— recruiting and managing laborers, usually migrant laborers, for ride-hailing companies. Perhaps the name is an innocent choice by the government or platforms; but perhaps not. By cutting out the “labor contract” part, the state and the big corps could make a better case for the

newness of the industry and its rightful position in Chinese society. In this chapter however, I would refer to these organizations as “labor contract companies.” It is because first, my investigation focuses more on the labor contracting part of these companies; And second, I want to remind the public of the existence of those often-forgotten migrant laborers in ride-hailing industry.

Although labor contract companies are little known by the public and even some employees of ride-hailing companies, they and the migrant drivers they employed had been a central focus of my research since early 2015. They are not, as many people would speculate, an exception to the norm. Rather, they are integral component of the industry that has existed ever since Didi, Uber, and others began operating private car business, and they have contributed significantly to these platforms’ rise.

LCCs were kept hidden from public view in the interest of ride-hailing platforms, who branded themselves as the “disruptors” of urban transportation formerly dominated by rent-seeking taxi companies.<sup>6</sup> Both Uber and Didi claimed that one of their important goals is to cut out the middlemen and thus improve the income and work condition of drivers. Therefore, existence of LCCs became a reminder that even China’s newest industry is still entrenched in an old labor structure, characterized by hierarchies of middlemen and a near-inexhaustible base of low-wage migrant labor.

From the perspective of the hundreds of thousands of migrant drivers who affiliate with LCCs, the current transportation service industry does not feel very “disrupted.” Their monthly overhead is even heavier than most taxi drivers. If a driver could afford to purchase their own vehicle (an entry-level car that meets industry requirements costs around ¥200,000), he would need to rent a commercial license from an LCC for ¥400-600 /month. But most migrants do not have money to invest in a new car. Even if they do, some of them told me that they were wary about investing so much savings in an emerging industry. Under these circumstances, they would have to rent a car with a license. That costs between ¥6,000-9,000/month in first-tier cities, an arguably even heavier overhead than taxi drivers.<sup>7</sup> On top of that, on-demand drivers have to pay around 22% of their

revenue to Didi as platform commission and miscellaneous fees. The heavier overhead was corroborated by oral accounts. Several on-demand drivers who used to be cabbies told me that the overhead they pay now is much heavier than what they used to pay taxi companies. So much for Didi's slogan of "cutting out the middleman."

### **Who Are the Drivers in Labor Contract Companies?**

If the working condition as LCC-affiliated drivers is even harsher than cabbies, why did migrant workers still flood into this industry? Migrant drivers come from all kinds of background. A significant number of them used to be drivers in other sectors, such as taxi driving, truck driving, driving illicit cars, driving for companies. One female driver I met used to be a personal driver for a Taiwanese boss. But after her boss' business tanked, she also lost her job. "I don't want to work in grocery stores and getting a fixed wage," she said. She wanted to work more and earn more, so she chose to become a Didi driver.

Some of them picked up driving after unexpected difficulties in other industries. For instance, I met a former grocery owner in Beijing, whose shop was shut down because of urban cleansing campaign (*chaiqian*; 拆迁). In order to maintain a cash flow, he took up Didi driving. But he lamented that the amount of money he made from Didi (¥10,000/month) only covers some daily expense and rent. While before, he could make ¥300,000/year from his grocery store, and he didn't have to pay rent because he lived above his shop.

Some just arrived at the cities and couldn't find suitable work, so on-demand driving became a good transitional job for them. A young man from Northeast China said he came to Shanghai to work in his relative's company. However, as soon as he arrived, the company got into some financial

difficulty. To make ends meet, he started to drive Didi. But by the time I met him, he has already been a full-time Didi driver for a year.

Most of the migrant drivers have always worked in the informal sector and are used to the instability of work. That is not to say that they do not suffer or complain about the exploitation of the platform and labor contract companies. But in contrast to taxi drivers who claim legitimacy in Chinese society and defend their job securities through protests and petitions, these illicit drivers often acknowledge their informal identities and reconcile with it.

My informants who own and manage LCCs unashamedly describe themselves as speculators. Many owners made their fortunes from the market bubble created by venture capital and policy barriers created by municipal governments: They rode the wave of the ride-hailing boom and ready to pull out as soon as the tide changes; They bribe corporate managers and circumvent governmental regulations. But opportunism alone does not characterize them. I found that in everyday life, the owners and managers of LCCs also exercise care towards their drivers: From training new drivers, to aiding on the road, to cutting slack to drivers who are late on payments, to raising funds for drivers who became seriously ill. They often sympathize with the suffering of their workers and feel morally responsibility for their welfare.

These seemingly contradictory moral values harbored by individuals and shared in communities was a consistent theme during my fieldwork about LCCs. Most actors show a wide range of divided subjectivities and self-identities that are shaped by their constant boundary-crossing practices.<sup>8</sup> They move between licit and illicit spaces, cope with economic uncertainties and regulatory risks, negotiate with corporate and state actors. In this world, moral values are rarely articulated and often have camouflaged as pragmatism. But I believe in practices of collusion, pursuit of wealth, and speculative moves, one can also discern the production of moral values in LCC communities.

This chapter narrates the socio-economic conditions in which labor contract companies

emerged. It introduces, through the story of Mr. Buddha, how labor contract companies developed and helped the initial development of ride-hailing companies. But they underwent a managerial turn, during which stratified structures and quantified managerial tools were employed to make labor management more modern and formal. I also explore the precarious and difficult everyday work experience of on-demand drivers who affiliate with labor companies, revealing what being platform labor actually entails in China. Finally, I examine the “legalization” of ride-hailing industry from central government to municipal governments, and how it inadvertently created of a de facto new “taxi industry.”

### **Catching the White Wolf with Bare Hands**

The majority of LCCs emerged in 2015, when Didi decided to transition from networking taxis to private cars. Though Uber has begun its promotion for “People’s Uber” a few months before, it was only after Didi joined the race that the two behemoths started aggressive market expansion. To incentivize drivers to join their respective platform, they gave out attractive subsidies, sometimes as high as three or four times the actual fare they get from customers (see details in Chapter Two Hacker Drivers).

Due to this maniac market campaign, a wave of non-local cars swarmed into major metropolitans in China. Take Beijing for an example, if you go to Sanlitun, a famous night-life district in Beijing on a summer night in 2016, you would see dozens of cars with car plates from Hebei province picking up customers in front of bars and clubs. “Nine out of ten times you order a Didi, you will get a non-local car,” I was told by several customers at that time. These trends became more pronounced during night times because Beijing restricts non-local cars from entering the city during

daytime. This situation was no doubt quite inconvenient for drivers and not great news for ride-hailing platforms, which need as many cars as possible to be working at all hours.

Under such a circumstance, a group of savvy entrepreneurs appeared to resolve this problem. They worked tirelessly to acquire cars and workers from every channel possible. At the highest point, I was told that Beijing has around 230 labor contract companies. Didi urged these companies to recruit drivers for them. Without completing a certain quota, they cannot get a contract with Didi. Unlike the official story Uber and Didi often told the public, saying that drivers often voluntarily sign up to their platforms based on words-of-mouth, the actuality of the whole recruiting process sounds more like a pyramid marketing scheme. Ride-hailing platforms' initial growth relied significantly on these primitive, aggressive, and labor-intense approach of marketing.

Now let me tell you the story of Mr. Buddha, whose interesting entrepreneurial path showed me how companies like his contributed to the rise of ride-hailing industry. And he showed me the complex moral world of a labor contract company and unique moral experience of him.

“Buddha” was introduced to me by a mutual friend. He got this nickname less from his demeanor but from his Buddha-like physique— bald, heavy-set (weighing probably 300 pounds or more), and hanging ear lobes. He likes to joke about his own weight as well. His WeChat name is “The skinny one from city south.”

While the “the skinny one” is a self-deprecating joke, “from the city south” part is a true description of himself and a part of self-identity he is particularly proud of. “I grew up in the *butong* (narrow lanes) in the southern part of Beijing, close to *Caishikou* (菜市口; where executions were carried out in Qing dynasty). My roots are there. I never want to leave even after I bought apartments in gated communities elsewhere, because those *butong* are ‘home’ for me.”

The first time we met was at a lunch banquet along with our mutual friend and my husband. The four of us occupied a whole room in a traditional Beijing royal-style restaurant. We spread out

around a heavy marbled inlaid mahogany table, topped with crimson table-cloth and gilded porcelain dinnerware. The chairs were matching vintage-looking mahogany chairs, lined with embroidered butt cushions— though I felt they were still very stiff and uncomfortable. But Buddha settled right into them. He collapsed around the chair with his arms hanging like a true royal, only one of his hands moving, intermittently, carrying his cigarettes back and forth. He and our mutual friend were both heavy smokers. After a couple of hours, the room was filled with misty clouds.

I call our meal “lunch banquet” because, our mutual friend, who was the owner of several top restaurants in Beijing, ordered at least fifteen elaborate dishes for the four of us. Serving after serving, the laboriously prepared traditional Beijing-style dishes soon populated our table and then piled up, with little food actually being consumed. I remembered the setting of this banquet so vividly and have given it thick description here is because, very often, as fellow anthropologists would understand, the physical setting in which conversations take place often becomes a shared “cultural premise” on which consequent conversations unfold. And for my first talk with Buddha, the implicit undertone running through our conversations were “conspicuous consumption,” “pursuit of material success,” and the “understanding of local business culture.”

Buddha loved to talk about money. He loved to boast about how much money there was to be made in this brokering business for ride sharing platforms. And he had the habit of giving me very specific numbers when he talked about revenue and income. As a researcher, I couldn’t ask for a better informant. As I rushed to jot down every figure, he grew even more enthusiastic. As much as I appreciated the detailed information he provided me with, I also gathered the moral attitudes and sentiments behind the unending mention of numbers.

How much can such a middlemen company make? To avoid citing of his own financial information, he disclosed that one of his friends in the same business makes ¥30 million to ¥40 million in revenue every year. His friend has to register several companies in order to avoid heavy tax

rates on “big corporations.”<sup>9</sup> And it is not uncommon to profit at least one million yuan every month for an average LCC, he said.

On top of generating ample profits, being the middlemen for ride-hailing had little risk and no management required. All he needed to do was to hire a couple of employees to handle some office work. That was exactly what his “company” looked like. Located on the southern edge of Beijing (it takes at least an hour and a half to get to from downtown), the office was a small room no larger than 30-40 square meters. In 2016, he only hired two people. But it grew up to be an eight-people team in 2017. He paid each of his employees around ¥14,000/month, for which he often boasts about being very generous. With this small management team, he managed to run one of the biggest labor contract companies in Beijing. “This is exactly the kind of business I like to be in,” he laughed, “it is ‘catching the white wolf with bare hands’ (*kongsbou tao balang*, 空手套白狼!)” This Chinese idiom refers to the behavior of engaging in lucrative business with little cost, since “white wolf” symbolize the rarest animal in the wild.

In the summer of 2016, Buddha’s labor contract company has around 200 full-time affiliated drivers, most of whom are rural migrant workers. From his full-time drivers, he earned between ¥500-1000 /per person from providing car rental.<sup>10</sup> Moreover, he takes a 2-3% cut of the revenues generated by the drivers (the remission is from the 20% of revenue Didi takes from the drivers). Didi would strike specific deals with each company, providing them of a certain percentage of remission if they fulfill certain requirement of the platform. Therefore, for Buddha, it is easy to extract 400-600 yuan from every driver’ ¥20,000 average monthly revenue. In total, he could make around  $(750+500)*200 = ¥250,000$  from his full-time drivers, even with the most conservative calculation.

He was extremely good at using the monetary incentives to recruit drivers. Twice a year, he holds corporate meetings, where he gives out financial rewards to loyal workers in the most literal way, stacks of hundred-yuan bills. He would place stacks of money on the table to show how much money

are being given out. Then group photos are taken, with him in the middle surrounded by dozens of drivers (without an exception all male), all of whom are holding stacks of cash at their hands. These photos were then posted on his professional WeChat account, serving as powerful advertisements for his company. Unlike corporate culture of Uber and Didi that is wrapped up in slogans and ideals, Buddha's material culture is crude and straight forward. Similar organizational culture could also be observed in other LCCs. For instance, one of the bosses in Shanghai, Mr. Ma, loved to post his drivers' paystubs on his WeChat moments in order to attract drivers. These explicit ads create an increasingly money-worshipping culture among on-demand drivers, and such culture incentives drivers to work even harder and thus make more money for LCC bosses and ride-hailing platforms.



**Figure 3.1.** Stacks Reminbi laying on the table in Buddha's office.

In addition to full-time drivers, Buddha also has over 500 private drivers who “affiliated” with his company. A lot of his profit comes from these drivers that he has never met. Until mid-2016, working in ride-sharing industry was not perfectly legal in Beijing, or any city in China. Regulations mandate that only drivers who employed by car rental companies are allowed to operate. Many rental companies used this regulatory barrier as an opportunity to profit.<sup>11</sup> They allowed individual drivers to “affiliate” with their company with monthly fees. Drivers have to pay labor contract companies, for every trip they make, 25 cents. It sounds like a small amount of money. But given the millions of trips made on platforms every day, the profit from these fees is rather tempting. Therefore, every labor contract company vies for these “fatty meat”— big profit without any work. And the Didi managers who are in charge of allocating these “meat” become key targets of bribery.

That brings us to another topic Buddha loved to discuss— the local business culture and collusion of interests. When we were on these topics, he often adopted an “educative” tone; he liked to teach me— an overseas student who has been away for too long— how things work in this part of the world. The deepest wisdom he shared with me is that “anyone who grew up in China could be corrupted if they are immersed in Chinese business culture long enough.” As a veteran in this industry, he has interacted with generations of managers at Uber and Didi. According to his cultural stereotypes, the earliest city managers of Uber, all American-born Chinese, “don’t even have oil and salt” (*Youyan Bujin, Shi Shenme Dou Buxing*; 油盐不进的, 使什么都不行; Cannot be bribed with anything). But soon these people went back to the U.S. and the “sea turtles” (Chinese who are educated overseas and return to work in China) took over. “Overtime, they ‘learn’ how to conduct business in China, haha! And the interns of Didi and Uber are just Chinese students from Tsinghua and Peking University. They have to accept my red packages, or they are not giving me ‘face’ (*Mianzi*; 面子).” Buddha was very proud that his grand theory of Chinese people’ corruptibility was affirmed by his anecdotal examples.

While he was working with Didi, he also practiced his tried-and-true business tactics:

Corruption. In order to get on the good side of Didi managers, Buddha tried very hard to corrupt them with special treatment. In his thirties, Buddha was older than most of the managers in Didi, who were usually in their 20s. “But I call them either ‘older brother’(ge; 哥) or ‘older sister’(jie; 姐) to show respect. Anyone I don’t know how to refer to I call him ‘leader’ (*lingdao*; 领导)! Even their security guard was my *lingdao*!”

When a Didi employee was sent to sit in his company for a couple of weeks, he bent back and forth to make sure he was very happy. “When the kid from Didi came to my company, I spent ¥100,000 just on his entertainment. I bought two cartons of high-end mineral water only for him to drink. And I personally served him, lavishing him with dinners and all types of entertainment.”

He has to gone to such lengths to cultivate good relations with Didi managers because, he explained to me, everything in Didi revolves around *guanxi* (interpersonal relations) just like in a state-owned enterprise. So he wants to get on the good side of Didi managers, especially ones in a department named “On-demand Industry Development.” It is this department who has the power to allocate the “fatty meat,” self-registered drivers, to different labor contract companies. If he could get say 100 drivers, he would be able make “affiliation fee” around ¥10,000/month for literally no work required. Some managers in this department, I was told, even own shares in the labor contract companies that they help. One can see how deep the collusion goes.

Although Buddha likes to flaunt his wealth both online and offline, he didn’t start out this successful. When he first started building this labor contract company, he started at the bottom of the food chain. One of his jobs was to recruit drivers on the streets. He said he used to stand in front of Uber’s office every day, recruiting drivers for Didi. Such marketing strategies seemed a bit primitive for the fancy and high-tech ride-hailing industry.

“The Uber employees didn’t chase you away?” I asked out of curiosity.

He laughed, “At that time, there were only six employees in Uber’s Beijing office, so they don’t

even have the manpower to chase people like me away!”

So, Buddha just stood there day after day, holding out his phone, asking potential drivers to scan his QR code. Although he has put in such hard work, he had difficulty getting payments from Didi. One time, he had to wait four months to get ¥1,200 payment. Things got so hard for him, he had to resort to only eating fried rice with eggs for three months straight.

His own humble upbringing and the hardship he encountered in work made him empathetic with his drivers. Under his careless appearance and gangster-like way of talking, he secretly cared a quite bit about his drivers. One time, a driver in his company was diagnosed with uremia. He soon organized a fundraising event that raised ¥40,000 for the driver’s treatment. The success of the fundraiser made Buddha think that it would be great if there was a more permanent mutual support group for the drivers. So that when a driver encounter adversity, his would have a supportive local community who can help. “It is like ‘I do something for everyone, and everyone do something for me’ that kind of feeling (*renrenweiwu, woweirenren*; 人人为我，我为人人)”, he said.

In 2016, he proposed to Didi that the company should establish an organization like drivers’ union, in order to improve drivers’ working and living conditions. He told his idea to the city manager of Beijing and manager relayed the message to one of the deputy CEOs of Didi. Buddha was then invited to have dinner with the deputy CEO a couple of times to talk over his proposal. Didi eventually accepted his proposal. But the name of the organization was later changed to “Drivers’ Commune,” which has a distinct red feeling to it. However, due to the fast growth of Didi in the last few years, the small and intimate community of Drivers’ Commune lost its momentum and was discontinued.

Buddha maintained two WeChat accounts, one for business and another for personal life. With the “business” account, he communicates with drivers and employees about the great work his company has been doing. He often sends caring messages to the group, such as telling drivers stay safe whenever there is a snowstorm outside, encouraging drivers to take advantage of Didi’s incentive

structure, and so on.

In contrast to Buddha's empathy towards drivers is his antipathy towards Didi. He hates its bureaucracy, hates its managers, and hates its exploitation. When he mentions Didi, words like "jerk-face company" would slip through his lips automatically. It was quite telling that, when he explained his antagonism towards Didi, the first example he used is that how Didi mistreated his drivers. He recounted that several times he went to Didi's customer service center to appeal cases on behalf of his drivers (when drivers were punished by the platform for various reasons), only to be turned down and laughed at with comments such as "don't you know that all drivers are liars?"

For Buddha, all of these ostensibly conflicting emotions seem to have been resolved. On a personal level, he has clear black and white judgment—he resents those who cheat him and helps those who work hard. On a business level, everything is grey—he would use any means to achieve his aim. The legitimacy of means doesn't matter to him. He believes in people but not the system. Anything beyond person-to-person bonds is pure politics, power, and profit.

Knowing more and more about Buddha and people like him, I started to get a vivid picture of how Didi and Uber mobilized these grassroots, resourceful, profit-driven entrepreneurs to conquer the difficult and varied markets in China. And I began to realize that the wildfire of ride-hailing industry was fueled not just by networking technology, financial investment, and strong consuming power, but also by massive migrant labor, ingenuity of local organizers, and the collusion of interests reached among various parties at a particular historical moment.

### **Quantified Managerial Turn**

In its early years, Didi and Uber actively recruited labor contract companies to facilitate their growth

in China's complex labor environment. Their promise of getting rich together incentivized many to enter the business of being LCCs. At a high point, there were over 230 LCCs in Beijing alone. However, once Didi has become a sizable corporation, it began to view LCCs, with all of their informality and problematic legal status, as “bad property” (*buliang zichan*; 不良资产). So, starting around late 2016, Didi moved to consolidate its workforce.

First step, Didi took away the “fatty meet” from LCCs and made all the self-registered drivers to directly affiliate with Didi. So nowadays, all self-registered drivers pay their 25 cents per trip “platform fee” to Didi. And drivers in Beijing, for instance, are served by the Didi Drivers' Club in Wangjing area.

Secondly, Didi altered its commission structure so that larger LCCs received larger cuts of each billed trip than smaller ones. This measure drove smaller companies to either merge fleets with similar-sized firms or be acquired by larger LCCs. By the fall of 2017, of Beijing's original 230 LCCs, only 51 remained. At the same time the average LCC fleet size rose from a couple dozen cars to between one and two hundred vehicles.<sup>12</sup> These mergers and acquisitions greatly reduced Didi's managerial burden, as the platform had to coordinate with far fewer LCCs.

Didi initiated another round of “slimming down” while I was conducting my fieldwork in 2017-2018. During this phase, LCCs were evaluated not only on the basis of their size (i.e. the number of drivers and cars they contracted out to Didi), but also on their ability to fulfill measurable quantitative targets set by Didi. This tendency towards quantification and evaluation, I will refer to as the “quantified managerial turn.”

Buddha shared with me an excel sheet that Didi issued to all of the LCC owners in Beijing. The sheet's rows listed every LCC in the city. The figures in the columns represented each company's current number of cars and drivers (each of which were divided into sub-categories), the total revenue of each company, the percentage of A-level drivers in the company and so on. At the rightmost side,

highlighted in red, were the expansion targets for the near future. According to Buddha, all of the figures were updated regularly, and each company's performance was compared against its targets.

It took only a moment to see that Didi's growth targets were being set far higher than most LCCs were able to expand. In the version of the document I viewed, only a handful of companies had actually met their "targets." Indeed, fewer than ten had achieved even 60% of their aspirational goals. Buddha's "Golden Road" company (pseudonym), however, stood at the top of the pack. His LCC had met its targets and held the No.1 rank in Beijing for several consecutive months.

Despite Golden Road's apparent success, Buddha sounded anxious. "It's not like it was before, when all you had to do was establish *guanxi* with a few people in Didi and you were all set. Now, if the small companies cannot reach the recruitment targets set by Didi, then they are pressured to sell their assets to bigger companies. You either work hard to recruit more drivers, or you die."

To illustrate how this managerial turn plays out at the level of individual drivers, let me recount the story of Mr. Chen, a five-star driver in Shanghai. I met Mr. Chen during a casual trip to visit some acquaintances in Shanghai. On that day, I ordered a *Youxiang* (优享) car on Didi, a category of service advertised as a "comfortable" alternative to the cheapest rides on the platform.<sup>13</sup> Soon I was met by a black Roewe 550 sedan, driven by a man in his 30s who looked especially presentable. He was clean cut and wore a crisp, white long-sleeve shirt, uncommon among Didi drivers.<sup>14</sup>

During the ride, we had a friendly conversation about his work and life. Then about 10 seconds before we reached my destination, Mr. Chen clicked on the Didi app and terminated the trip. He said that now I should be able to rate him on the app, and kindly reminded me that giving a five-star rating is not the only way to report your experience. He continued, "you can also check individual boxes such as 'smooth driving', 'clean cars', 'good conversation', and so on. These are also counted in drivers' service scores. Most customers forget to include these."

I was amazed by Mr. Chen's knowledge of Didi's rating system. Even as someone who

researches ride-hailing, I didn't know that checking those small boxes actually alters the service scores of drivers. I had always assumed that clicking "five stars" after my rides qualifies me as a considerate consumer. After this exchange, we chatted a bit more, and Chen revealed that he was actually a "team leader" in one of Shanghai's biggest labor contract companies. No wonder he had such deep knowledge of the platform! I immediately asked if I could speak with him again at greater length.



**Figure 3.2.** Didi rating page: customers could choose how many stars, tick boxes, and leave comments.

It wasn't until three weeks and a dozen or so WeChat nudges later that we managed to meet at a Starbucks in downtown Shanghai.<sup>15</sup> Mr. Chen had suggested this location. I asked whether he wanted

a coffee, but he said he would just have a small cup of green tea, without ice. Between sips of beverage, Chen began telling me the story of how he transitioned into ride-hailing.

