

THE ASCENT OF DIGITAL TECHNOLOGY IN CHINA 数码科技在中国的延伸

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Received: from Peking by unika1; Sun, 20 Sep 87 16:55 (MET dst)
Date: Mon, 14 Sep 87 21:07 China Time
From: Mail Administration for China <MAIL@ze1>
To: Zorn@germany, Rotert@germany, Wacker@germany, Finken@unika1
CC: lhl@parmesan.wisc.edu, farber@udel.edu,
jennings%irlean.bitnet@germany, cic%relay.cs.net@germany, Wang@ze1,
RZLI@ze1
Subject: First Electronic Mail from China to Germany

"Ueber die Grosse Mauer erreichen wie alle Ecken der Welt"

"Across the Great Wall we can reach every corner in the world"

Dies ist die erste ELECTRONIC MAIL, die von China aus ueber Rechnerkopplung in die internationalen Wissenschaftsnetze geschickt wird.

This is the first ELECTRONIC MAIL supposed to be sent from China into the international scientific networks via computer interconnection between Beijing and Karlsruhe, West Germany (using CSNET/PMDF BS2000 Version).

University of Karlsruhe	Institute for Computer Application of
-Informatik Rechnerabteilung-	State Commission of Machine Industry
(IRA)	(ICA)
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Hans Lackner	Zhu Jiang
	Zhao Li Hua

CHINA'S FIRST EMAIL.

On September 14, 1987, scientists from China and Germany together, sent China's first email entitled "Across the Great Wall, we can reach every corner in the world." The email was received in Germany six days later, on September 20.

THE ASCENT OF DIGITAL TECHNOLOGY IN CHINA

数码科技在中国的延伸 | Clément Renaud

Over the last few decades, the harsh international competition between nations for technological domination has shifted towards digital technology. This global rivalry has largely contributed to framing technology in China as a direct continuity of the Chinese state. Discourse around the Internet in China—the so-called “*Chinese Internet*”—has been fueled by techno-nationalisms both in and outside of China, enhancing the need for nation-states to reassert their power in the face of increasingly complex production and communication networks.

Historical references and analogy (such as the Great Wall) have been present since the early days of the Internet in China, and provided a historical anchor for national claims over computer networks. Digital technology has often been renamed after Deng’s socialism epithet, the famous “*with Chinese characteristics*.” This self-reinforcing narrative of digital China’s otherness pleased both the Chinese and non-Chinese sides, as it offered a comfortable frame of reference for national or regional issues.

To consider the world of technology as competing sides fails to address the most important underlying issues and questions we are facing. We need to understand how digital technology operates and contributes to our world’s current changes—both within China and elsewhere. The prevalence of a national frame of reference helps support scientific and business claims but prevents us from exploring more precisely the political and societal negotiations expressed in successive technical decisions that created digital technology in China, and their relevance to our world as a whole.

In this chapter, I will present an overview of some important moments in the history of digital technology in China. The construction of China’s digital edifice has involved a complex set of local, national and international actors, fueled by various ambitions. The present text aims at observing these dynamics and exposing their diversity within and outside of the country.