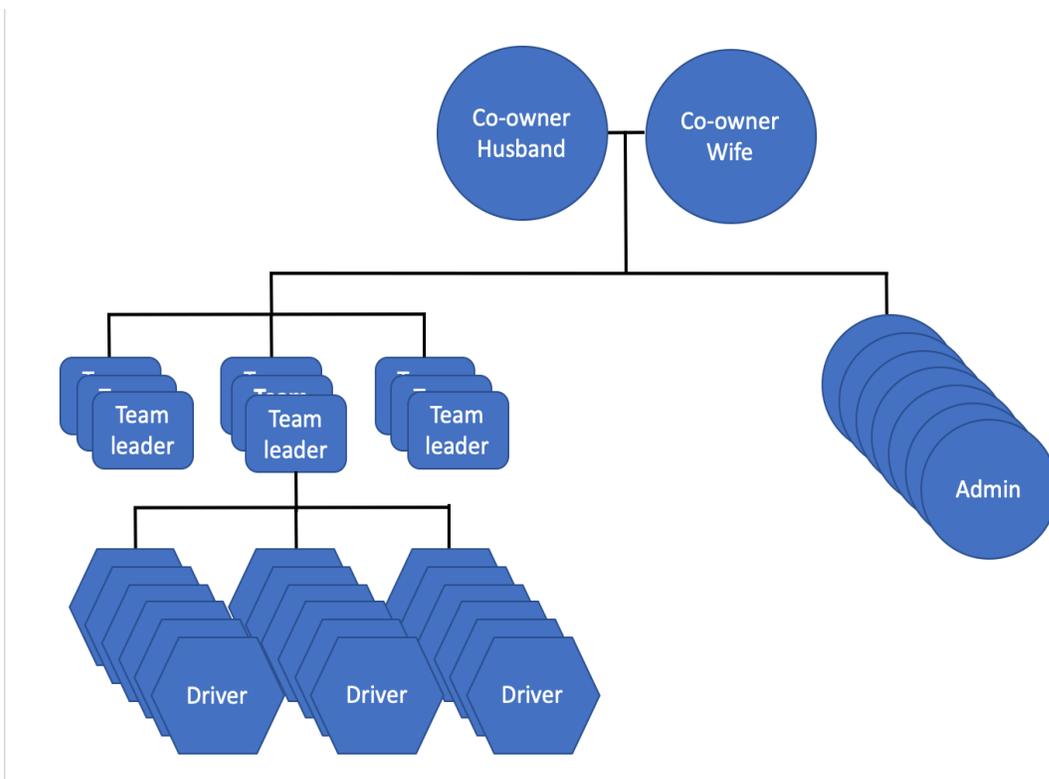
Originally from Chuzhou in Anhui province, Chen migrated to Shanghai in his early 20's to work in the transportation industry. Like most men of his generation, Chen was reluctant to take up a life of farming. So, he moved to Shanghai where he found work as a middleman in a truck depot. The depot is a place where the owner-drivers of trucks park their vehicles while they wait to contract shipping orders. As a middleman, it was Chen's job to help connect these drivers with factory managers to contract orders. As Chen explained, "Truck drivers from all over China would park their trucks there waiting for work. I gathered information from merchants about what goods they needed to ship and connected them with truck drivers. I then negotiated a mutually agreeable price between both parties. For every truckload of goods I introduced, I earned a ¥500 or so commission." After several years of saving up capital, Mr. Chen moved to Jiangsu province, where he purchased his own seven-meter long semi-truck and began delivering shipments of steel to factories.

Chen worked as an independent truck driver for a number of years, until a relative of his, who also drove cars for a living, introduced him to the ride-hailing business. Chen was enticed by the lucrative profits to be made from the industry due to the high subsidies at that time. Most of his hometown people rent cars from labor contract companies to work in ride-hailing. But he calculated the price. "It cost ¥8,000 to rent every month, and buying a new standard car cost about ¥200,000. So, if I could work more than two years, buying a car will be worth it," he thought.

After having worked in the industry for a couple of years now, Mr. Chen was relatively satisfied with his income and the intensity of his work. He earns a bit over ¥10,000 /month, well above the average income of Shanghai residents (¥6,504/month in 2018).<sup>16</sup> He did however work seven days a week. On weekdays, he usually works until 2 a.m., but on weekends he would take it a bit more lightly. Since both his twin sons were going to middle schools back in his hometown, being looked after by

their grandparents, and only he and his wife were working in Shanghai, he didn't mind working a bit harder. But it was until we talked about his management role in the company his face truly lit up.

His company has nine teams, each having 17-18 drivers. Mr. Chen's team members came from various provinces across China such as Hunan, Henan, Fujian; But over half of them came from Anhui province, the same province as Mr. Chen's hometown. He said that the owners of his company would deliberately arrange drivers from the same area to be in the same group, so they can build closer relationship with teach other. As the leader of one of the teams, Mr. Chen's job was to manage, train, and encourage team members so they could achieve higher service scores and drive longer hours. It was crucial for labor contract companies that a significant percentage of their drivers reach "full-time" status, because, first, Didi rewards companies accordingly based on this metric, and second, the more drivers work the more commission the companies could reap.



**Figure 3.3.** Company structure in Mr. Chen's company.

What does this mean to an ordinary driver? To achieve “full-time” status, a driver has to surpass 155 “metering hours” per month. “Metering hours” are the accumulated time during which drivers are actually servicing customers. It does not include the time it takes to pick up customer, wait time, and so on. Many drivers told me, 155 “metering hours” means at least twice the time of working hours. So a full time driver has to work 310 hours per month, that is 10.33 hours per day, without any day off. No day off for sickness, family emergencies, holiday celebrations. If a driver takes one day off per week, then he would need to work close to 12 hours a day. And that is only the baseline for a “full-time” driver, according to Didi.

The quantified management of drivers only intensified over the years. In 2019, a Didi driver in Shanghai told me that his company required 150-170 “metering hours” every month. If anyone was low on hours, the LCC would call up and pressure them. If they still couldn’t fulfill the time requirement, they would even punish drivers by deducting money from their deposit (most LCCs would charge security deposit for the rented vehicle for around ¥10,000). It goes completely against the ethos of on-demand platforms, which are supposed to provide workers with flexible employment.

The owners of Mr. Chen’s company were a husband and wife team, both local Shanghainese. With a team of seven assistants, they produced updated excel sheets every day, showcasing the working hours and service score of each driver. With these numeric data, the team leaders such as Mr. Chen can then identify those who were slacking off and “encourage” them directly. Mr. Chen pulled out his phone and showed me excel sheet of his team. I saw drivers were categorized as Level-A, -B, or -C.

“To be a Level-A driver, one not only has to have “full-time” status, but also has to achieve a certain service score. The threshold of Level-A score is calculated based on average score of all drivers in Shanghai of the day, which means that it changes every day and only a certain portion of drivers could achieve that (the score on the day we met is 86.62). As an experienced team leader, Mr. Chen can discern a lot of characteristics of his drivers from these scores. For instance, at first glance, I

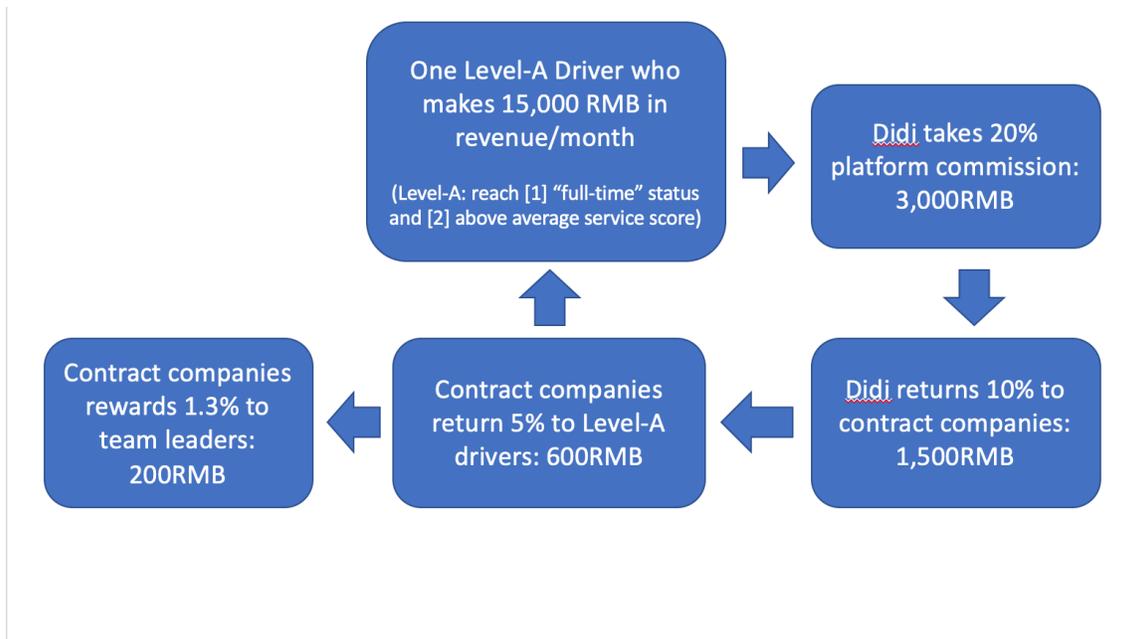
immediately saw a driver that completed very long hours on average, but achieved pretty low service score (70/100).

If a driver was working such long hours every day, shouldn't he or she have accumulated a lot of experience and get a higher score? I asked.

“Ah!” Mr. Chen explained, “It must be a two-shift situation. Some drivers informally hire relatives to do time-share with them. They take turns to use the same Didi account and drive the same car, in order to get most of their rental fee. They can complete incredibly long working hours. However, when customers see that their drivers do not match the registration information, they would have a bad impression and give the drivers very low scores.”

Indeed! I had a sudden revelation based on Mr. Chen's explanation.

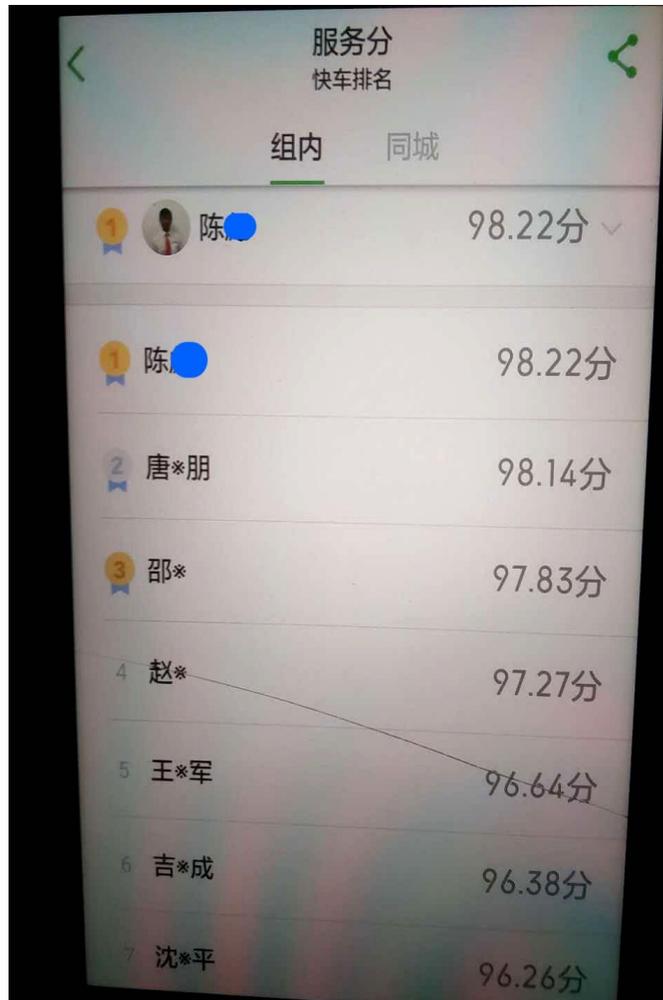
Although based on the nature of how it is calculated Level-A is intrinsically hard to achieve, the owners of Mr. Chen's company nevertheless wanted most of their drivers to be A. It is like grading students on a curved system but still expecting most them to get As. Some people have to get A- and B! The bosses set the goal of achieving 100 Level-A drivers by the end that month (which was 65% of their drivers). Mr.Chen pointed to his phone and said, “boss-lady (*laobanniang*; 老板娘) was shouting ‘add oil’ (*jiayou*; 加油) in the team leaders' WeChat group these days to incentivize us to work harder.”



**Figure 3.4.** The profit flow chart in Mr. Chen’s contract companies, which is representative of how Didi and contract companies create incentive structure for drivers and team leaders.

Mr. Chen would then pass these “encouragements” onto his own team members. He mainly does this in two ways: Knowledge sharing and community building. Being a top-notch driver himself, Mr. Chen had accumulated rich knowledge about how to make most money and get high ratings. He had kept his service score at an astonishing 98.22/100, ranking number one in his company (see figure 3.5). If that is not impressive enough, he opened an app developed by Didi which aggregates information of all Didi drivers in Shanghai. It shows that he is among the top 10 drivers in the city. It was no easy task to train layman drivers to experienced ones. Chen said sometimes he would be woken up by phone calls from his team members, asking questions such as “I drove to a really remote area, and there is no request here, what do I do?” “A nail stuck into my tires, what shall I do?”

Sometimes I don’t know what to do with questions like these, Chen laughed. His team members are also aware of his hard work, they often said to him “please pardon us for using silly questions.” And his heart softens.



**Figure 3.5.** Mr. Chen’s rating in the company.

In addition to knowledge sharing, Mr. Chen also provided a lot of emotional support for his drivers. When asked what was his main method, he replied, “Saying words with positive energy (*zheng nengliang*, 正能量).” These words often take the form of traditional idioms, motivational quotes, or kind reminders. The key ideas conveyed through these words are valorization of hard work, self-discipline, cooperation, honesty, and so on. Take one message as an example, he quoted a traditional Chinese idiom “*ye jing yu qin er huang yu xi* (业精于勤而荒于嬉),” meaning that achievement is founded on diligence and wasted through negligence.<sup>17</sup>

In the spirit of disseminating positive energy among his team members, Mr. Chen organized

get-togethers every other week. He used the community-building funds given by the LCC boss (¥2,000/month) to take team members to restaurants, where they could order some of their favorite dishes and drinks, share experience, and chat about life.

*Positive energy* is a newly coined Internet word that suddenly got viral in 2012. It is used to refer to productive and cheerful forces possessed by people, which is easily transferrable and has great influence on others. It was first used in the context of 2012 London Olympics to encourage people to embrace active lifestyle, but soon it was applied everywhere to describe a hopeful and upbeat attitude towards life. Through constant mentions by several Weibo influencers, *positive energy* soon became popularized in everyday language and was listed as “words of the year” by Chinese authoritative dictionaries in 2013.<sup>18</sup> The term was immediately appropriated by state actors. In particular, it became one of President Xi Jinping’s iconic words. In a state media article discussing the importance of *positive energy* during Xi’s regime, the term was defined as essential for fighting immorality and corruption, upholding justice and virtue, and realizing the China Dream.<sup>19</sup>

After the term *positive energy* was mentioned by Mr. Chen, I started looking for traces of positive energy in my field sites, and soon I found it was everywhere. I found it on the walls of a labor contract company in Shanghai. On the plain white walls, the owners put up cut-out letters saying “team is the build-up of hearts, not that of people.” They are accompanied by images of fit and active young bodies jumping into the sky. On the sides, there were corporate mottos for the employees to remember: The tasks of work— do it seriously; The things of personal nature— do it after work.....



Figure 3.6. Motivational slogans on the wall of labor contract company office.

Online platform is another important space to disseminate *positive energy*. One LCC boss posted the following statement in his WeChat moment, which gave the word a concrete definition in the context of labor contracting communities:

“XX company welcomes young people like this: they are full of *positive energy*, they know what they are supposed to do. For those who come to Beijing, we should all have one goal, and only one goal, that is to make more money. So that at the end of the year, we can bring more money to our parents, wives, children. Through our own dogged hard work, we can change the living condition of those we care about most. Maybe that means you have to endure some bitterness. But when you realize that your family can live happier lives because of your sacrifice, it will all be worth it! Particularly, we do not welcome those who do not have *positive energy*, complain every day, do not mind real business, always going to entertainment places, despite you might be a good driver.”

It is clear that having *positive energy* is a moral standard for drivers. It involves not only what they do in professional setting, such as being a good driver, it also involves what they do in their own spare time, such as not going to entertainment places. The promotion of positive energy by LCCs have become a form of soft governance, which pushes drivers to engage in productive practices and thoughts. Drivers' complaints and protests, in this environment, are characterized as contagious actions that propagates "negative energy." At first glance, this method might remind people of Maoist era big character poster or motivational slogans on factory walls. But after some scrutiny, one will find key differences. While Maoist motivational methods emphasize self-sacrifice to the abstract state or collectives, and early post-reform ideologies solely focus on pursuit of material wealth, the discourses of *positive energy* focus more on how it will benefit individuals and their immediate surroundings.<sup>20</sup> It is wrapped up in concepts of self-betterment and psychology well-being, which are in vogue in contemporary China.<sup>21</sup> With such governance tools, the management of labor contract companies could successfully mobilize the productive forces of drivers and suppress the dissent.

Those who bought most into this discourse, I found, are drivers like Mr. Chen, who climbed up the ladder and became mid-level management. Since they themselves have "made it" through self-improvement, they genuinely believed that this path was the best for other drivers as well. Mr. Yang, a manager in V Taxi (see details in Chapter Five), is also a good example of someone who breathes and preaches *positive energy*.

"What is the best kind of service? I often ask the younger drivers in my team," said Mr. Yang passionately, "Is it the kind that the service that the drivers smile at the customers all the time? No! That is fake and exhausting. The best kind of service is that the drivers embody *positive energy* and naturally transmit it to their customers. So much so that after riding with you, the customers would feel that their hearts are filled with joy for the rest of the day!"

Zhang Li, in her new book on psychological therapy in China, argued that people in

contemporary China care more and more about their inner well-being; and they went to lengths to improve their psychological health.<sup>22</sup> Some elite-drivers such as Mr. Chen and Mr. Yang have mastered the power of *positive energy*. They know very well that their middle-class customers who care about their inner well-being will be more attracted to drivers who exude positivity. Therefore, they deliberately cultivate and perform such attitudes, with the ultimate goal of embodying them as natural dispositions. And they have been quite successful. Many times, I found myself genuinely affected by their upbeat attitudes. No matter when I hailed a ride at 4 a.m. or chat with them after a long day of work, they always seemed energetic and cheerful. I felt my feet are a bit lighter after riding with them.

This trend of cultivating *positive energy* in ride-hailing industry not only reflects the psychology fever in China, but also coincides with the culture of “mindfulness” in Silicon Valley and tech sector in China.<sup>23</sup> Walking around Didi’s headquarter in Beijing, I saw large rooms furnished with natural wood floors, straw sitting mats, and dimly glowing lamps. These rooms were designated as “meditation rooms” for employees. The company has also created special program on “mindfulness” to help workers distill positive thoughts and become more creative. I saw my Didi friends sharing social media posts highlighting their meditation practices and growth of mindfulness frequently.

The organizational culture of embracing *positive energy* might look on the surface as innocuous or even a welcomed movement towards better well-being for managers and workers in tech industry. They might very well be beneficial to individuals. But from a sociopolitical perspective, concepts like *positive energy* are also convenient pacifiers for tech giants to dissolve conflicts, dissatisfaction, and dissent, which could be the very force that reforms the industry from bottom up.

### Drivers of Labor Contract Companies

For those full-time drivers who are at the bottom of the pyramid however, everyday life revolves much more around making ends meet than psychological well-being. Although the problems of extremely long working hours, low per hour wage, and strict algorithmic governance applies to most drivers on ride-hailing platforms (and also taxi drivers who get orders on platforms), full-time drivers who affiliate with labor contract companies suffer most from these working conditions. Their whole livelihood is tied up in this industry, so they have no choice but work themselves to the limit.

Juan, one of a handful female full-time drivers I met, works in ride-hailing industry with her sister. She heard about ride-hailing from local Shanghaiese contacts, who told her that being an on-demand driver could make quite a bit money. So she found a labor contract company and rented a car and license for ¥6,000-7,000/month. In order to maximize income, she asked her sister to join her and take turns to drive the same car. As the only female drivers in her company (with over 50 drivers in total), she felt a bit out of place. She confessed that she skipped a recent photo-op organized by the company because she felt she doesn't fit in with all the men there. But most of the time, she subjected herself to same work routine as male drivers in her company. Her daily schedule went mostly like this.

“I get up at 6 a.m., and buy myself two *bing* (a naan-like baked bread with some sweet filling), which will be my breakfast and lunch because I don't have time to rest around noon. During dinnertime, I will try to take a break and get some food. I would sneak into those restaurants that service taxi drivers, because the police wouldn't fine cars parked around those restaurants during meal time.<sup>24</sup> And then I would usually work until 2 to 3 a.m. and go home.” She had to work such long hours because at times business gets very slow. “Sometimes I wait for a whole hour without any trip,” said Juan. Even she works about 20 hours a day, she said it is almost impossible to reach ¥1,000/day

in revenue. From which she could only net around ¥300/day, making her per hour wage merely around 15 yuan (~\$2).

Sometimes, Juan told me, when she drove to a suburban area in the middle of night and the business was very slow, she would “just pull over and nap for a few hours.” I asked her whether it might get dangerous for her or did she ever get scared, she smiled and shook her head. But once in a while her customers would fear for her, she said. One time a customer got on her car at three o’clock in the morning and surprised to find a female driver who was roaming around suburbia so late at night. “He urged me to go home, but I didn’t listen to him,” said Juan, “I worked until morning.”

The next day she would hand over the car to her sister to drive, but she would not rest. On her days off she worked for on-demand food delivery platforms, which was a welcomed change of physical activity for her. “Delivering food is exhausting but I like sweating a bit. I hate sitting in the car all day. I already got serious slip discs around my neck and back!” Juan’s story shows that, although digital platform exploit labor by breaking jobs up into micro-tasks, on-demand workers could also take advantage of the same structure.<sup>25</sup> In Juan’s case, by mixing sedentary tasks with physical ones, she maximizes her profits while maintaining tolerable lifestyle.

When asked whether she experienced any difficulty in particular being a female driver, she said mainly two things: Finding a bathroom and running into drunk male customers. “If I am a male driver I would probably be more forceful when encountering drunk customers. I can’t do much if they refused to get off the car. One time a drunk man threw up in my car and refused to pay for cleaning up. I can do nothing but putting up with it.”

But Juan thinks being an on-demand driver also has some perks for women, especially mothers. The work schedule is more flexible. Some female drivers even put their kids in the back seat while completing trips. Even so, Juan didn’t bring her kids to Shanghai. Both of them were living with their grandparents back in the hometown.

Many full-time drivers I met, like Juan, had experience in different transportation industries before joining ride-hailing. After hailing rides for four years during my fieldwork, I realized that a significant number of on-demand drivers were from a handful of regions in China, namely Zhoukou in Henan province and Chuzhou in Anhui province. Out of curiosity, I asked several drivers from these two areas why so many of them join the ride-hailing industry. They uniformly told me that many people from their hometowns worked in other transportation industries, such as truck-driving and black taxis. Therefore, it was easy to transition into ride-hailing, since they already got driving skills and sometimes private cars.

Old Fan from Anhui was a rare example who had experience in all: Truck driving, black taxis, and ride-hailing. I was quite excited to know such an informant because not every day I can meet someone who would admit that they worked in the black taxi industry. His openness and unique comparative perspective made him great informant for my research. When asked to evaluate his experiences in these transportation industries, Old Fan concluded that being an on-demand driver was the most exhausting of all: “Driving Didi is even more tiring than driving trucks! I have to wake up at 6 a.m. and work until midnight. That is 17 to 18 hours every day!” Several drivers, including Old Fan, described this line of work as “exchanging money with life.”