Oct. 14, 1952

L. YUTANG

2,613,795

CHINESE TYPEWRITER

Filed April 17, 1946

17 Sheets-Sheet 1

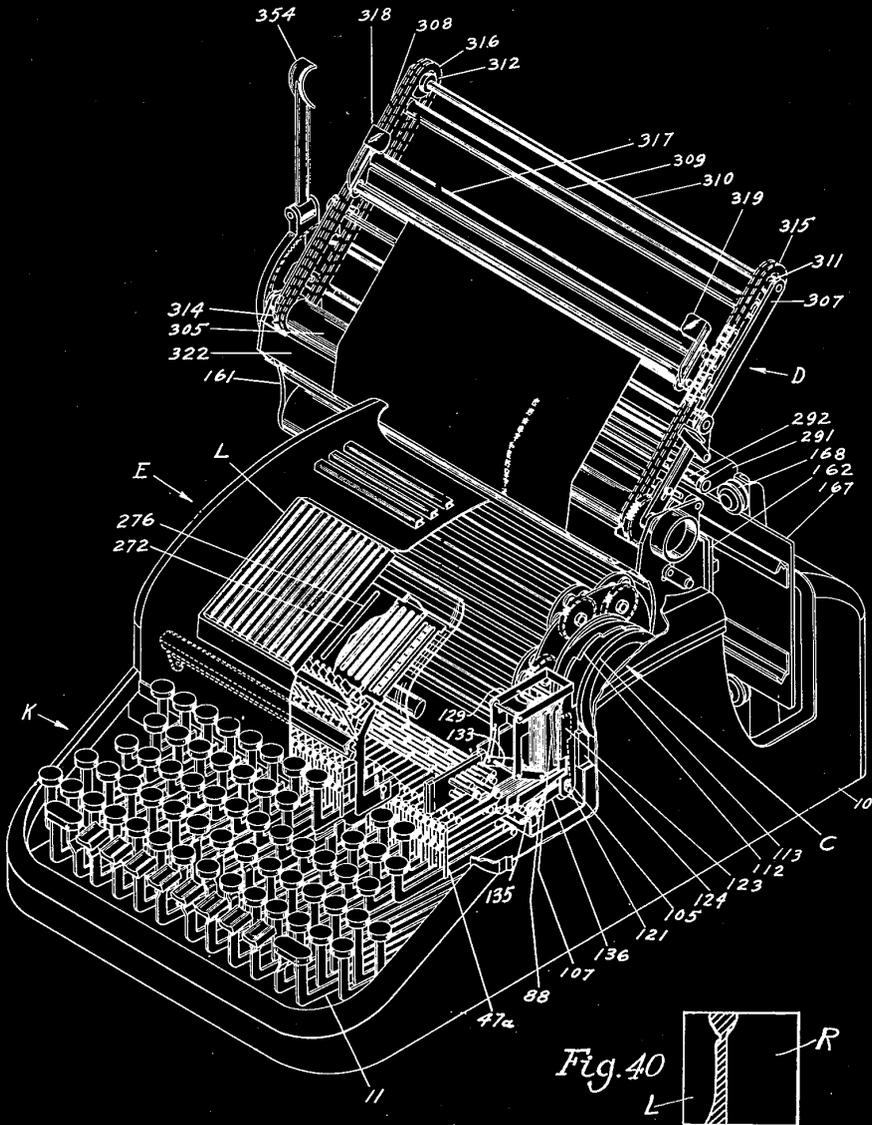


Fig. 1.



Inventor

LIN YUTANG

MING KWAI CHINESE TYPEWRITER.

Throughout the 19th and 20th centuries, the Chinese language was considered cumbersome and unfit for the expression of modern ideas by many reformers both in China and abroad. The global expansion of the Remington ignited fervent discussion on the necessity to romanize it. Patented in 1952, the Ming Kwai (明快, *mingkuai*, literally "clear and fast") was the first typewriter that allowed the retrieval of 8352 Chinese characters from the input of a compact keyboard (Mullaney 2017).

THE GLOBAL RACE TOWARDS INNOVATION

In the global technological race, the rush towards “innovation” seems to have replaced the previous quest for “progress”. Today, the concept of innovation acts as a catalyst for the political ambition of outperforming the neighbors.¹ Vast public and private investment programs aim at building organizations to capture markets defined by scientific and business strategies, where newness and invention are pursued as technological achievements, often at the expense of social improvements.

Digital technology, framed as a major engine of innovation, is usually received by two opposing and complementary views: the utopian and the dystopian, claiming either redemption or damnation by means of technology. This tension is omnipresent in most discourse around digital technology in China with the canonical example of *Alipay* being alternatively introduced as a futuristic and desirable mobile payment system or an Orwellian “social credit score” system enabling mass surveillance.

More than debunking one or the other, to consider digital technology in China requires framing it as a part of the country’s experience over the last several decades. The lives of hundreds of millions of people have been radically transformed over this period, partly by massive relocation movements from the countryside to megacities. The incredible diversity of these experiences provides the historical, political and daily context of where digital technology occurs in China, simultaneously locally and with numerous consequences across our planet.

To say it another way, technology exists—in China and elsewhere—not as a standalone set of tools but as an integral part of our daily lives and as a direct product of political and societal settings (Feenberg 1991). The history of technology is not a succession of innovations or inventions, but the long unfolding of evolving uses and solutions that societies create (Edgerton 1999). The inheritance of centuries of practices, technology exists as a complex form of human memory (Leroi-Gourhan 1964) and therefore should be understood outside of any possible national boundaries. More than anything, technology and its artifacts emerged from the entanglements and encounters of existence, a process sometimes described as “*creolisation*” (Nova & Vacheron 2015).

IS INTERNET IN CHINA REALLY DIFFERENT?

Arguably, the most important learning from China is that digital technology should not simply be considered as a communication tool (the “media”), nor as an infrastructure, but more as a new writing and control capacity. This control capacity exists not as a monolithic, top-down and unified force, but as a negotiation between numerous actors (governmental bodies, investors, private companies, manufacturers, end users, etc.) to distribute and delegate power across a vast network. In other words, writing at scale allows the creation of a

¹ This trend culminates in global rankings such as the Global Innovation Index published by the WIPO and used to evaluate throughputs and outcomes of national policies.



SEAGATE HARD DISK IN WUXI, JIANGSU.
Workers at Seagate's Wuxi Factory perform final testing and quality assurance on its 2.5-inch notebook drives before sending them off to customers.

deep and previously unknown administrative structure that has the particularity in China of explicitly matching part of the existing political organigram. For instance, the Cyberspace Administration of China—the country’s central Internet regulatory agency—answers directly to the Central Cyberspace Affairs Commission, which is headed by the CCP’s General Secretary and President of China, assisted in this task by his Premier.

Beyond this formal administrative structure, the Internet in China—and elsewhere—evolved from the daily proximity and contradictions between state administrators, companies, technicians, users, etc. Sadly, the lack of a comprehensive approach across disciplines in English-speaking scientific literature (Herold & de Seta 2015) has produced mostly caricatural narratives about the Internet in China, it being a force for either democratization or totalitarian control—as well as a splendid marketing tool.

Debating the Internet in China has long provided a safe framework for critics, scientists and editorialists to demonstrate how the Internet could “go bad,” while preserving enthusiasm about their own technological condition—and their own sales plans. Recently though, the dystopian tone solely used to describe digital technology in China has gained momentum across other areas of discussion, bringing new perspectives on the Chinese example. To make things easier, we could date this shift in perception to June 6, 2013, when Edward Snowden published his revelations on the surveillance practices of several US government offices. Occurring in Hong Kong, the “*Snowden moment*” shed light on unknown administrative mechanisms and structures of digital networks, revealing the extent of control wielded by the US government over them. As a direct consequence, it provided a great opportunity for editorialists in China to reassert their national claims over the Internet.²

The governability of digital systems has been a longstanding concern of nation-states, and remains a top priority today—especially in the recent wake of claims around election manipulation. Upon its inception, the Internet was considered a threat to sovereignty as states were unfit to regulate “borderless” networks (Wu 1997). Even its most fervent defenders introduced cyberspace as a “competing sovereign” (Lessig 1998), culminating in the publication of Barlow’s *Declaration of Independence of Cyberspace* in 1996 to counter the US National Telecommunications Act. While regulatory frameworks were gradually becoming clearer, a growing number of figures emerging from the “hacker generation” rose to important political positions, exacerbating the importance for nations and governments to transition into platforms (O’Reilly 2011).

These slowly spreading considerations were accelerated by the “Snowden moment,” leading to a worldwide shift in many governments’ tones. The Wuzhen Declaration and the speech by China’s president Xi Jinping on December 6, 2015,

² The *People’s Daily* published on June 23, 2014, an editorial entitled *Cyber Sovereignty, A Question Difficult to Avoid* (网络主权, 一个不容回避的议题)

Tsang-Kie: inventeur des caractères chinois



TOP: Cangjie (Chinese: 倉頡) is a legendary figure in ancient China (c. 2650 BCE), who claimed to be an official historian of the Yellow Emperor and the inventor of Chinese characters. Legend has it he had four eyes, and when he invented the characters the deities and ghosts cried and the sky rained millet.

BOTTOM: The Cangjie Input method was invented in 1976 for inputting Chinese characters on a standard keyboard.

urging countries to reassert their “cyber sovereignty” made a few converts, with this Chinese concept finding its way up to the EU commission.³ While the existence of pirates as a common enemy was instrumental in the creation of peace in Westphalia,⁴ the consolidation of digital technology around national defenses also required the threat of pirates and hackers—such as Snowden. Here, China does not appear as an outlying, insulated player in its country-wide network, but as a seductive model for nation-states feeling threatened.

RECONSIDER DIGITAL TECHNOLOGY

Before going any further, we need to address the question of what we mean by *digital technology*. More than just another human tool, we envision digital technology as a direct continuation of the history of writing. Technically, processes such as photolithography on semiconducting materials inherits directly from successive generations of writing machines (lithography, micro-photography and other printing processes). Socially and economically, practices and organizations in human societies have undergone tremendous transformation since the apparition of digital writing, with radical changes in key sectors such as scientific research or accounting. Politically, it appears that many of the power structures observable in the digital world present similarities with past traditions of writing (Guichard 2017).