Even more to his dissatisfaction, working extreme long hours on digital platform did not reap more profits than driving truck or black taxi. He disclosed that he could only make about ¥700 a day in gross income (from which ¥300 goes to car rental company and ¥200 goes to gasoline and other cost, making his actual wage around ¥12/hour). The main reason why the per hour rate was so low, in his opinion, was because all the *luanwanglu* (冤枉路; unnecessary detours) he had to take to pick up customers. Sometimes he drove two to three kilometers to pick up a customer, only to find that the paid trip itself was only a kilometer long. This was not a unique situation for Old Fan. The majority of drivers I interviewed complained about the fact that Didi would often pair them with customers

who were 2-3 kilometers away from them (sometimes even further). During peak hours, it would take drivers 20-30 minutes to get to the customers, making both parties very anxious. Some customers would get too frustrated and cancel the trip, making the drivers wade through heavy traffic for nothing.<sup>26</sup>

Old Fan was most reminiscent about his days as a black taxi driver. He worked around Xinzhuang, the last stop of subway Line-1 in Shanghai, where large numbers of commuters congregate. Together with his cousins and hometown brothers, they occupied the whole area, and established good relationship with local transportation police and frequent commuters. “We mostly wait for phone calls from our frequent clients and earn the bulk of income from long distance trips. When we don’t have business, we just rest in our cars and watch soap operas on our phones.” He said he could make a net income between ¥10,000-20,000/month, twice as much as being a Didi driver. Plus, his daily workload was only about a third of that by driving Didi.

After the popularization of ride-hailing platforms, the local transportation police started to crack down on black taxis in a much harsher manner. As a result, old Fan had to leave this lucrative business. His cousin continued operating black taxi and was recently caught by the police, resulting in a fine of ¥10,000 and four-months suspension of driver’s license. “The local police all knew who we are, what cars we drive, and where we operate. Once they decide that they wanted to prosecute us, it is extremely easy.” In his opinion, the incorporation of the black taxis into digital platforms not only harmed black taxi drivers, but also customers. “I saw many people waiting for a long time outside of the subway station for their rides now. When we were operating there, customers can get rides right away,” he recalled proudly.

Though drivers affiliated with labor contract companies often complain about the heavy overhead imposed by the companies, they also derive a sense of legitimacy from their affiliation. Some drivers call those unaffiliated drivers *Sijiache* (私家车; “private cars”), in order to distinguish themselves

and emphasize the public and commercial nature of their work. I have met quite a few drivers who owned their vehicles but would still pay labor contract companies a few hundreds of yuan a month to rent a commercial license in order to gain a sense of legitimacy (I would explain in the next section that these licenses do not fully legitimize work on ride-hailing platforms). One LCC driver I interviewed in Shanghai even advocated for heavy governmental crackdown on “private cars,” although they work on the same platforms. Harnessing the innate legitimacy of public infrastructure in China, on-demand drivers affiliated with labor contract company seek to gain some rightful position in Chinese society and protect themselves from regulatory risks.

### **How a New Industry Became Old**

Innovations in China are always already old. That is to say that nothing is new under the sun, but only pointing to the fact that the existing power structure is so rigid that any socio-economic innovation cannot be actualized if they are completely divorced from the old institutions. The new has to cooperate with the old, supported by the old, and legitimized by the old. In the process, the new might transform the old, but the old might also take over the new. The story of ride-hailing industry in China has both processes taking place in it.

The brief discussion of policymaking history on ride-hailing in this section is aimed at providing the context for the emergence of labor contract companies. Other details of policymaking, though absolutely fascinating, is outside of the scope of this dissertation and has to be tackled in an independent article. Also, to make things simpler, on the municipal level, I will use the example of Shanghai to illustrate the general trend. The Shanghai model does represent policy adopted by other first tier cities such as Beijing and Shenzhen. But other important cities for ride-hailing industry such

as Hangzhou and Chengdu have adopted different policy frameworks.

Taxi industry has been one of the most regulated industries in China ever since its popularization in 2000s.<sup>27</sup> Governments across China adopted corporate-centric licensing framework that empowered a generation of taxi companies who acquired highly-controlled medallions. While some companies do provide high-quality management and vehicle support (e.g. Qiangsheng and Dazhong taxi in Shanghai), most became shell companies that charged drivers hefty “deposit” and monthly fees (*fenziquan*; 份子钱) while doing little management. Investigative journalist Keqin Wang has exposed Beijing’s blood-sucking taxi industry in his sensational news report, revealing how an industry that makes up half of Beijing’s annual tax revenue was built upon layers of rent-seeking, speculative shell companies.<sup>28</sup> At the same time, taxi drivers had to shoulder back-crushing financial burdens and overwork to the brink of physical breakdown. This report and others have spurred taxi reformations once in a while, but the underlying problem has never been fundamentally addressed.

Cheng Wei, founder of Didi, once claimed that the goal of Didi (while it was still a taxi-hailing company) was that no taxi driver in China would ever find it hard to make money. But once Didi stepped into the private car business, it immediately ran into regulatory problems. Almost every local government has regulation distinguishing private and commercial vehicles. Letting private cars conduct business on digital platforms fly in the face of these hardline regulations. Since Didi and Uber started operating private cars around mid-2014, ride-hailing industry has been existed in the grey zone. Sandwiched between the raging consumer demand to embrace these digital platforms and incumbent power holders in taxi industry, local governments were in a dilemma.

As a progressive policymaking exemplar, Shanghai government started issuing “Automobile Management Qualification License” in 2014 to proactively resolve this issue.<sup>29</sup> These licenses were designed to expand the medallion to new companies who operate private cars. Each license come with a quota of 50, 100, or 200 entitlements to commercial car plates in Shanghai (those starts with EY).

These car plates do not automatically enable their drivers to operate commercially, but at least they serve as a first step to distinguish private cars who work in ride-hailing and those who do not.

Car plates in most Chinese cities are not just an identification of individual cars, the letters before the numbers are often used to indicate the nature of vehicles. Even when the cars themselves all look the same, the savvy locals could gather information from the car plates. During my numerous ride-alongs on the passenger seat, “recognizing car plates” is one of the first lessons I learned from experienced local drivers. “In Shanghai, when you see cars started with BY or DY, you will notice they are all black Buick vans. That is because these are all state-owned vehicles,” one driver taught me. And EY is the special category of cars that is designated for commercial use.

Although Shanghai government is trying to be progressive, one can easily see that it is still operating in the policy framework formatted for taxi industry. Instead of allowing ordinary private cars to drive on Didi and Uber platforms on part-time basis, they wanted to create a separate category of cars that are designated for commercial uses. This local policy gave rise to the first generation of labor contract companies in Shanghai. Mr. Ma, an owner of labor contract company told me that these licenses emerged in 2014. It was free to get them at first, but few people realized their value back then. So those who acquired them were mostly individuals with nepotistic relations with government officials, I was told.

But these licenses and car plates have been made more and more valuable by selective policing of the local transportation police. Between 2014-2016, the ride-hailing platforms grew like wild fire due to the immense cash flowing into the industry from venture capital investments. Thousands of urbanites started operating on the platforms, disregarding local regulation forbidding them to do so. So local transportation set up checkpoints in train stations, airports, or just on regular roads, capturing drivers who are violating the rules and issuing harsh fines (between ¥10,000-30,000). Cars with EY plates usually were not be stopped by police, based on tacit agreements between government

departments. Since operating with EY plates have significantly reduced risk, they became more and more popular among full-time drivers. These “sporadic law enforcement campaigns,” like many scholars argued, despite their ineffectiveness as ways to implement state policies, re-emphasize the existing hierarchical relations.<sup>30</sup> Migrants are reminded that they need the protection from some sort of authority, in this case, labor contract companies.

In 2018, EY car plates went for ¥12,000 (for hybrid cars) and ¥14,000 (for gasoline cars). Simultaneously, the corporate licenses with plate entitlements increase in value tremendously. A license with 50 car plates were auctioned ¥2 million in 2017 and 4 million in 2018.<sup>31</sup> The value increase also has a lot to do with the strict limitation on new licenses. Most of the licenses were given out from 2014 to October 2016. After that, companies could still apply for licenses, but it became almost impossible to get one. The written requirements are not hard to conform to, one owner said, but the most important “application material” is a strong tie with the government.

The local regulations were also heavily influenced by the central regulations made by Ministry of Transport and the attitudes behind those documents. In October 2015, Ministry of Transport announced its draft law for ride-hailing industry. This draft outlined strict requirements for ride-hailing, basically putting under similar regulatory framework as taxis. It can also be seen from its name “Internet-based taxi.”<sup>32</sup> It would be fair to say that many municipal governments created strict regulations for ride-hailing under the pressure of central government.

However, after the draft law was announced, numerous experts expressed their dissenting opinions: Including some neutral experts who genuinely believed in a more liberal model and a group of experts sponsored by powerful tech companies such as Didi. After a whole year of back-and-forth, the final version of “acting regulations” became much more lenient. In principle, it allowed private cars to operate in ride-hailing industry, making China the first major economy legalized ride-hailing on a central government level.<sup>33</sup> The new regulations were celebrated by most experts, not only

because its liberal stance towards this emerging industry, but also because it incorporated suggestions from the dissenting parties. It was prized as opening a new age of public policymaking in China.

However, the rosy days were short lived. In the central document, ministry of transport left space for local governments to “come up with specific requirements for the cars and individuals allowed to operate in ride-hailing.”<sup>34</sup> Starting late 2017, local governments such as Shanghai and Beijing came up with their own regulations. The requirements outlined in these regulations were so high that several academic and industry experts say that they are “letting ride-hailing die legally”.

Both Beijing and Shanghai instituted that ride sharing drivers have to be local residents, i.e. has local house registration (Hukou) status. And this practice was soon emulated by hundreds of other cities. According to a report conducted by Chinese University of Political Science and Law, 184 cities in China has instituted their own ride-hailing regulations. The majority, 154 out of the 184 cities, require local hukou or residency to become a on-demand driver. The report argues that these requests are against the Administrative License Law (*xingzhengxukefa*, 行政许可法) in China.<sup>35</sup>

On top of that, drivers have to participate in a 10-day mandatory training and pass an exam in order to get “certificate for internet-hailed taxis.” Only a handful of local drivers I interviewed had ever taken that exam, so most of them are also not perfectly legal.

For vehicles, the new requirements are even more arbitrary. Major cities all have demanded a minimum wheelbase, which is just another way to demand bigger and more expensive cars. Although local government officials justified these requirements with safety concerns, indicating that bigger and more expensive cars are safer for citizens. Professor Zheng, a policy researcher based at Fudan University stated that “this logic was completely unsupported by evidence.” The real reason behind these arbitrary requirements, he argues, is a blind protection of the taxi industry. “Since most taxis are smaller and cheaper than the listed standard for on-demand cars, they could now have a price advantage.”

These harsh new regulations made most migrant drivers “grey” again. In a recent investigation conducted by department of transportation of Shanghai, Didi was found to be full of “grey” drivers and cars. Among the 13 random trip requests placed on the platform, 11 out of 13 trips were sent to cars without proper certifications.<sup>36</sup> In order to reduce regulatory risks, many drivers chose to affiliate with labor contract companies to rent up-to-standard cars and acquire commercial car plates. Thus, a new taxi industry was born.

**Table 2.** Comparative view of local and central regulations on ride-hailing industry.

	Beijing	Shanghai	Shenzhen	Bureau of Transport
Driver Requirements	Local <u>Hukou</u> (house registration); three-year driving experience	Local <u>Hukou</u> (house registration)	Local <u>Hukou</u> (house registration) or resident permit; three-year driving experience	No Requirement
Car License	Local License	Local License	Local License	No Requirement
Age of Vehicle	No Limit	No Limit	Less than two years old	No Requirement
Vehicle Type	Gasoline cars wheelbase>2700mm; New energy cars wheelbase>2650mm	Gasoline cars wheelbase>2700mm; New energy cars wheelbase>2650mm	Gasoline cars wheelbase>2700mm; New energy cars wheelbase>2650mm	No Requirement
Discharge	Gasoline cars discharge>2.0L or 1.8T; conform to Beijing emission policy	Conform to Shanghai emission policy	Gasoline cars discharge>2.0L or 1.8T; conform to Shenzhen emission policy	No Requirement

## The End of White Wolves

Because of the ever-changing laws and regulations, owners of labor contract companies came into the industry with a speculation mentality. “I don’t think this industry will last,” said Buddha, “why would the state allow private cars running on the streets making money. It just doesn’t make sense.” I was shocked to hear an important stakeholder in the industry has no hope in it at all. But for Buddha, the future of the industry has little to do with him. He just wants to make a fortune and leave. I love “catching the white wolf with my bare hands,” he said.

For the past two years, the configuration of labor contact companies working with ride-hailing platforms have been more or less stabilized. A relatively new development is that LCCs are increasingly forced to work with one single platform; And the drivers affiliated with them can only work on single platform as well (or at least meet the full-time requirement for the first platform and then supplement with other platforms). In such a way, platform giants such as, Didi, Meituan, Shouyue, have got contracted LCCs who function as subsidiaries.

The time of catching white wolves has ended. Many LCCs became increasingly institutionalized and continued to expand their governance over drivers. Not only do they still require prolonged working hours, they started to impose comprehensive rules such as vehicle check-ups (drivers will be fined if they surpassed time for annual check-ups). Those who violate any of the corporate regulations risk deduction from their security deposit or termination of contracts.

The emergence and persistence of LCCs showed that the algorithmic governance of ride-hailing platforms have heavy and indispensable human components. They humanize the algorithmic rules in real life, with traditional managerial tools (e.g. monetary punishment; team-building) and with new governing techniques (e.g. motivational encouragements on WeChat). By revealing the invisible human infrastructure of ride-hailing, I hope to show how China’s newest technology sector is being

shaped by informal and localistic networks, hierarchical and exploitative labor structures, and collusive state-corporate relationships. At the same time, ride-hailing also brought new changes to these existing social institutions. Increasingly, we saw both corporate and informal labor being governed through the propagandization of *positive energy*; We saw the big corporations gaining power in their relations with informal institutions and even the state.

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<sup>1</sup> Our World in Data 2019.

<sup>2</sup> *Yicaiwang* 2017.

<sup>3</sup> To control the severe congestion problems, most metropolises in China mandate that only cars with local plates can drive during peak hours or in downtown areas.

<sup>4</sup> Gray and Suri 2019.

<sup>5</sup> Ma 2014.

<sup>6</sup> The managers of Uber did not conceal the fact that they collaborated with “Car Rental Companies” in the very early stage. Tan Jing talked openly in her book *Redefining Sharing* that she personally liaised many existing rental companies to supply cars and drivers to them. But they insisted that later on they relied mostly on individually registered cars.

<sup>7</sup> In 2015, the average monthly commission for each taxi is ¥8,025 yuan/month. However, each taxi is usually contracted to two drivers, who would take turns to drive and share the monthly commission. For LCC drivers however, every driver has to pay the entirety of monthly commission, which pressure them to work extremely long hours every day (Liu 2015).

<sup>8</sup> Kleinman et al. 2011.

<sup>9</sup> Companies with annual revenue below ¥500 million yuan are categorized as “natural individuals” (*Ziranren*; 自然人). Many people register for multiple companies and try to keep revenue of each company under this threshold in order to avoid higher tax rate for bigger companies.

<sup>10</sup> He rents cars from big state-owned companies in bulk and then sub-leases them to drivers at the rate of ¥4,000-6,000 yuan per car per month.

<sup>11</sup> Ma 2014. In August 12<sup>th</sup>, 2014, Beijing municipal issued an announcement that forbade exploiting the regulatory loophole of private drivers affiliating with car rental cars.

<sup>12</sup> Such a quick “slimming down” was also affected by the strict new ride-hailing laws passed in mid-2016.

<sup>13</sup> This branch is managed by the Uber team who was subsumed under Didi after the merger; the name *Youxiang* resembles *Youbu*. In my own experience, *Youxiang* is about 5-10% more expensive than the cheapest option.

<sup>14</sup> Wearing white shirts and ties are more common among *Zhuanche* drivers on Didi’s platform, a much more high-end branch. Most Didi drivers I met wore very casual clothes.

<sup>15</sup> Here I have to explain the difficulty of practicing traditional sit-down interviews with my driver-informants. Given the nature of taxi and on-demand driving, drivers rarely know where they will be in the city at a given time, so making appointments with them are quite different than that with normal people. Also, most drivers I know work seven days a week, never taking any day off work unless necessary. All the waking hours during the days are devoted to driving, maintaining cars (washing, getting gas, repairs), and short cigarette and lunch breaks. Coming to meet a researcher at a given time at a given place would take at least three to four hours out of their working day. I often feel guilty for asking. So I refrained myself from requesting too many sit-down interviews.

<sup>16</sup> “Shanghai pingjun gongzi shi duoshao?” *Shanghai Shebaowang*, <https://shanghai.chashebao.com/ziliao/18875.html>, accessed May 9, 2020.

<sup>17</sup> This line came from *Jinxuejie* (进学解), a famous essay by Tang dynasty intellectual Han Yu (韩愈).

<sup>18</sup> “Hanyu Pandian 2013 Pingxuan Jieguo (Chinese language 2013 highlights).” *CCTV.Com*. Dec 20, 2013. <http://kejiao.cntv.cn/2013/12/20/ARTI1387535769136350.shtml>.

<sup>19</sup> Li 2013.

<sup>20</sup> Bruckermann and Feuchtwang 2016; Zhang and Ong 2008.

<sup>21</sup> Zhang 2018, 2020.

<sup>22</sup> Zhang 2020.

<sup>23</sup> Coren 2016.

<sup>24</sup> It is a tacit agreement between municipal government and taxi drivers that taxis would allow to park temporarily outside of certain restaurants during meal time without being fined. It is to make having meals

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for convenient for drivers. I have conducted research among taxi drivers in such restaurants.

<sup>25</sup> Chen 2018.

<sup>26</sup> There is a cancelation fee for customers who cancel three minutes after placing the order on Didi. But the fee is pretty low and Didi takes a chunk of it. Sometimes customers even refuse to cancel and leave the drivers hanging. The drivers then have to cancel themselves in order to keep working. And they have to suffer punishment because of cancellation.

<sup>27</sup> Chen and Xiong 2012.

<sup>28</sup> Wang 2004.

<sup>29</sup> “Shanghai Chuzuche Guanli Tiaoli (Shanghai Taxi Regulations),”

<https://www.gslpt.cn/hbIndexAction!queryCatalogNextOneById.action?catalogId=502&parentId=465>,

accessed Apr 19, 2020.

<sup>30</sup> Swider 2015.

<sup>31</sup> These auctions happened in informal market and the figures were reported by my informants.

<sup>32</sup> “Wangluo Yuyue Chuzuqiche Jingyingfuwu Guanli Zanxing Banfa (Zhengqiu Yijian Gao).”

*Zhongguoxinwenwang*, Oct 10, 2015. <http://www.chinanews.com/cj/2015/10-10/7562706.shtml>.

<sup>33</sup> *Xinbuanet* 2016b.

<sup>34</sup> *Ibid*.

<sup>35</sup> Wan 2018.

<sup>36</sup> Shanghai Quaxian Choucha Wangyueche Pingtai (Shanghai government widely investigates ride-hailing platforms).” *Shanghaijiaotongguangbo*, Sept 2, 2019.

<https://mp.weixin.qq.com/s/upplDvF4Ryy61IUGWVp4xQ>.

## Chapter Four

### **Didi System Builders**

“We do not, and will never, disrupt.” This succinct statement by Pony Ma, the founder and CEO of Tencent, encapsulates, in a nutshell, the attitudes of Chinese tech leaders towards disruption. Disruption is something to deny, something to distance one’s self and one’s company from, not something to be valorized. In ride-hailing industry, while Uber was advertising its disruptive potential to industries and regulations, Didi tried to position itself as a part of public infrastructure from day one. But why is this the case? The answer to this question lies partly in the fact that “disruption” does not carry the same connotations in Beijing as it does in Silicon Valley.

When the Chinese media writes about “disruptive technologies” or “disruptive innovation,” they most often use the term *dianfu* (颠覆), literally meaning to topple or to overthrow.<sup>1</sup> If we dissect the word into its two constituent characters, we get *dian* (颠), meaning summit or zenith, and *fu* (覆), meaning to turn upside down. While it is unclear what factors drove the adoption of this particular translation for disruption, what is clear is that the word evokes very different imaginaries in the minds of Chinese citizens.

# 颠覆

**Figure 4.1.** Chinese characters for *Dianfu*.

In a famous essay written by Chancellor Wei Zheng (魏征) to Li Shimin, one of the great Tang Dynasty emperors, Wei invoked the metaphor of a boat atop a great body of water to describe the relationship

between an emperor and his people, and tacitly reminded the emperor that “while water floats boats, it can capsize them as well (*Shuifengzai zhou, yinengfu zhou*; 水能载舟，亦能覆舟).” Then, as in earlier usages, the word *fu* alluded to the toppling of regimes, an association that it would retain into the present.<sup>2</sup> In modern Chinese, for example, a *dianfu fenzi* (颠覆分子) is a saboteur, *dianfu buodong* (颠覆活动) are political subversive activities, and *dianfu zui* (颠覆罪) is the crime of conspiring to overthrow the state. Given this constellation of associations, it is evident why Chinese tech companies do not wish to associate themselves with disruption.

But never to be outdone, Chinese tech companies devised water metaphors of their own. Didi corporate managers began describing technological innovation not as waves that flips ships, but as a deluge, or *hongliu* (洪流), that inundates the land. Whereas *disrupt* is an agentic verb with a clear actor (disruptor) and object of action (a disrupted industry), *deluge* is passive noun with no clear agent. It is an irrepressible force of nature that reshapes terrains and, in its wake, leaves them unrecognizable. Like *dianfu*, the term *hongliu* also has an alternative political meaning. In the 20<sup>th</sup> century with the rise of Marxism-Leninism-Mao-Zedong-Thought, deluge was used to describe inevitable and irreversible historical trends, especially the rise of global socialism.<sup>3</sup>

*Hongliu* first entered into Didi’s corporate vocabulary in February 2017, when Cheng Wei (Founder of Didi) and Jean Liu (CEO of Didi) listed “inundating the land” as one of the five key objectives for the new year.<sup>4</sup> “Inundating the land” was more of a general developmental guideline than a specific program of action: It called for leveraging Didi’s online mediatorial powers to enhance its manufacture and capital management capabilities. In non-corporate-speak, this meant that Didi would harness the power of its computational algorithms, network of users, and data to sell cars, insurance, and financial products, as well as to build smart infrastructure for electric car infrastructure. In short, the leaders of Didi hoped to hasten the rising tide of the platform revolution.

While this strategy of “inundating the land” sounds striking similar to disruption, it differed in

one critical respect: it actively sought state buy-in by attempted to portray the deluge as a socially beneficial flood that lifts all ships. While Uber ran gimmicky marketing campaigns such as “on-demand ice-cream delivery” and “helicopter-hailing,” Didi created “taxis for the elderly” and a social credit system for Chinese youths.<sup>5</sup> While Uber concentrated its business in first and second-tier cities (the densest and most profitable markets), Didi pursued a mixed growth model that included expanding service offerings in third and fourth-tier cities. The latter of these moves in particular earned Didi praise for enabling migrant workers to return to their homes during the spring festival.<sup>6</sup> This is not to say that Didi cared more about corporate responsibility than Uber. But it does show that Didi strove to position itself as a platform that serves the public by catering to both the young and old, the rich and poor, and the residents of cities and towns.