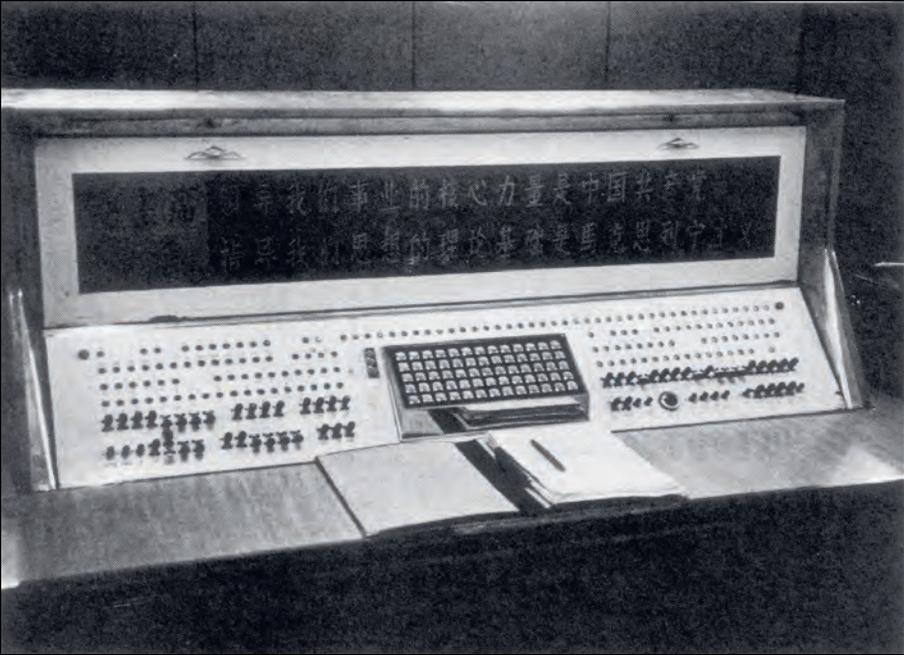
Writing is more than merely a tool for territorial and resource management. Goody (1977) has shown how alphabetization was a transformative experience of the mind—creating a new framework with which to visually and logically order thoughts. In many regards, new writing technologies transform the way we think—and the way thinking is regulated. During successive Chinese empires, characters, measurement systems, maps and virtually all writing systems were used to standardize practices and unify the Chinese territory. The current official history in the PRC dates the birth of China to the inception of the Yellow Emperor, whose first action after seizing power was to ask a famous scholar to create a new writing system to unify the territory. In the *Analects*, Confucius explains to his disciple that the first thing a new ruler coming into power should do is to “rectify words”.⁵

The early use of the Chinese printing press also greatly facilitated the compilation of studying materials for Imperial examinations. The circulation of these texts was an important political concern, and a stepping stone for the emergence of a gigantic bureaucracy under the rule of the Mandarins. Mao Zedong himself understood this very well, making his *Little Red Book* one of the most circulated books in the world with an estimated billion copies in circulation.

3 See, for instance, the report *Towards a European Digital Sovereignty Policy* published in 2019 by the Section for European and International Affairs (ESEC).

4 For more about pirates as *hostis humani generis*, see the excellent *Mercenaries, Pirates, and Sovereigns: State-Building and Extraterritorial Violence in Early Modern Europe* by Janice E. Thomson (1994)

5 “必也正名乎” — “Tsze-lu said, ‘The ruler of Wei has been waiting for you, in order for you to administer the government. What will you consider the first thing to be done?’—The Master replied, ‘What is necessary is to rectify names.’” in *Confucius Analects*—13.3 (James Legge, trans.)



CONSOLE OF THE 109C AT THE PEKING INSTITUTE OF COMPUTING TECHNOLOGY.
The Chinese inscription is a quotation from Chairman Mao (Science 1973).

In many regards, digital technology in contemporary China emerged from the need to rebuild a new form of bureaucracy. Like in Imperial times, the digital writing system regulates different spheres of public and private life by providing an infrastructure for territorial administration.

For the Chinese Communist Party (CCP) who seized power after the Second World War, rebuilding the country was not only an economic endeavor but also a grandstanding mission to reinvent China. Therefore, a new set of writing tools were needed. The Chinese language was reformed and simplified, with vast literacy campaigns conducted across the population. The goal was not only to teach the people to read but also to increase the political outreach of official statements, which gradually evolved to claim a continuation of the ancient Chinese civilization (*wenming*).⁶ It was no surprise then, that the formidable writing capacity unleashed by digital technology was to become a major vector of the country's political and societal transformations—as well as partially reproducing Imperial power and knowledge structures.