Didi’s efforts to align its corporate interests with public interests entered a new stage of maturation after President Xi Jinping declared, in his keynote speech at the 19th National People’s Congress, that “developmental inequalities” were the central tension in Chinese society.<sup>7</sup> Implicit in Xi’s speech was the idea that the societal mandate for leading tech companies was no longer limited to generating growth, but going forward would also include the expansion of welfare and the resolution of social problems. To enhance its brand as a socially beneficial enterprise, Didi provided its data and technologies to local governments to promote smart infrastructure initiatives; it invested ¥30 million in five rustbelt cities to help create new jobs; and it doubled down on promoting new energy cars by forming alliances with two dozen Chinese cars manufactures.<sup>8</sup> The firm even began referring to itself as a “social service company” (*shehui fuwuxing qiye*; 社会服务型企业).

However, not everything proceeded according to plan. Didi’s carpooling service, Hitch, which was designed to function both as a transportation service and a social network, became the center of a national controversy. In early 2018, two young women who used the Hitch service were raped and murdered by their drivers. Many Chinese netizens blamed Didi executives for their role in enabling

sexual predators. As the corporate managers of Didi would learn, when you throw open the floodgates, many things rush in.

In this chapter, I explore the world of Didi, retracing the history of the firm since it established a virtual monopoly over the industry in mid-2016. I do so by first introducing Didi's corporate culture, which paradoxically, is at once both grounded and idealistic. I then address Didi's ambitions to become a "social service company," by helping governments build smart transportation systems and create jobs in China's rustbelt. Finally, I discuss how Didi overplayed its hand with Hitch, and how the scandals surrounding the Hitch app seriously harmed the company's public image. By analyzing both successes and failures of Didi to "inundate the land" we get a sense of how the company popularized and localized the platform revolution in China, how they tacitly position themselves in relation to the state and the public, and how its digital platform started to become part of public infrastructure in Chinese metropolises.

### **Little Orange People**

Within Didi, employees often refer to themselves as "little orange people" (*xiaojuren*; 小桔人), a nickname derived from Didi's parent company Xiaoju Technologies, which translates as "Little Orange Technologies." What began as something of an office joke grew into a corporate identity. Over time, Didi adopting orange as the official company color and a cutesy personified orange as its official mascot. In many ways, the nickname was fitting. When I asked Didi managers to describe themselves, most of them used words like "hardworking," "action-oriented," and "down-to-earth" (*jiediqi*; 接地气, literally "connected to the Qi of earth"), and presented themselves as the more earthy alternatives to their counterparts at Uber.



**Figure 4.2.** Poster featuring mascot in front of Didi Headquarter, Beijing, 2017.

Yao, who graduated from Peking University, said that Didi’s corporate culture was a refreshing experience. “In the past I was surrounded by people who attended elite schools and felt that they are superior to everyone else.” At Didi most employees were good students, but had graduated from ordinary universities. “People here do not try to claim that they are better than you, or better looking, or more educated, or more moral,” said Yao. “They also don’t talk about ideals and missions. Instead, everyone focuses on real practice and eating bitterness.”

I personally found it quite remarkable that Didi had cultivated such a down-to-earth corporate culture with such a youthful and ambitious workforce. The majority of Didi’s employees were born around 1990. A smaller proportion are in their early 30’s. And, according to my informants, it is rare to come across anyone at the company who was born in the 1970’s. Mr. Jiang Ye, the founder of a grassroots taxi platform who was later hired on by Didi, said that he, as a man already in his 40’s,

found it very hard to assimilate into Didi's corporate environment (see Chapter Five for details).

The strength of the corporate identity also belied Didi's high employee turnover rate. Many of Didi's employees leave after a relatively short duration of time, often within a span of a few years and sometimes within a few months. Even those that do stay tend to get reshuffled within the organization, switching between departments every year or two. Since I began my research in 2014, most of my informants have already left Didi, and many have left the ride-hailing industry entirely. One person joked that I now been with the company longer than nearly all of its employees.

"Don't you feel such mobility is too unstable for life," I asked Huayu, a Didi employee who used to work as a government official in Beijing. "The pace of change in internet companies is very fast," he replied. "When a new project is launched, they will hire dozens of people; and when it dies, they are all let go of immediately." But rather than yearning for the stability of his previous job, Huayu said that felt liberated by being at Didi. When he worked in the government, most of his colleagues were much older than him, and power and responsibility were based largely on seniority. After realizing that he would become "them" in a few decades, Huayu made up his mind to quit government and find work in a more dynamic sector.

It is true that the "little orange people" of Didi generally prefer the freedoms provided by working at an internet startup. They are members of a group that not only turned away from, but even look down upon the "iron rice bowl" jobs in government and state-owned enterprises that had been the singular aspiration of their parents' generation. Many even appreciate that companies like Didi give no pretense of expecting long-term loyalty from their employees. As one manager put it, "it is way too pretentious to preach loyalty in an Internet company. Young people today would never buy into such a culture or ideology. So why even try it?"

But on the other hand, when I spoke with entry-level employees at Didi, I also got the sense that many young people had simply come to terms with inescapable facts of life. Instability permeates

China's tech sector. Tech companies tend to over-hire, because they run many early-stage projects in parallel, never knowing which might prove to be the next cash cow. Others intentionally over-hire in order to foster a competitive corporate atmosphere; employees of these firms are acutely aware that if they underperform, they won't survive the next cull. There are also important socio-economic factors at play. For example, many interns at Didi know that because of the strict household registration policies and the sky-high housing prices, there is no way that they can make a life in Beijing. Between their generational preference for job freedom and uncontrollable external factors, the "little orange people" are reconciled with their transitory existence at Didi.

Didi is a thing of contradiction. On the one hand, you have a corporate culture that stresses the importance of being grounded, while on the other, you have a firm that is being swept along by the tidal forces of the deluge. This contradiction manifests itself in the lives of Didi employees, who may have more humble aspirations than their counterparts at Uber, and yet are equally subject to the churn of the tech sector. And it manifests in the strategy of the firm, which is trying to simultaneously expand its core digital competency and build new competencies through the creation of physical infrastructure. Groundedness takes time and stability. But the deluge is ever pushing things forwards.

### **Creating Jobs for the Rustbelt**

In the fall of 2017, I was invited by Mr. Baiyi, an economist at one of China's most prestigious business schools and a leading researcher on the ride-hailing industry, to accompany him on a visit to Didi Research Institute.<sup>9</sup> Baiyi told me that the purpose of the trip was to get Didi's institutional and financial support for a new research project.

When we arrived at Digital Valley (*Shuzi Shangu*; 数字山谷), Didi's corporate headquarters, we were led to a meeting room with floor-to-ceiling windows and were joined by three researchers in the

institute. After a round of introductions and some casual banter, Baiyi pulled out a one-page proposal and presented it to the researchers. At first he tried to explain the technical concepts driving the research, but he soon lost the Didi researchers in a flood of economics jargon. Probably sensing this, Baiyi switched to plain language, and the conversation progressed much more smoothly. After a half hour of discussions, all parties agreed that the research should center on calculating Didi's economic contribution to China.

“So how big do you want the contribution to be?” asked Baiyi. I was taken aback by the suggestion of a completely ascientific approach to scholarship. But the three researchers seemed to be very comfortable with this process.

One said, “how big do you think is reasonable? We want it to be big, but also not too big. You know, it should be reasonably big.”

Baiyi got the drift. “Of course,” he said, “it needs to look reasonable.”

I suppose Baiyi could tell that I was uncomfortable with this exchange. After the meeting, he explained to me that the researchers we spoke to were not “real academics.” They work in a department called the University Liaison of Didi Research Institute. Their main job is to collaborate with other scholars and institutions to produce studies that frame Didi in a positive light. And the experts, who are paid for their research insights, are happy to play along. In China people often invoke the phrase *zhantai* (站台), which translates as “standing on the platform,” to describe this phenomenon of experts making public endorsements for private gain.<sup>10</sup>

While I found this shady collusion between academia and industry shocking, I quickly realized that others did not share in my discomfort. In my conversations with corporate employees, they talked about *zhantai* openly, as a universally accepted practice. They even tried to conscript me for propaganda work. A few days after the meeting, one of the university liaison officers contacted me on Wechat and suggested that I conduct a study of Didi's job creation efforts in northwest China. She

explained that I would be able to conduct full and comprehensive research, but stated, rather explicitly, they they would only be interested in publishing the positive results from the study.

When later I spoke again with Baiyi and told him about my mixed feelings of engaging in this kind of “collaborative research,” he tried to allay my concerns. “It’s a win-win situation,” he explained. “Just take their money, do your own research, give them the positive results, and keep the best critical parts for future publications in western journals.” I, however, decided to not follow up with the University Liaison Office.

Collaborating with experts is just one of many ways that Didi is trying to transform its public image. In order to position itself as a socially productive enterprise, Didi launched a wide range of initiatives that highlight its efforts to create new jobs and opportunities for the have-nots in China. Among these initiatives, the biggest and most advertised was its job creation project in China’s rustbelt.

In December 2016, the Ministry of Human Resources and Social Security held a special event in the northern city of Taiyuan. In China, Taiyuan is synonymous with coal. It was one of the many cities situated along China’s rustbelt that benefitted from the expansion of the state-run coal mining industry throughout the 1960’s and 1970’s. However, like much of the rustbelt, Taiyuan has since suffered from a long and steady decline. As China has shifted away from high-polluting heavy industries (especially since the central government initiated Reducing Industrial Over-Capacities policy in 2017), thousands of workers formerly employed in state-owned enterprises have lost their “iron rice bowls.”<sup>11</sup> After an escalating series of protests over layoffs and pension cuts, the central government finally stepped in. The “Meeting for Promoting Job Placement and Assistance to Northeast and Other Disadvantaged Regions,” was supposed to help alleviate these social tensions by soliciting the help of socially minded corporations.<sup>12</sup>

Among the corporate representatives at the meeting was Cheng Wei, the founder of Didi. Cheng announced that Didi would be setting aside ¥30 million to create a special fund that would

help provide new jobs for the laid-off workers in five major rustbelt cities. This fund would be dispensed as cash subsidies to workers who sign up as drivers and completed a certain number of trips each month. Additionally, Didi signed special contracts with two large state-owned enterprises, the Shanxi Coking Coal Group (*Shanxi Jiaomei*; 山西焦煤) and the Hebei Tang Steel Company (*Hebei Tanggang*; 河北唐钢), to set up special programs for recruiting and reskilling redundant industrial workers as Didi drivers.

In late 2017, Mr. Ying, a young manager in the Public Relations Department, was sent to Shanxi Province to report on the efficacy of Didi's job creation initiatives. The conditions that he witnessed there were much worse than the company had anticipated. The Shanxi Coking Coal Group was already at the brink of collapse. Among their tens of thousands of employees, many were being paid only half of their salary each month. A new subsidiary, called the "Shanjiao Human Resource Development Company," had been established to help these workers transition to other forms of employment and get them off the company payrolls. Ying recalled one particularly dystopian scene:

Thousands of workers congregated in the grand hall like a black cloud. The Party Secretary of this Human Resource Company shouted at them over a loudspeaker. He announced that they were being given the 'administrative order' to henceforth quit the mining industry and take up new jobs as Didi drivers.

Despite the poor delivery of the news, according to Ying, the campaign was quite successful. Didi set up a comprehensive program to help state employees to transition into the gig economy. They provided loans and other financial support to help miners purchase cars, and they also created training programs and other institutional support systems.<sup>13</sup> Hundreds of people immediately signed up to work for Didi. For the top players, this strategic alliance between Didi and Shanjiao was a win-win-win situation. The local government could claim that they had helped to create new jobs for its loyal workers; the central government could announce its success in stabilizing a part of the collapsing rustbelt; and Didi could brand itself as an ally of the state.

Ying went on to write several glowing reports about the success of the initiative in creating new jobs, and told stories about the “awakening entrepreneurial spirit” among rustbelt workers. Other researchers soon followed in suit. In the 2017 “New Economy, New Jobs: Didi Employment Report” jointly published by Didi Research Institute, Renmin University, and Capital University of Economics and Business, the rustbelt initiative was lauded as a triumph of social engineering.<sup>14</sup> The report claimed that between mid-2016 to mid-2017, 21 million drivers earned money through Didi’s platform, among whom, 3.93 million (roughly 20 percent!) were formerly laid-off workers from industries targeted in the “Reducing Industrial Capacities” policy. These impressive numbers showcased Didi’s role as a socially productive enterprise.

However, in his personal reflections, Ying admitted that many of the jobs that had been “created” by Didi were not actually new. Prior to formation of the strategic alliance, Taiyuan’s taxi had been dominated by migrant workers from the surrounding countryside. These migrants were often looked down upon by locals, for “speaking poor mandarin and having low *suzhi* (i.e. moral character).” When the employees of Shanxi Coking Coal Group learned of the opportunity to work as on-demand drivers, they were confident that they could outcompete these migrant taxi operators, and they did. With financial support from the state-run enterprise, political support from the municipality, and technological support from Didi, they soon monopolized the industry. And so it was that the jobs of migrant taxi drivers in Taiyuan were effectively transferred to former state employees.

### **Virtualizing Cities**

A year later, in May 2018, I returned to Didi’s headquarters with a group of undergraduate students from Northeastern University. Our trip began as so many trips in China do, stuck in traffic. The students’ hotel, located in Beijing’s inner core, was more than an hours’ ride from Didi’s headquarters in the western outskirts of the metropolis. But the American students were energetic and enthusiastic.

After having already gone on guided tours of the Forbidden City and the Great Wall and learned about China's past, they were eager to see its future.

Eventually, the tour bus arrived at Zhongguan Software Park (ZPark), the beating heart of tech innovation in the capital. ZPark is recent addition to Zhongguan Village, home to the famous electronic markets that prospered in 1990s and, more recently, to startups that propelled the development of China's modern tech industry. Today, many giants such as New Oriental and Kuaishou still call Zhongguan Village home. But with skyrocketing real estate prices and limited office space, baby titans, such as Didi, were forced to locate new commercial accommodations for their many thousands of employees. And so, the ZPark district was formed.

Although Zhongguan Village and Zhongguan Park share a name, they are situated about 10km apart (a half-hour drive when traffic is fair). They also belong to entirely different urban landscapes. The former is embedded between dozens of sleek skyscrapers and has access to two different subway lines. The latter is surrounded by fields of crops, that are crisscrossed by zigzagging roads. Indeed, before the area was called ZPark, it was known by a different name, *Houchuangcun* (后厂村), literally "Rear of the Factory Village."

Today though "Rear of the Factory Village" is undergoing rapid change. Tech veterans, including IBM, Microsoft, Lenovo, and Baidu have been attracted to the area by the allure of lower rents and larger spaces. Architectural buildings such as Digital Valley, where Didi has made its home, have sprung up like steel mushrooms in the former agricultural fields. Recently, it was estimated that over 300,000 IT workers now reside there.<sup>15</sup>

During the morning rush hour, hundreds of engineers who earn ¥50,000/ month (\$7,000) can be seen riding bikes alongside poor rural migrants. Interestingly, the lives of these two seemingly populations converge in more ways than just spatial proximity. While the engineers develop the technologies used by platforms in ride-hailing (Didi), delivery (Meituan; Eleme), and other gig

economy sectors, it is the migrant workers who provide them with labor. Indeed, a few years ago “Rear of the Factory Village” was known locally as the “Didi Driver Village,” because so many rural migrants from across China had immigrated there to work for Didi. A journalist reported that at its height, there were more than 5,000 cars with Chongqing plates parked in the “Rear of the Factory Village,” physical evidence of the thousands of workers who had travel across the country work as on-demand drivers in the capital.<sup>16</sup>

We circled around the convoluted roads of this urban-village-turned-industrial-park for at least fifteen minutes until we finally found the entrance to enter the headquarter of ride-hailing empire. We were soon greeted by a contact and escorted to see a digital exhibition of Didi. It seems to be a standard “destination” for visitors. At the entrance of a dark tunnel, an immaculately dressed young lady was waiting to receive us. She was wearing a black skirt suit and had her hair pulled back in a sleek manner, looking very much like an airline attendant, or tour guide of the future. Following her, we walked into a pitch-black space that was lit up only by digital moving images at a distance—it might be what it is like walking in a galaxy.

Many of the images featured in the exhibition were abstract bird’s eye views of cities. One of them was a map made up by real-time data collected in a Chinese city. Against the static background of streets and buildings, streams of traffic were flowing through freely like running water. Yet unlike real water, they are so legible, calm and controlled. They stopped and resumed as Didi’s smart traffic light changed colors. On the map, there was no congestion, honking, or cutting in. All the human messiness was removed from this smart and elegant image. “With the help of ‘big data’”, the lady explained in her perfectly toned English, “Didi has reduced the traffic congestion in XX city by 50%.” Against the dim light from the screen, I could see the intrigued expressions of the students.

During the tour, I was walking with my colleague Benny, a visual anthropologist from my home department at Harvard. He was there as a teaching assistant for the students, but soon he

realized this exhibition was also of interest to his own research topic, “spectacles in China.” Didi has turn technology into art, he commented, or even Shamanism. With all kinds of artistic techniques, they manipulated people’s perception of reality, and made presented objects bigger than life.

Indeed, during the half-hour tour in the dark galaxy lit up by data (metaphorically and literally), I felt so immersed in and convinced by the “reality” displayed in front of me. It made me forget momentarily all the encounters I had with drivers, who reported their experience with increased congestion in the cities and how the numerous glitches of Didi’s platform technology.

One of the effects achieved through such digital Shamanism is that people are empowered see the world<sup>17</sup> not just from “bird’s eye view” but from “god’s eye view”. From this view, the world is readily manipulatable. It looks like human engineering can be immediately realized in real world. The effects are often instantaneous, smooth, and pleasurable, because it does not take into consideration all the glitches, failures, and simply indifferences of the world. In this view, reality blurs into virtuality. The virtual map became not a representation of the cities, but a blueprint of how the cities should be engineered toward.

In our so-called digital, Internet, or algorithmic era, virtuality is built upon the “informationization of the worldview”, a process through which information science abstract hidden algorithms from the world experienced via senses.<sup>18</sup> This process started with what Coolen called “the postulate of programmability”, that is a belief in the replicability of the actual course of events by computer programs.<sup>19</sup> Even though there are clear limits of programmability, the informationized worldviews have gradually become essential lens through which we understand and explain the reality.

Most importantly, the fundamental influence of informationistic sciences lies in their status as modal sciences. More and more often, the question asked by entrepreneurs, policymakers and citizens is no longer “what reality is” but “what reality could be.”<sup>20</sup> The goal of informationistic sciences is no longer to understand and explain the laws of nature but to control them, via converting the world into

a range of virtual possibilities and human being into clusters of information.<sup>21</sup>

Although these digital images are so well produced, the students and I were warned by our tour guide that we cannot take pictures in this exhibition. I found this policy to be a bit peculiar. If this exhibition was built for outside visitors and these images curated to showcase the magic of Didi's technology, why are they not allowed to be photographed. If these images are photographed and then shared by visitors on social media, wouldn't they and the narratives behind them multiply their effect a thousand-fold? But then I remembered Benny's comment about Shamanism. These images, just like performance of Shamanistic rituals, are only allowed to be shown at particular times and to particular groups of people. That is because these images are less scientific presentations that could be closely examined and contested, but artistic performances that supposed to exert its influence in a situated context. Compounded with Didi's strict measures of safeguarding their data from external access, the images produced by the company became the only way to view the transportation systems, cities, and worlds.

### **Engineering Sex**

From the news reports in the introduction, you have already known how Didi Hitch's efforts of building socialization service have ended. But how did it start? Why did the managers of Didi Hitch choose to use sex as a marketing tool anyways? To address this, we have to go back to the very beginning. Let me start with the story of Yao, one of the founding members of Didi Hitch.

Yao is a local Beijinger in his early thirties. Growing up in the capital, Yao went to the best elementary school, best middle school, best high school, and eventually the best university in China—Peking University. In college, he chose to major in Chinese, following the footsteps of Yan Fu, Hu Shi, and other intellectual leaders who spearheaded the May Fourth movement. Suffice to say, Yao is

among the most educated and most idealistic group of elites in China.

After graduating from Peking University, Yao joined Douban, a social website for educated young people to post movie critiques, share favorite novels, and express political opinions in covert language. Self-prized as a “literary and artsy youth” (*wenyi qingnian*; 文艺青年), Yao was naturally attracted to Douban and ended up working in its community building department for a few years. But soon he realized that online socialization is rather limited and superficial. “Yes you could meet new people through WeChat or Momo, but you can necessarily trust them,” Yao said.<sup>22</sup>

“Didi Hitch is different than them,” Yao said, “all the social interactions happen in a real, offline, and enclosed spaces.” He was drawn by its potential for creating socialization opportunities in real life. Also, many people hail the same Hitch partners repeatedly, which allow them to build up trust over time. Yao joined the team in 2015 and started developing its nascent social functions.

His early efforts were rather successful. He told me that he knew young people who found romantic partners through carpooling. He knew people find doctors for their sick family members through Hitch. And some bosses even drive around in order to find good employees. All the heart-warming stories on the Hitch platform could be put together as a Chinese version of “Midnight Canteen,” he said.<sup>23</sup> The numbers of Hitch are also strong: it ranks the third most popular option on Didi’s platform after Kuaiche (Express) and Zhuanche (Premier); and it generates 10% of trips for the company.<sup>24</sup>

But all of these heart-warming stories suddenly lost their luster, when two rape and murder incidents took place on Didi Hitch platform. In May, 2018, a 22-year-old young woman, an air stewardess, was killed by her Didi driver on her way to a friend’s wedding. Moments before she was murdered, she sent messages to her friend saying that her driver was a pervert. She said, “he commented that I am pretty and he wants to kiss me.” A few months later, another female college student was murdered by her Didi driver, who was reported for sexual harassment by another female

passenger only a day ago. But the platform took no action. And the college student was raped and killed the next day. These two saddening incidents soon caught the headlines of media and the attention of Chinese netizens. People found that they were the result of systematic problems of Didi Hitch, rather than stand-alone incidents.

Consumers of Didi Hitch reported one after another that they noticed some of the functions on the platform were intended to induce social interactions that are dangerous for users (especially female users). For instance, on the platform, drivers can leave unsanctioned comments about customers. Some comments shared by concerned netizens contained overt sexual descriptions of female customers. For instance, one comment said, “[She is] such a beauty. My mind wondered when I saw her black stockings.” These unsanctioned comments are attached to users’ account and can be viewed by all the other drivers on the platforms.

People also noticed that the prevalence of sexual language and consumption of female sexuality was, to some extent, engineered by Didi. The former manager of Didi Hitch Joel Huang commented that Didi was very clear about Hitch’s mission from the get-go. They wanted to make the inside of private cars into “half public, half intimate” social space, just like cafes and bars. “It will be a very sexy scene — full of potential,” she said.<sup>25</sup>

To create this “sexy scene,” Didi Hitch employed several strategies. First, its advertisements overwhelming featured “romance” as the selling point. Almost every poster portrays one beautiful woman and one attractive man, sending romantic signals to each other. For instance, to celebrate Chinese Valentine’s day, one advertisement (Figure 4.3.) says in bold characters: “Let’s date!”



**Figure 4.3.** Poster of Didi Hitch for Chinese Valentine’s Day.<sup>26</sup>

In Figure 4.4., the young woman with beautiful long black hair, holding a bag-full of grocery was wondering, “Is this another ‘serendipitous encounter?’” She already knew it was not a random carpool. Her monologue goes “Hi, we meet again. What a coincidence! Actually, I knew your little secret long ago, you are not on the same route. But I will continue play this sweet game with you, forever and ever.” The trip’s starting point says Chinese Academy of Art, hinting that she is a college student looking for a romantic encounter.



Figure 4.4. Encounter.<sup>27</sup>



Figure 4.5. A lifetime.<sup>28</sup>

In Figure 4.5., a more mature-looking woman, again exceptionally beautiful with long waves and red lips, is waiting for a ride. The male driver in the right bottom corner is looking at her, with a bouquet of red roses behind his back. According to his profile information on the bottom, he drives a purple Mercedes Benz. In bold letters the advertisement says, “Ten minutes for a lifetime — the ten minutes I waited for you I felt so lucky. When you opened your door, my anxiety turned into maiden’s blushes. Suddenly I realized, I have been waiting for you for my whole life.” These advertisements suggested to users that the most prominent feature of Didi Hitch is not its convenience or affordability, but the potential to meet attractive dates on the platform.

Furthermore, Didi encouraged drivers and consumers to describe their experience with tags (pre-coded word phrases users can use without typing, e.g. [smooth driving] [great driving skills]). However, Didi provided official tags with phrases such as [beautiful girl] [cute guy]. It demonstrated that Didi wanted its users to comment on each other’s attractiveness, so much so that it even created shorthands for them. Then, all the comments submitted by users, plus personal information such as

users' age, gender, picture, and hobbies were all viewable by the public. Users can see the historical comments and even search them when choosing a ride. For example, if one were specifically looking to ride with a pretty girl, he or she can type keywords and find targets.

One of my informants told me that he used to pick up Didi Hitch orders on his way to work. But as a single guy, he only picked beautiful girls. Female passengers with nice profile pictures will have many drivers fighting to drive them; but male passengers on the other hand have difficulty getting rides. This highly gendered dynamics were even supported by Didi's own data. Joel Huang, the former director of Didi Hitch said that, "Our data shows that the majority of our drivers are male with an average age of 32, and female consumers are 10% more likely to get rides than males." Even the founder of Didi, Cheng Wei, casually mentioned to media that whenever he and his wife request rides at home, his wife was always much more likely to get rides. And the drivers who were willing to pick her up usually drive BMW and Mercedes Benz. His requests, however, were usually picked up by lowest level cars.

Strangely, none of these evidences alarmed Joel Huang or Cheng Wei. On the contrary, they saw this gender dynamics as potential marketing opportunity. "This is the project we have to work on," says Huang, "[we need to think] how to best satisfy their needs." The answer of Didi Hitch was bundling female sexuality with economic incentives and selling them to male drivers. On the other hand, male drivers with their attractive personal property (in the form of cars) were bundled together with cheap rides and sold to female riders.

"I never thought this platform could become so trashy," said Yao, when I met him again in spring 2018 after the first murder case. He had already left Didi to work for an investment company. I asked what he thought of the socialization function of Didi Hitch he helped to design. He said he was shocked how socialization has degraded into sexual predation. "My intention was to build a platform that like-minded people can meet during carpools," he said, "You know, people can share

their trip experience to Africa, or how to build a start-up, and so on.”

Listening to him genuinely explaining his intention, I realized that, to some extent, it was also a story of an upper-class Chinese intellectual’s idealist dream crashing into the social realities of Chinese society. So fundamentally shaped by the world he grew up in, Yao imagined the ways other Chinese citizens socialize just like he friends did. But other forms of platform participation were not that far away from his world. In the L Tribe in Shanghai, a group of middle-income drivers secretly share pictures of female passengers and make overtly sexual comments; the female drivers in the groups accept the sexual harassment from their male counterparts and some even play up their femininity to trade for favors and comments. If he or his colleagues had immersed themselves in local communities of drivers, they might realize that promoting romantic encounters could easy go from cheesy to dangerous.

### **Harnessing the Deluge**

In 2018, Didi launched the Deluge Alliance (*Hongliu Lianmeng*; 洪流联盟), a coalition of firms dedicated to advancing the development of smart transportation systems. Its founding membership included not only tech firms, but also China’s most venerable automotive manufactures, such as SAIC (Shanghai Automotive Industry Corporation), FAW (First Automobile Works), and BYD. According to Cheng Wei, the goal of the alliance was to bring together the physical and digital, by melding “flows of iron and steel” with “streams of information.”<sup>29</sup>

How exactly the Deluge Alliance would create linkages between traditional manufactures and tech innovators was less than clear. But Didi’s recent experience provided some clues. For several years, Didi had already existed in a symbiotic relationship with electric car manufacturers. As part of the central government’s push to promote the adoption of green vehicles, the purchasers of electric

and hybrid cars were automatically granted license plates. In places such as Beijing and Shanghai, where people have to enter a queue to purchase new cars, and license plates are worth their weight in gold, many on-demand drivers were incentivized to take advantage of the favorable regulations. As ride-hailing grew, electric car manufacturers experienced a boom in business, and Didi benefited from the influx of green cars that could be acquired more affordably and quickly. The two are natural allies.

Didi will also try to leverage its extensive customer networks. As a member of the Deluge Alliance, Didi has already said that it aims to “build an online car dealing platform, which will promote and sells over 10 million new energy cars within the next 10 years.” If you open Didi’s app today, you will find that car sales are already listed as one of the company’s key offerings. It is even listed before taxi-hailing, the service that the company started with.

But perhaps the biggest goldmine of all, is Didi’s network of drivers. In 2017, Didi began investing heavily in the development of new financial products (mostly microloans and insurance) for its massive population of drivers. If a driver works regularly for Didi’s platform, he or she automatically becomes eligible to take out a small loan. From Didi’s perspective these microloans are very low risk. If the drivers do not pay back the loan within a given timeframe, Didi can simply garnish their wages.

If the Deluge seems amorphous and hard to pin down, it’s because, for Didi, it means different strategies at different fronts in different times. It means translating its virtual networks into concrete products when the ride-hailing boom is stabilized; it means allying itself with other corporations when a new boom is on the horizon, it means showing its social responsibility when called upon by the state. But continued grounding is inevitable, because Didi is no longer a start-up, but a system builder.

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- <sup>1</sup> For instance, Jean-Marie Dru’s popular book, *Disruptive Innovation*, was translated as *Dianfu Shi Cbuangxin* (颠覆式创新) when it was published in China in 2016.
- <sup>2</sup> Even in the Classic of Poetry, the *Shijing*, written sometime before 600 BCE, the word combination *dianfu* was already used to describe regimes being overthrown.
- <sup>3</sup> *The Deluge* by Polish Nobel laureate Henryk Sienkiewicz in 1860 was translated into Chinese as *Hongliu* in early 20th century.
- <sup>4</sup> The five phrases were: improving internal structure; developing smart transportation; dominating ride-hailing industry; laying out global strategies; and *hongliu luodi* (洪流落地), literally “bringing the deluge to land.”
- <sup>5</sup> *China Youth* 2016; Li 2016.
- <sup>6</sup> *Xinhua Net* 2016a.
- <sup>7</sup> See full text of the speech at Xinhua News, Nov 3, 2017, [http://www.xinhuanet.com/english/special/2017-11/03/c\\_136725942.htm](http://www.xinhuanet.com/english/special/2017-11/03/c_136725942.htm).
- <sup>8</sup> *Zhongguoqingnianwang* 2016.
- <sup>9</sup> To protect the privacy of this scholar, his name was changed and his identity was omitted.
- <sup>10</sup> The phrase “standing on the platform” came from the practice of having beautiful ladies standing in front of booths trying to sell the product.
- <sup>11</sup> See more about policies of reducing industrial over-capacities, Yang, Yang. 2018.
- <sup>12</sup> *Zhongguoqingnianwang* 2016.
- <sup>13</sup> Announcement for the employees for Shanxi Jiaomei: <http://www.sxcc.com.cn/tzgg/596.jhtml>.
- <sup>14</sup> Didi Policy Research Institute 2017.
- <sup>15</sup> Huang 2017.
- <sup>16</sup> Ibid.
- <sup>17</sup> Boellstorff 2008.
- <sup>18</sup> de Mul 2010.
- <sup>19</sup> Ibid.
- <sup>20</sup> Emmeche 1991.
- <sup>21</sup> de Mul 2010.
- <sup>22</sup> WeChat and Momo are two of the largest SMS platforms with social functions. WeChat is a must-have for every smartphone user in China; it has a build-in “shake and meet” function to connect you with strangers nearby. Momo, on the other hand, is especially famous for finding hook-ups and casual dates.
- <sup>23</sup> *Midnight Canteen* is a real-life TV series in Japan. It takes place in a little eatery in Tokyo, where people from all walks of life congregate in the middle of the night to enjoy warm food and share life stories.
- <sup>24</sup> Feng 2019.
- <sup>25</sup> Sun 2018.
- <sup>26</sup> Picture retrieved from *Xinlangsongbekeji*, “Jingsong de Sexy (Scary Sexy),” Aug 29, 2018. <https://tech.sina.com.cn/i/2018-08-29/doc-ihikcahf5236349.shtml>.
- <sup>27</sup> Picture Retrieved from *PingWest*, “Zai Baohu Chengke Anquan Shang (In Regard of Customer Safety),” May 17, 2018. <https://www.pingwest.com/a/166688>.
- <sup>28</sup> Picture retrieved from *Xinlangsongbekeji*, “Jingsong de Sexy (Scary Sexy),” Aug 29, 2018. <https://tech.sina.com.cn/i/2018-08-29/doc-ihikcahf5236349.shtml>.
- <sup>29</sup> Li 2018.

Chapter Five

**V Taxi Team**

After walking through the entire journey of the rise of ride-hailing industry in this dissertation, you are probably wondering like me: is the Uber-style disruption the only way to innovate digital technologies? Is the Didi-mode of monopoly the only way to provide convenient urban transportation? To answer this question and re-imagine an alternative future, let me take you back to the very beginning. The pre-history of ride-hailing in China.

In Hangzhou, the burgeoning tech capital of China, V Taxi Team (*V Chedui*; V 车队), a grassroots community of taxi drivers, began offering digitally mediated services well before the popularization of ride-hailing platforms like Uber and Didi.<sup>1</sup> In a city already renowned for its entrepreneurial spirit, V Taxi is something of a local legend. Newspapers have reported extensively on these tech-savvy cabbies and their pioneering use of digital technologies.<sup>2</sup> However, the novel use of technology is only one part of V Taxi's story. As V Taxi members will tell you, their success has been driven equally by the community's ability to harness social networks, facilitate practices of sharing, and produce social values in addition to economic value.

At its core, V Taxi is a community of entrepreneurial taxi drivers who share economic opportunities, skills, and knowledge. Each member is a professional driver who recruits and cultivates a personal pool of clients.<sup>3</sup> Whenever a member is unable to carry out an order, instead of turning it down, he or she shares it freely with his or her peers on the platform. Through this cooperative strategy, V Taxi drivers are able to generate the bulk of their incomes from prebooked trips.<sup>4</sup> Not only does this increase the stability of their work but it also enhances their wages. In 2013, V Taxi members earned approximately ¥7,000–8,000/month (\$1,018–1,164), roughly 50% more than the vast majority of Chinese taxi drivers.<sup>5</sup> In addition to enjoying higher incomes, V Taxi drivers also engage in fulfilling social interaction. As Jiang Ye, the founder of V Taxi, put it, “Together, we train new drivers, share resources, and hang out after we get off work. V Taxi members are excited to come to work because the community is about more than driving.”<sup>6</sup>

For V Taxi, value is produced through practices of “sharing,” or *gongxiang* in Mandarin (literally, “to enjoy together”). At the most basic level, drivers share client orders that they themselves are unable to fulfill. Although orders involve the exchange of money for a service, they function in V Taxi as “gifts” in the Maussian sense.<sup>7</sup> This is because what is actually being shared is not orders per se but entitlements to those orders. Entitlements are earned through the cultivation of client relationships and thus are personal and inalienable to the drivers. Like gifts, they are always shared freely; no commission is charged. The only expectation of reciprocity is for those who receive orders to pay it forward by sharing with other drivers in the future.

Such practices of sharing create new relationships and reinforce existing ones by producing relational value. Relational value, as defined by Julia Elyachar, is “the positive value attached to the creation, reproduction, and extension of relationships” in economic exchanges.<sup>8</sup> Unlike resources or assets, relational value does not reside within individuals or among groups; rather, it is a “relational flow performed under certain circumstances through networks.”<sup>9</sup> When individuals exhibit community mindedness in interactions with their peers, they produce a “value of generosity” that binds the community together and enables it to carry out its economic functions. In V Taxi, relational value involves feelings of fellowship, which encourage the sharing of economic opportunity. The sharing of opportunity, in turn, sustains the production of relational value and deepens the ties of the community.

V Taxi’s emphasis on “sharing” harkens back to an earlier era of *sharing economy*, when communities of actors used digital technologies to facilitate nonmonetary exchanges.<sup>10</sup> Couchsurfing, for instance, enabled hosts to share their sofas in exchange for companionship and conversation rather than rent. However, since the early 2010s, these alternative forms of value creation were crowded out by “crowd-based capitalism.”<sup>11</sup> Guided by a “bigger is better” ideology, platforms such as Uber and Airbnb created centralized algorithmic systems to efficiently coordinate users and their capital. In

theory, the more user data these platforms collected, the better they could predict (and shape) user behavior, and the more efficient and cheaper their services would become. This hyperscalable model attracted billions of dollars of venture capital investment, which enabled these platforms to undercut the prices of their competitors and expand at lightning speed. After a brief period of intense competition, a few platforms emerged as virtual monopolies. This winner-takes-all approach to dividing up the sharing economy has been glorified in the tech sector, with prominent figures such as Peter Theil arguing that “monopolies are good for society” and “competition is for losers.”<sup>12</sup>

From an economic anthropological perspective, the crowding out of values can be explained by corporations’ efforts to engineer universal social structures that are divorced from local contexts. On the surface, sharing economy companies seem to have internalized an important lesson from the substantivists, namely, that people’s economic and social lives cannot be decoupled.<sup>13</sup> Ride-hailing firms, for example, have explicitly designed platforms to facilitate social interactions in addition to economic exchanges. Didi’s carpooling platform (see more in Chapter Four) harnesses as much people’s motivation to profit as their desire to socialize with local residents and have romantic encounters. Though some corporate actors mainly see the incorporation of socialization merely as a tool to make money; Others, such as Yao, genuinely hoped to implement his vision about offline socialization in Chinese society. This phenomenon could be best analyzed by Nigel Thrift’s theory of distanced economy. Disagreeing with Polanyi’s “disembedding” framework, he argues in *Knowing Capitalism* that capitalist economy has not become more disembedded.<sup>14</sup> Instead, it should be seen as more distanced, that is structured through time and over space by different kinds of machines.

This is exactly what many sharing economy platforms have done. Instead of embedding platforms within local social worlds (like V Taxi) or giving economic actors the freedom to connect the platform with their local contexts (like Craigslist), they designed universal structures that can be implemented in any context and promote only those activities that further the goal of profit

maximization. The social values they promote rarely stem from users and local communities, but rather the head of corporate managers, engineers, and designers. In doing so, they ultimately constrain users, instead of enabling them to produce a heterogeneous range of values that hold communities and societies together.<sup>15</sup>

From a science and technology studies perspective, we can see how the platforms' tendency to crowd out values becomes fixed in their technological designs. As Winner argued, the choices made about what matters “tend to become strongly fixed in material equipment, economic investment, and social habit,” namely, the shape of sociotechnological systems.<sup>16</sup> In the ride-hailing industry, centralized algorithmic systems that so closely resemble Deleuze's “control societies” make it almost impossible for economic actors to diverge from the predesigned paths.<sup>17</sup> The laborer's every action is controlled by omnipresent tracking, monitoring, and data feedback. Their sole purpose is to execute orders and conduct repetitive tasks.<sup>18</sup> Under such conditions, where humans are treated as mere extensions of machines, laborers can hardly develop transferrable capabilities or form the social connections necessary to produce relational value.<sup>19</sup>

If we truly value the preservation of individual agency and the production of heterogeneous values, then we must explore alternative technological systems that facilitate economic activity while enabling nonmarket exchanges. One proposal for what such a system might look like was offered nearly half a century ago, by British economist E. F. Schumacher in his book *Small Is Beautiful*.<sup>20</sup> Schumacher argued that when it comes to new technologies, bigger is not always better. He believed that small, decentralized technologies have the greatest ability to empower local actors by enabling “production by the masses,” rather than mass production.<sup>21</sup> For this reason, he called for a shift toward “technology with a human face”—a type of bottom-up, appropriate technology that harnesses local knowledge, skills, and resources.<sup>22</sup>

Does Schumacher's proposal for "small technology" still apply in today's digital age? If so, what should small technological platforms look like, and how ought they function? More pointedly, how might these platforms be used to expand, rather than limit, human agency and to enhance the production of heterogeneous values? It is in relation to these questions that the case of V Taxi yields new insights.

In this chapter, I provide an ethnographic account of V Taxi set against the backdrop of China's rapidly shifting technological landscape. The data I use were collected during 20 months of dissertation fieldwork, spanning five years (2014–18). The central findings were derived from in-depth interviews with V Taxi members, casual conversations with on-demand drivers, participant observation during ride-alongs, and online observations of social networks (WeChat). Most of the relevant fieldwork was conducted in Hangzhou, though supplementary work was done in Shenzhen, Shanghai, and Lanzhou.<sup>23</sup>

In the following sections, this chapter introduces the history of V Taxi and the formulation of the community's organizational structure. It illustrates how, through the harnessing of local social networks, V Taxi's human-centric system empowers local economic actors. It goes on to show how members of the community produce relational value through practices of sharing and how relational value serves to strengthen the community. It then examines how the "smallness" of the system is maintained through the creation and maintenance of boundaries. Finally, it recounts the failed attempt of the community founder to centralize V Taxi and explains why he encountered resistance. Based on this ethnographic account, this article explores an alternative model for digital platforms, one that is more localized, socially embedded, and human-centric.

## The History and Structure of V Taxi Team

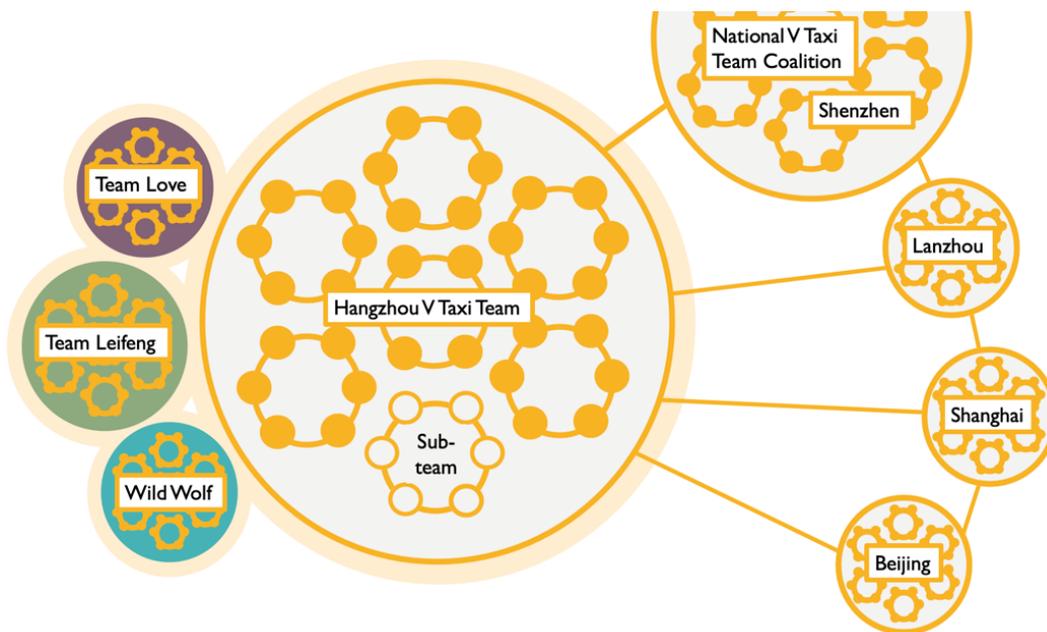
In November 2011, Jiang Ye, a local taxi driver in Hangzhou, had an idea. After seeing one of his customers use WeChat, a recently launched instant messaging platform, Jiang leveraged the networking power of a mobile app to create digitally mediated transportation services. Jiang Ye believed that a digital platform could solve a key problem for transportation service professionals, namely, the inability to cultivate and retain large pools of personal clients. Many experienced drivers like Jiang had long-term clients who frequently prebooked their services. Because prebookings are generally more lucrative than other orders, the more prebookings one has, the higher one's income is. However, prebookings also come with opportunity costs; because drivers cannot control where real-time orders will take them, they must stop cruising the streets well in advance of prebooked orders and therefore forgo other potential fares. Additionally, whenever more than one client prebooks an order for the same time slot, the driver has to refuse an order and risk damaging the client relationship. Jiang, therefore, thought of a platform in which drivers could share orders with their peers in real time. Such a system not only enabled drivers to accept more prebookings (and thereby increase incomes) but also ensured that customers' requests were consistently fulfilled.

With this nascent idea, Jiang set out to digitize transportation services in Hangzhou. First, he registered a WeChat account under the name of Jiang Ye Taxi Service and set a photo of his taxi as his profile picture. Then, each time Jiang dropped someone off at the airport, he parked his car in the adjacent parking lot and used the "Search Nearby People" function of WeChat to send friend requests to passengers at the airport. As an experienced driver, Jiang knew that the most lucrative part of the business was the fares going to and from the airport, so he made frequent flyers his target clients. His strategy worked. New customers began adding him on WeChat and booking rides. Jiang then got four of his driver friends to join him and use the same method of scanning for customers. Within a couple

of weeks, word of Jiang’s new system had spread, and dozens of drivers around Hangzhou were requesting to join the group.<sup>24</sup>

On March 3, 2012, Jiang made the group official and called the inaugural meeting of founding partners. The first order of business was selecting an official name. Most members wanted to call themselves the Hangzhou WeChat Taxi Team. But, worried that the name might violate copyright, they shortened it to V Taxi Team (in the Hangzhou dialect, “We” and “V” are pronounced the same). The founding partners then outlined the group’s basic organizational structure.

Many of the founders, including Jiang, felt that the structure of V Taxi should reflect how members of a community naturally form the deepest bonds with their immediate friends and weaker connections with more distal peers. This meant that rather than being flat, the organization would resemble a set of concentric spheres. Drivers would be situated in a close-knit subteam of eight to ten drivers, which would, in turn, be embedded within the larger V Taxi community. The entire community would then form cooperative networks with other taxi driver groups in Hangzhou as well as with V Taxi communities in other cities in China.



**Figure 5.1.** Graph showing the concentric structure of Hangzhou V Taxi and their outward networks.

The founding members of V Taxi also designed a seniority-based managerial system and an apprenticeship program highly reminiscent of Chinese professional guilds.<sup>25</sup> At the top of the hierarchy, a group of senior members would serve as managers on a voluntary basis. This managerial board, with “Driver No. 1” Jiang Ye at its head, would create codes of conduct, establish basic regulations, and control the admission of new members. When the board admitted a new member to the group, they would assign him to a subteam and pair him up with a senior driver for a three-month apprenticeship. But, just like with guilds of the past, the candidate would first need to establish *guanxi* (interpersonal relations) through practices of gift giving.<sup>26</sup> One driver told me that he had to gift a computer to a senior driver to gain access to V Taxi.

While it is unlikely that the V Taxi founders studied the classical work of Fei Xiaotong, the organization they imagined perfectly mirrors Fei’s theory of the traditional structure of Chinese society.<sup>27</sup> According to Fei, every individual in China is situated within concentric spheres of relations that extend outward from the self, to the family, to the lineage, to the community, and finally, to the state. When people in society interact, they form “differential modes of association” (*cha xu ge ju*), which vary according to the degree of overlap of their respective spheres. So too with V Taxi, the distances of relations between individual members are not equal. The loyalty of each driver resides, first and foremost, with the other drivers in his subteam. Only more distally do their “spheres of relations” extend to encompass other V Taxi members and, finally, drivers in other organizations.

These spheres of relations produced vibrant yet varied social lives for the drivers. Subteam members talked on WeChat on a daily basis and often went out together for drinks or to play mahjong. The larger team established a communal fund, which was used to organize community-wide gatherings. These social interactions helped strengthen bonds, which enhanced interpersonal trust and facilitated economic activity.

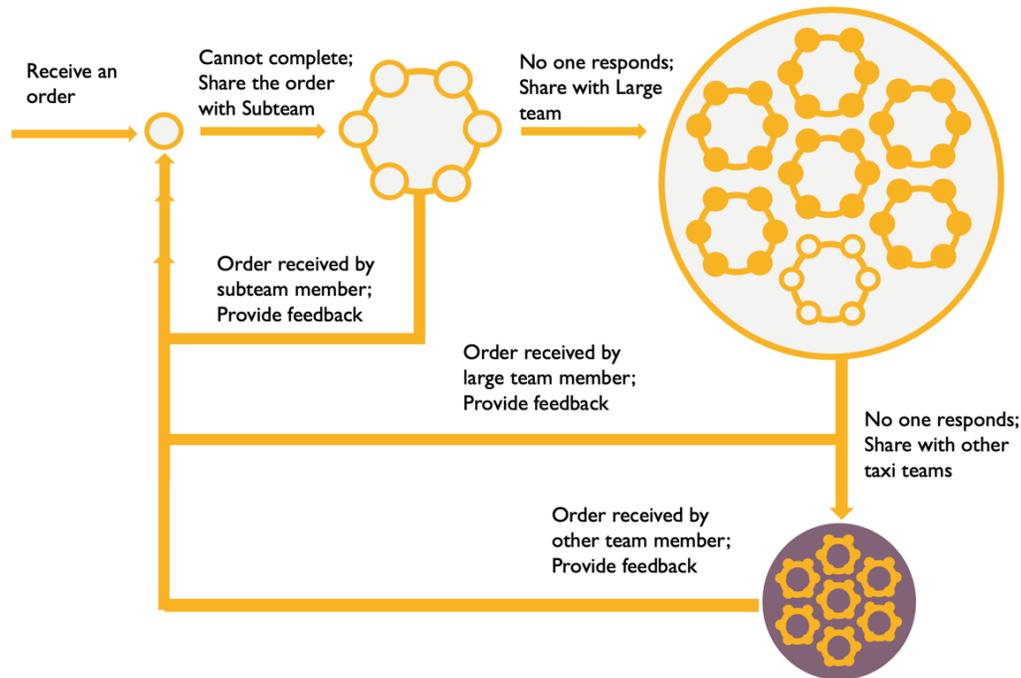
V Taxi's organizational structure also succeeded in co-opting the localistic networks characteristic of blue-collar industries in urban China.<sup>28</sup> Migrant drivers from the same area were generally allowed to band together to form their own subteams. These place-based subteams fostered a deeper sense of identity and group solidarity. But the V Taxi leaders were also wary of the strength of these localistic ties. After an incident in which a large group of drivers from northeast China split from V Taxi to form their own group, V Taxi adopted measures to diversify its community. Just like migrant entrepreneurs in China's construction industry who created a "diversified workforce so as to balance the influence of workers from different regions," the leaders of V Taxi attempted to protect the community by balancing the composition of drivers from different provinces in China.<sup>29</sup>

With this community-centered design, V Taxi achieved remarkable organic growth. From its official founding in March 2012 to its zenith in 2014, V Taxi grew its team of 20 into a thriving community of more than 300 active driver-members. As knowledge of V Taxi spread outside of Hangzhou, communities of taxi drivers in other cities established their own V Taxi teams. In 2015, a national association of V Taxi was established in Shenzhen, the southern tech capital of China, and Yang Zifeng was appointed to serve as its director. In addition to organizing an annual national V Taxi conference, Yang has worked alongside municipal V Taxi leaders to link up community-based networks and provide seamless transportation service for intercity travelers across urban China.

### **A Human-Centric Platform**

Unlike platforms that depend on computational algorithms to process orders and match customers with drivers, the V Taxi platform relies principally on human agency. While this model may place an

upper limit on the efficiency and speed at which orders are processed, it ultimately results in a far greater degree of transparency and accountability.



**Figure 5.2.** Flowchart showing how a V Taxi order is processed.

The flowchart in Figure 5.2. illustrates the flow of service requests within V Taxi. When a driver receives a client order that he is unable to fulfill, he reposts the request to his subteam's chat room. Every repost conforms to the standard format of [Time; Pick-Up Place; Destination], which conceals the identity and contact information of the client. If a member of the subteam responds, then a referral relationship is formed. However, if no one responds after a certain period of time, the driver reposts the same service request to the community chat room. All V Taxi members then have the opportunity to respond to the order. If (in the unlikely event that) still no one responds, the driver reposts the service request to a multi-community chat room comprising drivers affiliated with different taxi teams

cross Hangzhou. Until the trip is complete, the sharing driver will keep in touch with the referred driver to ensure that his client is well serviced. across Hangzhou. At any point in this chain, once a referral relationship is formed, the driver sends a message to his client with the number of the referred driver along with his or her contact information.

To ensure the smooth functioning of this system, V Taxi enforces strict tech-related requirements. Every car must be equipped with at least two smartphones, a wireless hotspot, a wireless amplifier, and a touchpad.<sup>30</sup> Every member must develop technological literacy with all of these devices as well as demonstrate his proficiency in using WeChat, posting order requests on the platform, and claiming requests shared by other members. A junior driver told me that the first thing he learned during his three-month apprenticeship was “how to @.” As he explained, when a driver responds to a shared order, he must @ the repost in order for his response to be legitimate. Similarly, the sharing driver must acknowledge the first person to respond to his request by @-ing that driver. The bilateral @-ing signifies the establishment of a referral relationship and ends the service request process.

To further streamline operations, the identities of V Taxi drivers are numerically coded. When new members join the group, they are assigned unique identification numbers. These numbers become the primary mode of identifying individual members and are used for all community communications. Even when drivers develop close relationships with their peers, they continue to refer to each other by their codes. However, to soften the impersonality and show respect and intimacy, most drivers append “brother” or “sister” to the numbers. You often hear them referring to each other as “Brother 6” (*Liu ge*, 六哥) or “Sister 108” (*Yaolingba jie*, 一零八姐). Such terms mimic forms of address in Chinese families, in which siblings refer to each other by ranking instead of by name (e.g., third brother, *san ge*, 三哥) . The strange combination of technical anonymity and kinship terminology reflects the ingenuity of drivers and the community’s ability to produce intimate relationships in a technologically mediated system.

Though the operation of V Taxi depends on mobile technologies, the platform's human-centric design affords it a high degree of transparency and accountability. This is because the system is structured to ensure that the order-sharing process is open and disputable. As we have seen, service requests are posted in open forums and are thus subject to the scrutiny of every community member. If there is a dispute about impartiality, drivers may request external verification or may call on a senior community member to arbitrate. For instance, technical glitches on WeChat sometimes cause a driver to see himself as the first respondent to a request, while the sharing driver claims otherwise. In such cases, the aggrieved driver may request a screenshot as evidence or ask a senior manager to review the dispute. To be sure, this commitment to transparency comes at a cost. Jiang Ye said that he used to spend so much time settling disputes that he became "far more intimate with my phone than my wife." But by providing access to the inner workings of the system, drivers are better able to establish trust and more willing to share economic opportunities.

Machine-centric platforms like Uber and Didi are, by contrast, "complex and mathematically grounded social material blackbox[es]" that resist questioning.<sup>31</sup> Their computational algorithms are intrinsically unknowable to the people whose actions they coordinate, and their decisions are near-impossible to contest. As I learned through fieldwork, on-demand drivers often experience frustration with the perceived injustice of algorithms. Drivers report that algorithms sometimes miscalculate their miles, fares, and subsidies— all of which result in reduced earnings; A few even claim that they have been unjustly fined or had their accounts suspended after algorithms misreported fraudulent behavior. Such frustrations are compounded by the lack of viable channels for seeking recourse. Drivers who call customer service hotlines to lodge complaints report experiencing long wait times that interrupt their work. And even for those who do get through, it is often difficult to provide sufficient evidence that an error has been made. "If Didi were a person, it would have already been murdered a thousand times," quipped one on-demand driver. "We truly hate it, and often feel wronged by the platform. But

when we reach out to the company, the people who answer the phone are just other migrant workers. How can we argue with them?”

### **Expanding Human Capability**

Another area in which human- and machine-centric platforms diverge is investment in human capabilities. Since corporations such as Didi and Uber use humans primarily as extensions of their proprietary technologies, they tend to focus little on the training of their drivers. Instead, they dedicate their resources to technological advancement, betting on the belief that, in the near future, fleets of autonomous driving vehicles will be cruising the streets. In one public presentation, a researcher from Didi tried to assure his audience that they need not worry about job displacement, because autonomous vehicles will still require drivers to “sit inside of them” for at least the next decade. However, the presenter made no indication that the company would endeavor to provide drivers with skills that might enable them to gradually transition to other jobs.

While technological advancement and human capabilities are often portrayed as oppositional binaries, anthropologists have pointed out that the adoption of new technologies also allows for the enskillment of workers. As Grasseni and other authors argued in *Skilled Vision*, “there is no fixed algebra of skill and machine by which an increase of technology means a decrease of [human] skill.”<sup>32</sup> This is because, with the advent of any new technology, workers must acquire new skills and apply their embodied knowledge to make the technology useful.<sup>33</sup> My ethnography of the V Taxi community corroborates this line of argumentation and further identifies that the key to expanding human capabilities is designing technological systems with space for humans to share skills and knowledge and establish social relations.

In the V Taxi community, the new-member three-month apprenticeship teaches them to recruit and retain clients. A critical component of this training is the honing of communication skills. Each driver receives instruction on how to identify a customer's interests and how to spark conversation. I was told that when new drivers go on trips, their mentors ask them to record (with consent) their conversations with customers. After the trips are completed, the mentor listens to the recordings, analyzing how well the driver engaged with the customer's interests, identifying which conversational strategies worked and which might have been inappropriate. According to V Taxi veterans, the skills imparted through this training are key to cultivating a loyal clientele. One mentor stated, "If one cannot find where the customers' interests lie, how does one expect to retain them as long-term clients?" Perhaps the strongest evidence of the value of such training is the extent to which it has been emulated. Yang Zifeng, the leader of the Shenzhen team, once said that V Taxi is referred to as "the training school" by outside drivers, because so many who went through V Taxi's apprentice program later split off to found their own successful organizations. While this high rate of defection may not be ideal for V Taxi, it has contributed to the spread of knowledge and skills throughout communities of drivers across China.

The cultivation of communication skills not only distinguishes the service of V Taxi drivers from ordinary drivers but also makes their work more meaningful. Brother 25, a veteran V Taxi member, once told me a story about an old client, a businessperson who traveled frequently between Beijing and Hangzhou. One time while the client was on a business trip, the client's elderly father fell ill. The first person the client called was Brother 25. "I asked him which hospital I should take his father to and he replied, 'To whichever hospital you think is the best. I trust your judgment.'" There are many such stories of driver-client friendships. While seemingly trivial, to V Taxi members, these moments give them the sense that they are more than drivers. "Taxi drivers are probably the lowest rung of professions in our society," explained Brother 25. "We don't have fancy cars or shiny uniforms.

The reason clients stick with us is because we treat each other like family...In this little space I have met so many different kinds of people, and some of them have become my true friends, the kind you can grab a drink with after work.”

The training that V Taxi provides might well be interpreted as part of a broader effort to transform individuals into “private” or “enterprising selves” in China’s post-socialist market economy.<sup>34</sup> But it also differs in one key respect. Unlike the archetypical “enterprising selves,” who make autonomous decisions to cope with uncertainty, the ideal V Taxi driver realizes his optimal self by engaging in nonmarket activities (such as sharing resources, skills, and knowledge) with his fellow community members.<sup>35</sup> This pursuit of “enjoying together” immaterial things complicates narratives of an overwhelming trend of individualization in China’s marketization processes.<sup>36</sup>

### **Small and Beautiful**

“Small and beautiful” (*xiao er mei*; 小而美) is the exact phrase that Jiang Ye, the founder of V Taxi Team, used to describe his community-based organization. Unlike corporate ride-hailing platforms such as Didi and Uber that seek to become as large as possible as quickly as possible, V Taxi endeavored to preserve its sense of “smallness.” Its members actively formed and maintained community boundaries, which they viewed as being of equal importance to practices of sharing. For them, “sharing” did not imply creating equal access to common-pool resources. To the contrary, sharing could occur only within the confines of clearly delineated boundaries, such as the mutual observance of “personal property” (i.e., drivers’ clientele). It is these boundaries that enabled the community to function and underpinned the system’s sustainability.

The importance of boundaries was illustrated most clearly to me during my first trip to the airport with Brother 315, a junior driver in V Taxi. As I rode and chatted with Brother 315, I noticed a stack of business cards with the V Taxi logo in a holder on the dashboard. To my surprise, though, throughout the trip, Brother 315 never offered me one. Just as I was stepping out of the car, I asked, “why didn’t you offer me your business card?” With an almost apologetic smile, he said, “Because you are Brother 25’s client. If I offered you my card, it would be considered poaching. That’s not the way we do things. But if you are happy with my service, you are more than welcome to take one.”

This simple act showed me that relational value can be produced through the upholding of boundaries. In V Taxi, there are no formal mechanisms governing community members’ behavior. No one is monitoring a driver’s actions, nor is there much risk of being caught should one try to poach a client. However, by choosing to respect established norms and forgo the possibility of small personal gain, drivers produce relational value and strengthen the bonds of the community. The taboo against poaching thus establishes a basis of mutual trust and enables drivers to form long-term relationships with their clientele.

However, these boundaries are not immutable. The protection of clients applies only to personal orders that are shared freely and in good faith. If a driver attempts to monetize his or her relationship with a client by reselling the order to another driver, then he or she alters the nature of that relationship such that it falls outside the boundaries of sharing. As one senior community member explained, “if a driver sells his order, then he opens up the moral wall protecting his clientele. Other drivers would therefore be justified in poaching them.” “Even worse,” he continued, “if the clients learn that you are selling their orders, then they will abandon you in a heartbeat for a more trustworthy driver.”

Similarly, the taboo against monetization does not extend to orders from on-demand platforms. Once, when I was borrowing a driver’s phone to browse through the V Taxi discussion

board, I noticed a number of orders written in the form of “Trip from A to B, 10 A.M. on Thursday, 10 yuan.” Curious, I asked him to explain why there were prices appended to the orders. He told me that trips formatted in that way originated from ride-hailing platforms like Didi. Because those trips are assigned by impersonal algorithms, V Taxi members have no moral qualms with selling them. Indeed, some members even employed hacking software, such as “accelerators” and “GPS movers,” to snatch up the most profitable trips on Didi and then sell them to their peers for a small profit. By clearly delineating the boundary between personal and impersonal orders, the community enables members to generate additional income without corrupting the ethics of sharing.

Members of V Taxi also recognize that creating a sensible boundary around admission to the group is important for guaranteeing that the basic economic needs of its members are met. In the past, during V Taxi’s initial period of growth, the acceptance rate of new members outstripped the expansion of drivers’ client bases. This caused a decline in the ratio of orders to drivers on the platform, thus resulting in a fall in average income. For this reason, the community decided to cap its total membership at 320. As a senior driver explained, “for a while we existing members couldn’t ‘get full’ with the orders being generated, so we stopped accepting new members...Because when drivers cannot ‘get full’ they will start to poach clients, cut corners, and breach the bottom line of morality.” In other words, V Taxi members understood that the healthy production of relational values cannot be sustained without a concomitant production of economic value.

Maintaining the smallness of the community is also important for building strong social relations. It takes time for drivers to learn to trust one another and engage in meaningful sharing. If the team size is too big, it is almost impossible for drivers to get personally acquainted with all other team members. This is why merely capping the team size did not resolve the internal problems that emerged after the team expanded to more than two hundred members. Many drivers found it hard to

develop trust toward their peers and so began sharing orders only within their subteams. This resulted in the formation of cliques and a gradual reduction of the efficiency of the system.

### **Centralizing V Taxi**

Team leader Jiang faced a dilemma: He could either reduce the size of the community to a more manageable level or adopt a different model that would allow for continued expansion. The choice came at a moment in mid-2014 when V Taxi faced an existential threat. Uber had just entered the market. Many suspected that Didi, a company that originally served only taxis, would soon also expand into the realm of private cars. Jiang feared that the shifting tide of the industry would eventually force out small, community-based organizations. The only path forward he believed was through growth: to develop a more machine-centric platform for V Taxi in order to allow more drivers and clients to use the platform.

In early 2014, Jiang Ye hired a group of computer programmers to help him develop a centralized system for receiving and dispatching client orders. In Jiang's new system, clients would affiliate with V Taxi's official WeChat account (rather than with individual drivers) and would post service requests directly to the platform. Requests, once posted, would be immediately relayed to the client's preferred driver. If that driver was unavailable, then the request would be recirculated within the community. However, not every driver would see the requests at the same time. A ten-tier hierarchy would rank drivers according to their performance evaluations. Level 1 drivers would receive requests first, Level 2 drivers would be able to view them one minute later, and so on down the pyramid. This whole process would be fully automated to handle the largest possible volume of orders.

To ensure a fair distribution of opportunity within the community, Jiang's system included another novel feature: digital tokens. Digital tokens, referred to as "gold coins" in the community, would entitle members to claim orders. Whenever a driver contributed an order to the platform, he would be awarded a certain number of gold coins. Conversely, whenever a driver wished to claim an order, he would need to pay a requisite number of gold coins. If a driver were short of coins but still wanted orders, he could purchase additional gold coins (with real money) from the V Taxi bank controlled by Jiang Ye. From Jiang's perspective, this new system would not only enable greater efficiency and scalability but also preserve the core interests of drivers. Drivers would always get first dibs and unrestricted access to their own clients' orders. They would also be actively rewarded for recruiting new clients and bringing more opportunities to the platform. The ten-tier hierarchy would also provide an incentive to improve service performance.

However, when the new system was unrolled, it was met with mistrust and protest. Many drivers felt that it corroded several key features of V Taxi's human-centric design. First, the centralization of orders undermined the personal ownership of client relations. Drivers worried that if more clients began placing orders directly on the platform, they would slowly lose their interlocutory power. As one driver predicted, "the clients will soon associate with the official V Taxi account, not us drivers." Another driver with similar concerns asked, "What happens when we want to leave the team? Will we be able to take our clients with us? I don't think that's likely."

Second, the automation of order allocation eliminated volition from sharing practices. In the original V Taxi system, drivers made conscious decisions about whether to share orders. As was previously discussed, on the old system, drivers may have felt tempted to monetize their client relations by selling orders to peers. But by not doing so—by instead choosing to adhere to the principle of sharing—they demonstrated their commitment to the community and thus produced relational value. When this process is automated, however, orders are no longer under drivers' control. Without

control, drivers could no longer exercise agency and produce relational value through voluntarily sharing orders.

Third, the introduction of digital tokens reduced system transparency and accountability. Members neither knew the total number of coins in circulation nor had access to audit the processes of coin assignment. Drivers began asking questions like “Why is Jiang Ye solely responsible for creating and dispensing new coins?” and “How do we know the system is not rigged for his personal gain?” One driver told me that once Jiang awarded him a large number of gold coins for a personal favor, which inadvertently made him wonder, where do these coins come from? This process of black-boxing, which mirrored that of corporate ride-hailing platforms like Didi, proved antithetical to the transparency present in the original system.

For these and other reasons, Jiang’s new platform proved short-lived. In fall 2014, Jiang left the community he founded to join Didi as an operational manager. Many team members interpreted Jiang’s move as a betrayal. For them, Didi represented an existential threat—a corporation with a very different vision for the industry that would destroy or devour any alternative platforms. For Jiang to abandon V Taxi for Didi was, according to one member, tantamount to deciding to “exterminate his offspring” (*jueren menbu*; 绝人门户).

### **The Anti-Hero**

Ever since I started studying V Taxi, I was looking forward to meeting Jiang Ye, the founder of and a somewhat controversial figure in V Taxi team. I wanted to understand, why someone who founded V Taxi would want to join Didi, which seems to be in many aspects the antithesis of V Taxi. I first spoke with him on the phone in 2016, since he was working in Shenzhen on the Didi bus project. In

the fall of 2017, after scheduling for months (he had been traveling back and forth between Beijing and Shenzhen with uncertain schedule), we finally found a weekend afternoon to meet.

We decided to meet in a shopping center close to his rented apartment. Although in his late 40s and married with a child, Jiang was living a bachelor life in Beijing. He rented a small apartment in an old gated community in Xi'erqi area, a short bus-ride away from Digital Valley, the industrial park where Didi's headquarter was located. Living there was convenient for commuting, but rather boring for everyday life. In Chapter Four I introduced how Digital Valley was basically constructed in the middle of fields, the nearby residential areas were not much more metropolitan. Walking around, one saw fewer branded restaurants and cafes, but more fruit vendors and cheap eateries.

The shopping mall was the most hustle bustle spot in the area. We scheduled our meeting at 2 p.m. In China, that usually means having a tea or coffee. But surprisingly, Jiang was to have lunch together. He explained that since he lives alone in Beijing, he rarely cooks. So for most of the meals, he had to resort of take-outs. Since today he was "meeting a friend," he was really looking forward to having a proper sit-down meal. I could hardly refuse.

We sat down in a mix-style restaurant, and ordered a Hawaiian style pizza and a pot of green tea (such a strange combination). While we were waiting for the food, I finally got a chance to look at the anti-hero I have admired up close. Jiang seemed to be a typical Hangzhou man, fair-skin, soft-spoken, neatly addressed in a navy blue peacoat.

I remembered that last we spoke on the phone, he answered questions in a neutral tone. But after corresponding through WeChat for over a year, he started to relax and he began telling me how he really felt about leaving V Taxi for Didi. First, he felt he doesn't belong at Didi. Most of his colleagues were in their 20s and graduated from top universities in China, while Jiang did not have any tertiary education and didn't even know how to use a computer when he first started. After three years, he finally learned how to use PPT and Word, and he started to insert many professional terms into

his speech, such as *changjing* (scenes/context), *zengzhi fumu* (value-added service), *ph zhi* (ph value). But when I asked what the “ph” in “*ph zhi*” means, he confessed he didn’t know (it came from English word “per hour”). No wonder he felt frustrated in the corporate environment and said to me “I have so many good ideas but just didn’t know how to express them.” It seems that the cultural and educational gap between him and the other little orange people cannot be bridged in the span of a few years.

For this and other reasons, he felt his talent had not been utilized properly. After being stationed in Shenzhen to develop the Didi bus project (which failed in the end), he was transferred back to Beijing to work on the “Manhattan Project.” It is a project that aims at developing financial products related to the ride-hailing platform, such as micro-loans for drivers. Since neither project he was assigned to had little to do with his rich experience in taxi driving, he felt rather dispirited.

Most importantly, throughout our conversation, I realized that his vision of what it means to be a good driver was very different from that of Didi’s.

Being a driver on Didi is like ‘simpleton style’ driving. The platform has all the clients and the drivers do very few things. Many people think driving taxi should just be like that. Why do you need to do anything else? They say. That is a stereotype of taxi drivers. But we [V Taxi] think everyone can play many roles, you can be a driver, a mother, a salesman, an entrepreneur. Through taxi service you let people know what kind of people you are: reliable, punctual, have good personality. And when they have business opportunities, they will then reach out to you.

Although he had already left V Taxi for three years, Jiang still sounded like a representative of V Taxi. The ideal driver he envisioned was still the entrepreneurial, highly-skilled, and socially-connected kind that can only be produced in an environment like V Taxi.

Not long into the conversation, Jiang suddenly lowered his voice and said to me excitedly, “I want to tell you some news, I am working on a new venture!” His eyes suddenly lit up. He told me that he was organizing a new taxi-hailing platform that would combine the advantages of both Didi and V Taxi. His hope was that in this new venture, he could preserve some of the most valuable

features of V Taxi, such as helping drivers and customers form long term relationships, and encouraging drivers to recruit their own clients. But at the same time, it would use a centralized digital platform to process orders. It sounded to me very much like V Taxi 2.0.

I guess the anti-hero didn't really change his dream that much. It just took him a few years and two careers changes to find out how to best realize his vision.

### **Imagine an Alternative for Platforms**

The case of V Taxi provides a powerful illustration of how, in our current age, “small technology” can still be used to empower local economic actors. The V Taxi community created a socio-technological system that both reflects and reinforces the values of its members. Instead of deskilling drivers, the system harnesses their skills and knowledge and encourages the development of their capabilities. Instead of atomizing drivers, the system operates through spheres of loyalty that mirror the social structure of Chinese society. And instead of centralizing decision-making processes, the system treats drivers as moral agents who are capable of thinking beyond their immediate self-interests. The success of V Taxi's model resides in the fact that it is not only an economic organization but a moral community that reproduces shared values.

Upon first glance, V Taxi might seem like an aberration, an organization that has survived rapid economic change only by virtue of existing within a market niche. But V Taxi was never insulated from the rest of society. Like all transportation service providers, the community was deeply disrupted by the rise of ride-hailing platforms, but unlike many, it was able to weather the storm. To be sure, years of fierce (and some would argue unfair) competition from Uber China, Didi, and Kuaidi (now all subsumed under Didi Chuxing) took their toll on the community; when I left my fieldwork in 2018,

the original Hangzhou team had shrunk to around one hundred member-drivers, about one-third its size during the boom years of 2013–14. But membership numbers were stable, and the V Taxi network continued to expand to ever more cities across China. The dynamic new head of the national association, Leader Yang, had even begun to develop new revenue streams for V Taxi, including wedding car bookings, roadside emergency assistance, and other specialized services.

As my ethnography has shown, it was exactly the human centrality and social embeddedness of V Taxi that made the community more resilient and adaptable to change. When competition from ride-hailing platforms heated up, V Taxi did not forbid its members from operating on those platforms; instead, it delineated clear boundaries between commercial orders (which could be sold) and personal orders (which had to be shared). When the community founder, Jiang Ye, later attempted to centralize V Taxi, members opposed him and fought to preserve the community's original human-centric structure. In the face of challenges both external and internal, the production of relational value strengthened the bonds that held the community together.

By putting this chapter at last, I hope it serves not only as a critique of ride-hailing platforms like Didi and Uber but also as a constructive proposal of what more human technologies might look like. As David Graeber so eloquently argued,

If one takes up the Maussian project with too much uncritical enthusiasm, one ends up with a naive relativism utterly blind to power. But if one is too rigorous and single-minded about one's critical project, one can easily slip into a view of social reality so cynical, of a world so utterly creased with power and domination, that it becomes impossible to imagine how anything could really change.<sup>37</sup>

Here I have attempted to delineate one possible alternative future: “small” digital platforms in China's contemporary ride-hailing industry that are effective and agentive.

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- <sup>1</sup> This article was previously published as an article “Platforms as if People Mattered,” in *Economic Anthropology* 7(1).
- <sup>2</sup> Fu 2013; *Hangzhou Net* 2013a, 2013b.
- <sup>3</sup> Except for a very small percentage (7%) of drivers who own their medallion, most cab drivers in Hangzhou affiliate with licensed companies to obtain rights to operate taxis. Drivers pay a monthly mandatory fee to these companies, ranging from ¥4,000 to 8,000/month (\$582.20–1,164.40) in 2016.
- <sup>4</sup> In addition to prebooked trips, V Taxi drivers would cruise the streets as other cabbies and pick up orders on platforms such as Didi and Kuaidi to supplement their income.
- <sup>5</sup> According to Chen 2018, as of 2016, 93% of taxi drivers in China earn less than ¥5,000/month (\$851.80).
- <sup>6</sup> All the names of study participants have been anonymized in this article, except for the names of Hangzhou V Taxi founder Jiang Ye and Shenzhen V Taxi leader Yang Zifeng. They authorized the author to use their real names.
- <sup>7</sup> Mauss 1989.
- <sup>8</sup> Elyachar 2005, 7.
- <sup>9</sup> Ibid.
- <sup>10</sup> Nadeem et al. 2015; Sundararajan 2016.
- <sup>11</sup> Sundararajan 2016.
- <sup>12</sup> Theil 2014.
- <sup>13</sup> Polanyi [1944] 2001; Carrier 2005.
- <sup>14</sup> Thrift 2005.
- <sup>15</sup> Graeber 2001; Mauss 1989; Polanyi 2001.
- <sup>16</sup> Winner 1980, 128; see also Winner 1993.
- <sup>17</sup> Deleuze 1992; Rosenblat and Stark 2016.
- <sup>18</sup> O’Neil 2016; Rosenblat and Stark 2016; Gray and Suri 2019.
- <sup>19</sup> Some on-demand drivers also form communities on various social platforms to share knowledge and seek friendship, but such groups are relatively transitory and disorganized.
- <sup>20</sup> Schumacher 1973
- <sup>21</sup> Ibid., 153.
- <sup>22</sup> Ibid., 146.
- <sup>23</sup> Besides the main field site of Hangzhou, Shenzhen was chosen because it is the headquarters of the V Taxi national association, and Shanghai and Lanzhou were chosen because their local V Taxi teams provided insights about how other teams in China operate. Because of the individualized and mobile nature of drivers’ work, the author chose to gain insights about drivers’ interpersonal interactions via observations in WeChat groups. Drivers’ interviews were conducted during trips to and from airports (to ensure length of conversation, privacy, and driver’s normal income). Additional interviews with study participants were conducted in restaurants, in cafés, by telephone, and over WeChat messaging. Because many events described in the article happened before the author’s fieldwork, the author had to rely on drivers’ recountings of those events and corroborate them with news reports.
- <sup>24</sup> Hangzhou Net 2013b.
- <sup>25</sup> see Rowe 1984; Vogel 1980.
- <sup>26</sup> see Yang 1994.
- <sup>27</sup> Fei [1948] 1992.
- <sup>28</sup> Guang 2005; Lee 2006.
- <sup>29</sup> Guang 2005, 490.
- <sup>30</sup> *Hangzhou Net* 2013a.
- <sup>31</sup> Anderson 2011, 540.
- <sup>32</sup> Grasseni 2007,10.
- <sup>33</sup> Frost 2017.
- <sup>34</sup> Rose 1990; Zhang and Ong 2008.
- <sup>35</sup> Rose 1990.
- <sup>36</sup> Yan 2009; Zhang and Ong 2008.

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<sup>37</sup> Graeber 2001, xiii.

Conclusion

**Theorizing Disruption**

Six years ago, since I first hailed a ride on a Chinese mobile app, I have avidly followed the evolution of China's ride-hailing industry and witnessed how it has, in fits and bursts, reshaped the economic and social landscape of China. Even in our fast-paced world, the pace of change of ride-hailing has been nothing short of astounding. In less than a decade, Uber and Didi have grown into two of the largest tech corporations, employing as many laborers as Walmart and McDonald (if their driver-partners were counted as employees). On their path of relentless growth, their business model has courted countless controversies, capturing the attention of policymakers, the media, investors, and the public, as well as scholars across various disciplines.

Though I am thankful for the abundance of fascinating developments, the volatility, vast expanse, and sheer scale of ride-hailing has also presented great challenges. As the subject of my research changed before my eyes, I often struggled to make sense of these changes, and place them within an understanding of the broader history of technology and capitalism in China. I admit that I often found myself at a loss, and that many of the phenomena that I observed only gained coherence in hindsight. So in this conclusion, I will share some of my reflection the ride-hailing revolution, and attempt to tease a few narrative threads out of this spool of chaotic energy.

### **Reflections on the Revolution**

When I began my research, Chinese ride-hailing platforms were still in their nascent stage of development. The technological systems were built atop an existing transportation infrastructure, and they relied on human agency rather than computational algorithms. Professional taxi drivers (rather than on-demand laborers) were the principal service providers. When a customer hailed a taxi on an app, instead of being algorithmically paired with a driver, the order was sent out to all nearby drivers who manually "battled" for the order by rapidly tapping a button on their phones. When a trip was completed, the fare was paid on the spot (sometimes even with cash!), rather than being automatically

deducted from a linked bank account, moved to escrow, and paid to the driver. The whole system was low-tech, manual, and seemingly designed to augment, rather than disrupt, the existing taxi industry.

However, even in their earliest incarnation, digital platforms challenged established power relations. Users of mobile apps found it far more convenient to order rides on their smartphones than to call in orders or to hail cabs from the sidewalk. As more and more urbanites went digital, the telephone dispatching systems of taxi companies began to lose revenue. In response, large taxi companies banned their drivers from using apps such as Didi and Kuaidi. But since apps improved drivers' incomes (by reducing cruising times), and because taxi companies had no practical methods of monitoring driver behavior, many drivers used the apps anyway. Some younger, tech-savvy drivers even mastered the art of hacking to grab the most profitable trips; they formed online trip-sharing communities that dominated the more lucrative pockets of the industry. While older drivers complained about the emerging income disparity, the younger drivers were not sorry at all. As the young man in Chapter Two proudly proclaimed, the older drivers had enjoyed higher incomes because of nepotism with the dispatchers, and now it was the next generation's turn. This unapologetic attitude to embrace progress is incredibly reminiscent of many historical moments in China's modern history, from the May Fourth Movement, to the Great Leap Forward, to marketization of state-owned enterprises. It seems to be the moral imperative for citizens to accept the ruthless societal progression and bear the cost individually.

The collective decision of taxi drivers to embrace digital platforms had a corresponding impact on the choices of consumers. As drivers developed the habit of picking up orders on apps, they became less active in physically seeking out fares on the streets. Consequently, consumers found it increasingly impossible to hail rides from the sidewalks. For most, this change simply represented a minor change of habit. But for members of some groups, such as the elderly, the illiterate, or the foreign, there were significant barriers to adopting the new technology. Many were pushed, as it were,

to the curbside. Jack Ma, whose company invested heavily in Kuaidi, said that when he learned that his own mother could no longer get a taxi, he began to reconsider the aggressive expansion strategy that he himself had supported.



**Figure 6.1.** Jack Ma Sharing his Concerns on Weibo.<sup>1</sup>

Societal debates about the goodness of ride-hailing platforms continued to emerge with the introduction of new innovations. When I returned to China for fieldwork in 2015, companies like Didi and Kuaidi had already undergone their metamorphosis from taxi-hailing to ride-hailing platforms. With the introduction of a new business model, i.e. allowing private citizens to labor on digital platforms, China's entire urban transportation sector was thrown into chaos. Massive waves of rural migrants flooded into cities to take up better-paying work as on-demand drivers. And with this influx of drivers and the diminishing costs of trips, consumers found it ever-more convenient and affordable to hail rides on digital platforms. The fact that Didi, Kuaidi, and Uber were pouring massive quantities of venture capital into the market, artificially deflating costs and inflating wages, only added

fuel to the flames. By the allure of cheap rides and high-paying jobs, the will of the masses was increasingly supportive of platforms.

But not everyone approved. After the advent of ride-hailing, taxi drivers, the earliest adopters of digital platforms, switched from being proponents of the industry to its most outspoken critics. While the expansion of ride-hailing meant that the overall pie for digital transportation was growing, taxi drivers' slice was narrowing by the day. As migrant laborers and private cars populated city streets, local taxi drivers experienced a sudden and sharp decline in income. For many, exiting the industry was not an easy option. Contractually bound to their employers, they were forced to continue paying weekly licensing and rental fees, and had to work longer hours to scrape together an existence. Mounting discontent soon coalesced into collective action. Taxi drivers began organizing strikes, staging "stand-stills" along major streets, and petitioning the central government to intervene.

I vividly recall the boiling hot summer when the taxi drivers of Hangzhou made their final stand. As a principal market into which venture capital had been pumped during the subsidy wars, Hangzhou had become ground-zero of the ride-hailing revolution. There, perhaps more violently than any other city, taxi drivers had been pushed to and beyond the brink of existence. During ride-alongs, I listened to drivers as they sent and received voice messages on WeChat. Together with their peers, they vented frustration both at ride-hailing companies like Didi and Uber, who they believed were engaging in unfair competition, and with the local government, whom they accused of aiding and abetting the tech companies. Interwoven in the litanies of curses were concrete calls to action. Drivers planned protests throughout the city and beyond, but most were immediately identified and suppressed. In the largest single protest, I was told, more than 200 drivers drove their taxis from Hangzhou to Beijing to appeal directly to the central government. However, even before reaching the capital, the convoy was intercepted by police, and the drivers were disciplined and escorted back home. No mention of the event ever touched the pages of Chinese newspapers. Their discontent was silenced.

Taxi drivers were not the only ones frustrated by the state’s handling of the ride-hailing revolution. While taxi drivers protested local governments’ inaction, on-demand drivers criticized local governments’ arbitrary and unprincipled application of the law. While ride-hailing platforms were operating throughout most of China, the industry existed in a legal grey zone. Regulations in most municipalities generally prohibited private cars from being used for commercial purposes. In many cities, Departments of Transportation Management cracked down on ride-hailing by prosecuting individual drivers. They set up check points at airports, train stations, and other high-traffic areas to catch people driving for platforms like Uber and Didi. Some agents even “fished” for on-demand drivers, placing orders on mobile apps, and arresting whoever arrived to pick them up. Those caught were often issued crippling fines in excess of ¥10,000 or had their licenses suspended.

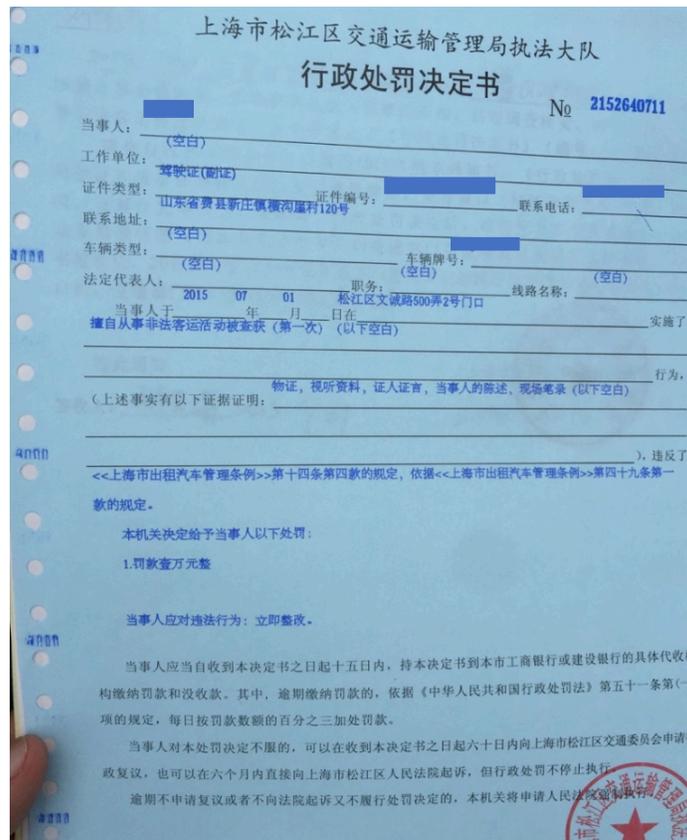


Figure 6.2. A statement of prosecution for participating in ride-hailing, issued by the municipality of Songjiang in Shanghai (personal information redacted).

Drivers were aggrieved by the perceived two-facedness of the government's actions. In their eyes, the governments were, on the one hand, encouraging the rapid development and adoption of new Internet technologies, while on the other hand, suppressing individual participation in this prospering economy. A common refrain echoed among drivers went like: "If the local government were truly unhappy with ride-hailing, then why don't they just shut down the apps? Why do they attack us common people (*laobaixing*, 老百姓) instead?" Many on-demand drivers suggested that the arbitrary fines were the government's means of recouping the revenue being lost by the taxi industry. Others speculated that the government bureaucrats were colluding with the managers of ride-hailing platforms; the check points and the random arrests were just a theatrical display to placate angry taxi drivers.

After returning to campus that fall, I co-authored a business case study, "Uber in China: Driving in the Gray Zone" with colleagues from Harvard Business School.<sup>2</sup> The case observed the ride-hailing market in China has been developing in the legal gray space, walking a narrow line between competition and speculation. Uber and the newly merged Didi-Kuaidi were each burning through more than a billion dollars per year, in an attempt to grow and capture the massive ride-hailing market. All of that loose venture capital was having a massively distortionary effect. Commuters were hailing rides because they were just as cheap as taking the subway. Migrant workers were abandoning their jobs in factories to take up more lucrative work as on-demand drivers. Hacker-drivers were innovating new methods of faking trips and reaping subsidies as profit. Such chaos might seem counterproductive on the surface, but we argued that it was exactly the gray-ness of the industry that allowed Uber to compete with its domestic rival that was informally "endorsed" by the government.



**Figure 6.3.** Cheng Wei, founder of Didi, was invited to 8<sup>th</sup> US-China Internet Industry forum with president Xi Jinping, while founder of Uber Travis Kalanick was conspicuously absent.<sup>3</sup>

Then, in July 2016, the Ministry of Transport announced a new guiding policy that fundamentally changed the state of Chinese ride-hailing. After months of public debate and lobbying, the Ministry effectively reversed its position on ride-hailing, and created a new regulatory framework that was, in comparison with the former status quo, shockingly liberal. Whereas the Ministry's draft law (issued a year earlier) had suggested that ride-hailing be subsumed within the existing taxi industry, the new guiding policy effectively gave ride-hailing companies carte blanche to reshape urban transportation. Many experts and political commentators described the development not only as a triumphant moment for the industry, but as the dawn of new era of more inclusive and transparent public policymaking in China.

Immediately after the guideline was made public, Uber announced that it would be

withdrawing from China. In another event that took global markets by surprise, Uber revealed that it had successfully negotiated a deal with Didi to merge its China operations, in exchange for a 17.7% equity stake in the new entity. This was the first instance of Uber being forced to retreat from an expanding market. And so, it was within the span of three short days that China had become the first major economy to fully legalize ride-hailing and Didi had become a virtual monopolist in the world's largest ride-hailing market.

If the history of Chinese ride-hailing leading up to the summer of 2016 was characterized most by technological augmentation and cumulative innovation, what came after can only be described as the governmentalization of ride-hailing companies. In the B Case of “Uber in China,” a follow-up that my co-authors and I scrambled to produce in the aftermath of Uber and Didi's merger, we predicted the arrival of a new normal in China ride-hailing industry, whereby the industry leader would consolidate its power by partnering with state institutions.<sup>4</sup> This prediction has generally held true. Didi has been proactive in building collaborative relationships with governments and has increasingly assumed quasi-state functions. The company has, for example, dedicated resources to retraining laid-off workers in China's rustbelt and shared its proprietary data with municipal governments in South China to help build “smarter” cities. At the same time, the firm has rebranded itself from a tech company, to a socially-minded facilitator of all transportation needs— from taxis, to buses, to carpooling, to chauffeur services for the inebriated.

However, the assumption of quasi-governmental roles proved to be a double-edge blade. Didi's new status meant that every part of its digital platform could be being scrutinized as public infrastructure. In 2018, two women using Didi's carpooling service were murdered by their drivers. In the aftermath of these tragedies, the public accused the firm of blatantly capitalizing on female sexuality and creating a digital environment in which sexually predatory behaviors were permissible. Public sentiments about the social good of ride-hailing fell to an all-time low. Under unrelenting

pressure, Didi was forced to suspend its carpooling service and issue an apology for failing to create safe transportation infrastructure. The moral values expressed through technologies and the social good they create had become central concerns for ordinary Chinese citizens.

In the early years of my fieldwork, informants were often puzzled by my interest in morality. They often asked, “what does morality have to do with ride-hailing apps?” I would try to explain that any value judgment is rooted in moral beliefs and that any prioritization of some ideal (say efficiency) over another (say access) is an expression of one’s values. Some people understood what I meant. Others remained skeptical. However, during my last year in China, something had clearly changed. Whenever I invoked the words *technology* and *morality* in a single sentence, I rarely needed to explain myself. Everyone seemed to have “got it.” It was amazing how the evolution of ride-hailing and all the debates that it had generated had fundamentally altered people’s conception of technology and the role of technology in society. Sometimes, history (or the dissertation) really writes itself.

### **Narrating Disruption**

The preceding narrative is my retrospective attempt to impose a degree of order on the history of China’s ride-hailing industry. But this represents just one possible “history,” a societal-level retelling that filters out all but what I have judged to be the most essential drivers of change. Such a narrative is a useful device that contains much truth, but necessarily reflects my own prioritizations and inferences. The actual progression of events as it was experienced by actors on the ground, the “lived history” if you will, was far more contingent and multilinear.

No matter how forcefully one argues that disruption is driven by factors A, B, and C (and indeed there is a whole cottage industry of scholarship that does just this), disruption is, by its very nature, a hyper-contingent process. In my half-decade of interviewing tech experts and industry leaders

in China's transportation sector, I discovered that even those at the vanguard of the ride-hailing revolution had no idea what direction the industry was heading. Before the arrival of Uber, the corporate executives at Didi and Kuaidi had not seriously entertained the idea of running private car services. I was told by insiders that the executives believed that the ride-hailing model was too controversial and would soon get shut down by local governments. It took the exogenous shock of "People's Uber" for domestic firms to counteractively launch P2P services of their own. Even then, the future of Chinese ride-hailing remained uncertain. It was only two years later, with the surprise passage of a national-level policy that the business was finally legitimized, and a new equilibrium was achieved. At each of these inflection points (and there are many more such examples), the way that disruption would play out was fundamentally unknowable.

This is all to say that the rise of ride-hailing was not a teleological progression of a new and novel technology displacing an old and outmoded one. At every stage in the process, there were many competing forces and many possible futures. If Uber had not made an expansionary play, China's urban transportation sector might have developed more peacefully, with digital platforms augmenting, rather than disrupting, the existing taxi industry. If the central government had not interceded on the behalf of domestic firms, then regulatory power might have been left up to municipal governments who were inclined to favor their local taxi industries. It is not difficult to imagine a counterfactual present wherein Chinese ride-hailing experienced decentralized development. Domestic firms like Didi and Kuaidi might have been forced to negotiate with individual municipalities, each of which might have adopted its own approach to governing urban transportation. In such a scenario (which is, by the way, the more common in China), we might have seen a proliferation of diverse localized firms, rather than the rapid monopolization of the industry. But this was one of many possible paths not taken.

It is equally important to recognize that the disruption brought about by ride-hailing was

experienced in fundamentally different ways by different groups of actors. Uber executives described disruption as a vitalizing process, a path towards attaining a new and more desirable future. Labor contract managers conceptualized disruption as the driver of the repetitive churns that characterized Chinese-style development. Taxi drivers instead spoke of disruption using the language of class struggle; they viewed disruption as a reconfiguration of power, an attempt by certain political classes (i.e. tech experts and capitalists) to tip the scales further in their favor. The way that each group made sense of ride-hailing—the way that they self-narrated their history of disruption—was shaped by the particularistic lenses through which they viewed the world. In other words, disruption is a socially embedded process, and the histories of disruption are born from communities of shared experience.

Moreover, the ecology of disruption is so complex that its actors/participants are not fully aware of how they are interconnected nor how their individual actions bear upon the overall system. In the case of Chinese ride-hailing, communities of actors that interface with digital platforms are often ignorant of each other's existence. Venture capitalists that invested in ride-hailing firms were largely unaware of the communities of hacker-drivers who hacked the platforms to fake trips. Hacker-drivers, in turn, were unaware of how their activities might have actually helped the industry expand more rapidly; the data they generated through the faking of trips helped companies like Didi and Kuaidi achieve their expansionary targets, thus enabling them to better court more investment or government support. Similarly, to this day, most people, including transportation industry experts, are unaware of the centrality of labor contract companies to ride-hailing. In the conference rooms of think-tanks and NGO's, ride-hailing is still discussed as having a flat structure (with countless entrepreneurial drivers contracting their capital and labor directly to consumers), whereas in reality it is a highly hierarchal industry with layers of speculative middlemen. Such complexities are often lost even to principal agents within this ecology.

For all these reasons, writing a “lived history” of ride-hailing requires not a single overarching

narrative, but a plurality of narratives that at times diverge and other times intersect. The question of course is how to go about writing this. It was here that I received inspiration from an unlikely source: the epic fantasy series, *A Song of Ice and Fire* (now immortalized as HBO's award-winning television drama, *Game of Thrones*). In these books, George R.R. Martin masterfully captures the multilinear experiences of societal upheavals and changes. Every chapter is written from a perspective of a different protagonist, and every protagonist's narrative was situated within their immediate world. By eschewing a singular "god narrative," Martin achieves a far more realistic representation of what history is like: self-centered, disconnected, and pluralistic, but with occasionally world-making and world-shattering collisions.

In this dissertation, I have attempted to emulate Martin's approach in order to recapture the contingency, multilinearity, and complexity of technological disruption. But whereas Martin writes from the perspective of individuals, I have instead chosen to narrate the experience of communities. For while people might experience the effects of technological disruption at an individual level, the way that they theorize and self-narrate their experience is necessarily intersubjective. It is within communities of practice that people develop negotiate, contest, or re-affirm their individual beliefs and develop these fragmented ideas into theorized accounts of the world around them. It is within communities that people form shared understandings of how society operates and how change unfolds. And it is as a community that people convince each other and themselves what really matters.

I understand that by emphasizing the communal values instead of individual values, I might be sacrificing the distinct voices of individuals, and my work might be read as painting archetypes of what "Uber manager" or "taxi driver" are like. Alas I felt compelled to do so, because I want to capture how the community-level uniformity binds the members together and how individuals, when situated in these community settings, actively perform to or genuinely identify with the archetypes. And I want to show how the advent of ride-hailing disruption gave rise of a variety of new communities, which

pulled individuals out of their previous existences, drew them together in new forms, and re-configured their economic and social relations, as well as moral values.

### **Contrasting Moral Worlds**

Of all the things I learned through the exploration of local worlds, perhaps the most interesting was this: every community makes sense of the world around them by producing their own theories of change, and through this process of theorization, they form shared moral understandings. In the realm of Chinese ride-hailing, communities of corporate managers, taxi drivers, and hackers alike theorized technological disruption— how it happens, what drives it, how it reshapes society. Together they analyzed the changes unfolding around them and made judgments about their morality. It was by observing this process that I was able to develop insights into the moral worlds of different communities and learn what really mattered to them. This exercise de-centered my worldview and forced me to rethink my own theories of technological disruption.

At the beginning of my dissertation, I showed how the corporate managers of Uber were true disciples of disruption. Not only did they believe in and proselytize the righteousness of ride-hailing, they were deeply confident in their ability to create said technologies and transform society. Such zeal was highly contagious. Uber managers successfully harnessed the power of social media, creative advertising (e.g. helicopter hailing, on-demand ice-cream), and crowd-sourced art, to reshape the collective imaginaries of Chinese citizens. They imprinted in peoples' minds the image of ride-hailing as cool, progressive, even indispensable part of future urban life. In other words, these disciples of disruption laid the “imaginary infrastructure” necessary for the actual development of the industry. And after the ride-hailing revolution had been realized, members of the went on to spearhead the development of other emerging technologies such as bike-sharing, AI-driven media, and cryptocurrency.

The managers of Didi shared many ambitions with their counterparts at Uber, but had a fundamentally different view of the path to progress. For them, the best way to achieve a collectively desired future was not to disrupt, but to engage in collaborative social innovation. Even during the zenith of disruption caused by ride-hailing, when digital platforms were actively displacing jobs and throwing urban transportation markets into disorder, Didi managers tried to position their firm as a propagator of the values of mainstream Chinese society. On their public Weibo and WeChat accounts, they posted heart-warming stories of Didi drivers helping pregnant women or going out of their way to return lost items to their owners. After Didi became a virtual monopolist, it focused even more resources into branding itself as a “social service” enterprise. The logic behind this move was self-evident. Didi managers believed that only by building collaborative relationships with local governments and aligning one’s interests with those of the state are tech companies able to survive and thrive in China. The best path forward, as they saw it, was to follow in the footsteps of mega-platforms like WeChat and Taobao, growing as large and diverse as possible, and making their company indispensable to society and the state.

In sharp contrast to the idealistic aspirations of corporate managers were the far simpler goals labor contract company (LCC) operators. According to Buddha, Mr. Ma, and other protagonists that appeared in Chapter Three, there was really only one rule for being a successful entrepreneur: make as much profit as possible from any opportunity that presents itself. From the perspective of LCC operators, technological disruption is part of a ceaseless churn that continuously remakes society, constantly destroying the old and creating the new. This directionless churn is neither good nor bad, moral nor immoral; it is simply is. What is most relevant for entrepreneurs is the fact that the churn opens up numerous fissures, which present opportunities to those bold and clever enough to seize them. When ride-hailing firms set out to transform the way that people moved around cities, it was LCCs that helped identify and fill in voids in that vision. With minimal capital investment or

assumption of risk, LCC operators successfully positioned themselves as intermediaries between labors, ride-hailing firms, and local governments, reaping profits from all sides. In other words, for LCC bosses, chaos is a most desirable state, and *speculation*, rather than innovation, is the way to make it in China. Towards the end of my fieldwork, as the industry was beginning to stabilize, my labor contractor friends were growing visibly restless; although they were still making profits hand-over-fist, already they were searching for the next wave of disruption and the opportunities it would surely bring.

While labor contractors personally gained by identifying and filling the holes in the system, hacker-drivers instead profited by drilling new ones. After the torrent of restless capital flooded into China's ride-hailing sector, an online ecosystem of fake account peddlers, hackers, and tech-savvy drivers emerged to exploit loopholes in the system, and thereby derive illicit profits. Upon first glance, the two communities of actors appeared quite similar; both were centrally defined by their opportunism and moral flexibility. But further observation of hacker-drivers revealed that their practices were more reactionary, ad hoc, and individualistic than those of LCC operators. For instance, the members of L Tribe tended to speak of the subsidy war between ride-hailing platforms as a sudden and senseless windfall, an episode with little meaning beyond the possibility of immediate personal gain. Although they were clever and resourceful in their pursuits, they did not seek to change the system (at least not intentionally) nor to become a permanent component of it. As soon as the subsidies dried up, community members simply returned to their normal working lives or moved on to the next profit-opportunity. They were transitory participants in a revolution who were largely unaware and unconcerned with the influence they exerted.

Finally, there was V Taxi, a grassroots community of taxi drivers who managed to not only weather the storm of ride-hailing, but to prosper in their niche market. Unlike other taxi drivers, for members of V Taxi, the changes brought on by ride-hailing platforms often felt distal to their everyday experience. Though V Taxi was very much enmeshed in the history of ride-hailing (I will show later

how they were instrumental to the rise of Kuaidi), the community ultimately developed a human-centric model of ride-sharing that proved resilient in the face of disruption. Although the community did suffer a setback when their founder was poached by Didi, and although they did face punishing price competition from on-demand drivers, they were still able to achieve spontaneous organic growth; what began as a single community of drivers based in Hangzhou is now nationwide network of driver communities operating in more than 50 cities in China. More importantly though, throughout their evolution, V Taxi successfully held onto its central values: solidarity, professionalism, fellowship, communality, and trust. For members of V Taxi, technological disruption is not an inevitability, but a societal choice. The community imagined an alternative possible future and developed the sociotechnical system to enact it.

The more I describe and theorize the local moral worlds, I increasingly realize how much institutional structure (the physical or virtual space, rules and regulations, organizational settings) in which communities are situated have influenced the views of the actors. I want to make this point explicit for the readers as well. The views actors expressed to each other and shared with me are, for better or worse, products of the environments they are embedded in. For instance, Didi employees work in a highly secretive and controlling corporate environment. Every time an informant receives me at the corporate headquarter, they have to punch in his/her personal information and my personal identity, which leaves permanent records. When we have conversations on corporate property, we are also surrounded by colleagues, security guards, and sometimes cameras. Such an environment would inevitably have affected what they said to me and even their own values. Although I tried to meet my informants outside of the corporate space as much as possible, I think the habituated and unconscious self-editing still persisted in some cases. On the other hand, the hacker-drivers inhabit an online community that is temporary and informal. Uncensored by societal moral norms, individuals might act in ways that are very different from their usual selves in workplaces or families. They might even

perform more “outrageous” behaviors just to let loose or fit in. But their practices are still of great value for analysis because, first, they speak volumes of individuals’ personal values even without words, second, their actions have had great influence on the development of ride-hailing industry.

### **The Anatomy of Disruption**

In the previous sections, I recounted the history of ride-hailing from a retrospective perspective, and I reflected on this grand narrative with multilinear histories from various local perspectives. In this final section, I would like to identify some of the most salient themes that emerged from the juxtaposition of local moral worlds and offer a few concluding thoughts on what I believe technological disruption really means for the broader society.

#### *Disruption as Dispossession*

First and foremost, I argue that the process of disruption involves dispossession. As I have shown through the histories of local communities, the success of ride-hailing industry was not predicated upon new technologies and innovative ideas alone. Yes, it did tap into some un-explored consumer demand and connected resources in inventive ways. But a significant part of the ride-hailing boom was also displacement of other existing industries.

In China the domestic ride-hailing industry was built upon the support of taxi drivers and the pre-existence of a robust “black car” economy. Taxi drivers were the among the earliest adopters of digital platforms, whose skills, expertise, and trustworthiness enabled the domestic platforms to function. In their early incarnation, when platforms were incapable of automating basic functions—

such as pairing customers with nearby drivers, projecting fares, or even providing accurate navigation—it was the knowledge and skills of taxi drivers that filled the technological voids. Equally important were informal transportation providers, whose activities hastened the acceptance of the ride-hailing model. The fact that Chinese consumers were already accustomed to hiring the services of private-citizen-drivers, and the fact that illicit operators represented a massive amount of labor ready to be absorbed into platforms, greatly facilitated the adoption and expansion of the industry. However, as ride-hailing developed, taxi drivers and “black car” drivers were among the first disrupted.

After an initial period of profitability for those who joined platforms, taxi drivers experienced a near-universal decline in incomes. Fierce price competition from on-demand drivers, who were not required to purchase operator licenses and whose activities were subsidized by venture capital, reduced the aggregate demand for taxi services. Platform companies also blatantly favored on-demand laborers over taxi drivers. In Chapter Four, I discussed how Didi cooperated with the local government of Taiyuan to re-employ laid-off coal workers as on-demand drivers. To achieve this task, the company provided reskilled workers with professional training and exclusive subsidies. With these advantages, they soon took over the local business from taxi drivers. And this was not an isolated example. Taxi drivers were even marginalized on the digital platforms themselves. The last time that I visited China, when I tried to hail a taxi using Didi, I could no longer locate the option on the app. It was only after swiping around a while that I rediscovered the “taxis” button. It had been removed from the front page and relegated to some digital hinterland that few time-constrained users visited.

 顺风车 Carpool	 快车 On-demand Economy	 专车 On-demand Business
 代驾 Chauffer	 豪华车 On-demand Luxury	 公交 Bus
 单车 Bikes	 买卖车 Car Sales	 自驾租车 Car Rental
 出租车 Taxi		

**Figure 6.4.** Taxi was listed as the last option, and only accessible after swiping right.

Illicit operators fared little better than their licit counterparts. Before the advent of digital platforms, outside of every train station, bus depot, and airport in China, there were queues of unlicensed drivers standing by to pick up travelers and deliver them to their destinations for a negotiated fare. Since the legalization of ride-hailing, the “black cars” that once populated China’s transportation hubs and midnight streets have largely disappeared. Transportation consumers have decided, whether or not on the basis of fact, that rides on digital platforms are safer, more convenient, or otherwise more preferable than those provided by independent operators. While many former “black car” drivers (such as Old Fan in Chapter Three) now work for Didi, they have lamented the freedom and higher income they have enjoyed as illicit drivers.

Many forms of “primitive accumulation,” argues the Marxist geographer David Harvey, happen not through explicit acts of violence, but through mundane processes (e.g. financialization,

privatization, and state redistribution) that reallocate wealth from the many into the hands of the few.<sup>5</sup> While in Harvey's analysis, the principle agents that exercise "accumulation by dispossession" are nation-states, anthropologists have since revealed that transnational corporations and non-governmental actors are equally practitioners of dispossession.<sup>6</sup> Furthermore, anthropologists have shown that what is being dispossessed is not only material wealth, but also knowledge, networks, and practices. In *Markets of Dispossession*, Julia Elyachar recounts how local entrepreneurs in Cairo were dispossessed of their community-based networks and practices and were 'incorporated' into the formal economy.<sup>7</sup> While this process was carried out under the guise of empowerment, in actuality, it robbed the community of immaterial economic resources.

Perhaps the most vivid example of dispossession in China's ride-hailing industry can be found in the story of V Taxi, the community of entrepreneurial taxi drivers discussed in Chapter Five. By the time that a group of programmers in Hangzhou produced a beta version of a taxi-hailing app in late 2012 (an app that would later become Kuaidi), V Taxi was already operating a successful ride-sharing business. V Taxi had a couple of hundred member-drivers, knowledge of the platform had spread far by word-of-mouth, and locals were becoming accustomed to the practice of booking taxi rides on their smartphones. It was the team of programmers who approached V Taxi for help. Their startup lacked the necessary resources and knowledge to develop and market their app, and so they asked V Taxi to join them in a strategic partnership. They even offered to sell the community an equity stake in the newly formed tech company.

While the leaders of V Taxi declined the offer to invest (because they couldn't raise enough funds), they agreed to enter into a strategic partnership with the startup, whereby V Taxi drivers would provide their skills and knowledge in exchange for being granted a preferential status over other drivers on the platform once it was up and running. The team members installed the app and actively promoted it to their customers. The leaders of V Taxi met with the programmers and provided insights,

based on decades of accumulated knowledge, that were used to improve the design and functioning of the app. V Taxi members even came up with the idea of renaming the app “Kuaidi.” As one driver recalled, “At that time Didi’s rapid growth was already making news in Beijing. So, we thought why not call our app ‘Kuaidi,’ to suggest we are even faster than Didi (*Kuai* 快, means fast in Chinese).” The founders of Kuaidi were keenly aware of how much V Taxi was contributing to their cause. Every time V Taxi held group gathering, the founders of Kuaidi would attend and pay for all the food and drinks.

This community/business partnership would however prove short-lived. In its series A fundraising, Kuaidi successfully courted a massive 10-million-dollar investment from Alibaba and Matrix Partners. No sooner than the money had traded hands, Kuaidi terminated its relationship with V Taxi and reneged on its part of the deal. Shortly thereafter, Jiang Ye, V Taxi’s founder, was poached by Didi, who hired him on as a corporate manager. After V Taxi’s networks and knowledge were capitalized, the community was left to operate without its founder and without a privileged place on Kuaidi’s platform. As one V Taxi leader put it, “The donkey was slaughtered the moment it left the millstone (*Xiemoshualu*; 卸磨杀驴).”

### *Disruption as Re-Configuration of Boundaries*

Disruption is not just a process of restructuring old socio-technological systems; it is also a process of re-defining boundaries. Not only are actors outside of the old systems brought in, and actors inside forced out, but the very boundaries of belonging are fundamentally changed.

A significant part of the platform disruption has involved opening technological systems to society. Instead of internalizing labor relations as traditional corporations so often do, digital platforms contract armies of decentralized, temporary, and on demand laborers. These laborers, by definition,

are not already “inside” of the system. They are only connected to the system the moment they turn on the app; and they are only contracted by the platform the moment a ride is hailed (such as on Uber) or a task is performed (such as on Amazon Mechanical Turk). Given this set-up, the boundary between the social and technical became extremely porous if not non-existent.

Therefore, I argue that the rise of platforms can be seen, on one hand, as the technological black box extending its control to broader society. Platform companies use their technologies to connect instantly to a large pool of laborers and users, from whom they collect data and influence their actions through optimizing algorithms. But on the other hand, the platform revolution can also be understood as society becoming part of the black box. This idea can be best exemplified by the bilateral interactions between hacker-drivers and the ride-hailing platforms. In one direction, hacker-drivers are being controlled by the platforms through constant GPS tracing and feedback loop. But in the other direction, they and their collaborators shape the platform technologies, like a team of external engineers. As they upgrade their hacking software and devise new hacking techniques, the platforms have to patch up the holes and improve their systems accordingly.

This bilateralism suggests that scholars need not try to open the black box from the inside. In his article “Upon Opening the Blackbox and Finding Nothing,” Langon Winner criticized the persistent tendency in science and technology studies to look for the internal process of production.<sup>8</sup> This obsession, I think, is largely predicated upon the rather arbitrary boundary between the social and the technical. If we are interested in finding the social inside of labs and corporations, we should be equally fascinated by studying the technical in communities of ordinary users and producers. As I show, digital platforms, in particular, provide new opportunities to do so.

*Disruption is Speculation*

Finally, I showed in my dissertation that disruption is closely intertwined with speculation. When Christensen and Bower coined the concept of “disruptive technology” in the mid-1990s, they imagined disruption as a linear process by which inventors first created “new and raw technologies,” and then entrepreneurs, at some indeterminate point in the future, found novel ways of introducing them into the market, thereby causing industry-wide disruption.<sup>9</sup> But from the vantage of the present, this sequential process is no longer the norm. Increasingly often, entrepreneurs develop “disruptive technologies-in-potential,” and have wild imaginations about how they might be used to revolutionize industries. They then sell their visions to investors, who bet on the possibility of hitting the jackpot. With a massive capital infusion, a handful of technologies do realize their imagined disruptive potential. But far more often than not, they prove technologically infeasible, impractical, or simply unnecessary.

Perhaps the most shocking example of speculative disruption was the case of the Silicon Valley healthcare start-up Theranos. Founded in 2003 by a 19-year-old Stanford University drop-out, Elizabeth Holmes, the company claimed to be developing a revolutionary medical technology that could use just a few drops of blood to run a battery of diagnostic tests. By 2015, the company was evaluated at 9 billion USD, and won the support of iconic figures such as Rupert Murdoch and General James Mattis. Holmes was named as the wealthiest self-made female billionaire, and many heralded her as the next Steve Jobs. But eventually the bubble burst. As was revealed in the best-selling book, *Bad Blood*, this billion-dollar venture was a house of cards, held together by the forces of speculation and a societal obsession with disruption.<sup>10</sup> And when the knowledge that the scientific claims of the technology were fraudulent, the house came tumbling down.

Although the collapse of Theranos is now regularly invoked as a cautionary tale, the model of disruption it represents, with the technological imaginary preceding the technological reality, remains a norm in Silicon Valley (and increasingly other tech markets around the world). Instead of selling

technologies, entrepreneurs today sell potential. To see how this is still taking place in real-time, one needs to look no further than the current boom in Artificial Intelligence and its subsidiary industries. Despite the fact that many scientists have warned us time and again that we are nowhere close to a breakthrough to Artificial General Intelligence (machines with human-level intelligence), a whole cottage industry of corporations, thinktanks, and academic institutions (many based in world class universities) have managed to capitalize on people's imagination and fear of AI.

Returning to the ride-hailing industry in China, we can also clearly see that the growth of the industry has been driven by visions of revolution rather than sensible judgments of market demand. This lesson was illustrated to me most clearly by the case of Yidao Yongche (易到用车), the first digitally-mediated commercial transportation platform in China. Before Uber entered Chinese markets, and Didi and Kuaidi merged into a mega-platform, Yidao was the most promising contender for the ride-hailing throne. Founded by the serial entrepreneur, Zhou Hang, Yidao was (like Uber in its earliest incarnation) a well-respected black car service that emphasized quality and professionalism.<sup>11</sup> However, unlike Uber, Yidao made the conscious decision to remain a luxury service provider, even after domestic firms like Didi and Kuaidi made the move to the mass-market.

Zhou Hang, the founder of Yidao, is a loyal disciple of Mao Yushi (a prominent Chinese liberal economist) and a living, breathing homo-economicus.<sup>12</sup> One afternoon over lunch, Zhou said to me, "What [Didi and Uber] did was pure speculation. From a rational business perspective, it did not make any sense." Zhou went on to explain that on the basis of "rational calculation," mass market ridehailing could never be profitable in China. If one just added up all the baseline costs, such as the minimum wages for drivers, the cost of cars, and the price of insurance, one would clearly see that the price of on-demand services could never beat that of traditional taxis.

I had no reason to doubt Zhou's calculation. Taxi services in China are incredibly cheap, partly because taxi companies use low-end sedans that are purchased wholesale from manufacturers, and

partly because they receive significant government subsidies for gasoline. Ride-hailing companies, on the other hand, operated more expensive cars, charged lower fares, and received no checks from the municipal governments. From a rational perspective, the basic economics of ride-hailing were flawed.

But as it turned out, this classical “rationality” would cost Zhou Hang the opportunity of a lifetime. By 2016, he finally realized that the industry had been overtaken by a new Silicon Valley logic: get huge first and worry about making money later. Zhou tried to enter the sphere by courting financial investment from LeEco and using it to fight in the subsidy war being waged between Uber and Kuaidi.<sup>13</sup> But it was already too late. Yidao had become irrelevant.



**Figure 6.5.** Attending Yidao Press Conference of launching mass market ride-hailing service, 2016. Mr. Zhou Hang was in the middle.

The thought process of Mr. Zhou Hang stood in sharp contrast to that of Uber managers; the latter understood perfectly the importance of harnessing a collective imaginary to drive technological disruption. They also understood that speculation is an indispensable part of the game. In *The General*

*Theory of Employment, Interest and Money*, John Maynard Keynes talked about a type of “instability” that lies at the heart of capitalist activities. “There is the instability due to the characteristic of human nature,” he said, “that a large proportion of our positive activities depend on spontaneous optimism rather than mathematical expectations, whether moral or hedonistic or economic. He defined such unfounded positivity as “a spontaneous urge to action rather than inaction, and not as the outcome of a weighted average of quantitative benefits multiplied by quantitative probabilities.”<sup>14</sup>

Technological disruption is, in my view, an orchestrated and collective manifestation of optimism about technology’s infinite capacity to transform society. Such ideas can be traced directly back to the Silicon Valley of the early 2000s, while the origins of these ideas have much deeper roots still. But recently, we also see something new. Techno-utopian imaginaries are being co-produced by actors from all walks of life, from policymakers, to scholars, to workers, to the most ordinary of citizens who are just trying to keep abreast of the changing times. These imaginaries have real impact. They lead to the mass reallocation of resources towards the development of digital technologies. As a result, we have begun to experience ceaseless waves of technological disruption, one cresting right after another. And all the parties involved, waiting with fingers crossed, hoping that they too will benefit from the economic and social changes brought on by disruption.

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- <sup>1</sup> *Zhongguojingjiwang* 2014.
- <sup>2</sup> Kirby et al. 2016.
- <sup>3</sup> Picture was photographed by Su Xiaoyuan, Chinese Radio Seattle and retrieved from *Xinlangkeji* 2015.
- <sup>4</sup> Kirby et al. 2016b.
- <sup>5</sup> Harvey 2004, 2007.
- <sup>6</sup> Elyachar 2005; Ferguson 2005; Tsing 2004.
- <sup>7</sup> Elyachar 2005.
- <sup>8</sup> Winner 1993.
- <sup>9</sup> Bower and Christensen 1995.
- <sup>10</sup> Carreyrou 2018.
- <sup>11</sup> “About Yidao,” retrieved May 10, 2020, <https://www.yongche.com/cms/page/v10/aboutUs.html>.
- <sup>12</sup> Mr. Zhou Hang is a studious student and passionate supporter of neo-classic economics. He is closely associated with an academic association of neo-classical economists, in which Economist Mao Yushi was revered as the authority.
- <sup>13</sup> Ho 2015.
- <sup>14</sup> Keynes 1957[1936], vii.

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