THE NEW *LITERATI*: THE DREAM OF THE RED ENGINEERS

At the end of the 1970s, the Cultural Revolution had left the country benighted. Research centers and universities had been closed for a decade, and the Chinese Academy of Sciences (CAS), the heritage of the Soviet Academy of Sciences, was a small and powerless institution. On March 18, 1978, Deng Xiaoping, leading the vast Reform & Opening plan, announced in front of more than 6,000 scientists freshly returned from the countryside, that science and technology were now considered at the forefront of China's reconstruction. Deng's new doctrine of "*socialism with Chinese characteristics*" was based on an interpretation of Proudhon's "*scientific socialism*." Therefore, Chinese governance should rely on comprehensive scientific—instead of ideological—reasoning.

While Mao or Deng's experience was mostly with the military in the People's Liberation Army, rebuilding the country required different skills. Hundreds of thousands of engineers would have to build roads, bridges, ports and cities for the whole country over the following decades. Called the "Red Engineers" (Andreas 2009)—in contrast to the experts and political agitators of the Cultural Revolution—this new generation pursued higher education in science and technology.

Chinese engineers rapidly grasped the importance of computers. From the new possibilities of information storage and computation to nationwide distribution networks, the potential of the computer was virtually unlimited. In 1989, Jiang Zemin was named General Secretary of the CCP and would soon become China's president, and the first engineer to ever hold this position. Having studied electrical engineering during the Japanese occupation, he understood the

⁶ In Chinese, *wen* (文) means writings and literacy. Civilization is often translated as *wenming* (文明), a word that can be understood as *light of writings* or *to be enlightened by literacy*.



INFORMATION HIGHWAYS AND GOLDEN PROJECTS.

In parallel to the US, another main communication megastructure was developing - in China.

importance of telecommunication networks for the country.⁷ Early on, he visited US facilities in Silicon Valley and decided to send his own son Jiang Mianheng, who would become one of the leading figures of the early Internet in China, to the mythical Xerox PARC.

THE FARMER AND THE ENGINEER: TO BUILD AND CONNECT A CHINESE COMPUTER

Even during the Cultural Revolution, computers were already part of the country's development effort. A group of American computer scientists visiting China in the 70s were surprised to find a production chain of computers:

“The factory that previously produced handles for doors and windows, with housewives as workers, was reorganized in cooperation with the Shanghai Computing Research Institute in order to produce an integrated circuit digital computer. In all of our discussions, the Chinese referred to the factory as “the window handle factory”, and it was pointed out that most of the 90 employees in its electronic workshops were the same housewives who had been there during the handle days.” (Cheatham et al. 1973)

On September 20, 1987, Chinese and German teams managed to establish an X.25 connection in order to send the first email from China. The message was entitled “*First Electronic Mail from China to Germany*” and had for content “*Across the Great Wall we can reach every corner in the world.*” A few months later, the Taiwanese contract manufacturer Hon Hai Precision Industry Company Ltd opened its first plant in the Shenzhen Special Economic Zone to produce joysticks for Atari video game consoles. The company (later known as Foxconn Electronics) would become one of the largest employers in the world—employing one million workers in 2015—and the plant one of the largest as well—housing more than 200,000 workers. Meanwhile the city of Shenzhen, first designed as a pilot for China's early experiments with capitalism, would transform from a small border town into a global technological center.

In 1991, just a few years after that first email, the Clinton administration launched its *Information Highways* program. The Chinese administration quickly followed in 1992, with the launch of a dozen major initiatives known as *Golden Projects* to build communication infrastructures across the country (Lovelock et al. 1996). While the most famous is the Golden Shield—nicknamed the *Great Firewall of China* by Californian editorialists (Ye & Sang 1997), the Golden Projects covered multiple aspects of the country's administration: customs, banking, taxes, reporting of public spending, etc. Like the *Information Highways* for the US, this comprehensive investment plan laid out the blueprints for China's digital world as we now know it.

⁷ “The electronics industry plays an extremely significant role in modernization, and we should place great emphasis on its development and progressively use electronic technology in all sectors of the national economy.” (September 11, 1983; p. 73)—in Zemin, Jiang. 2010. *On the Development of China's Information Technology Industry*. Singapore: Academic Press.



TENCENT QQ.

In 2014, *Tencent QQ* had more than 800 million active accounts. More than just a messaging tool, the application includes games, blogs, online avatars and many services that became a central part of daily life on the Internet in China.

A PUBLIC INFRASTRUCTURE OF WRITING

As shown by Ang (2018), local bureaucracy in China has developed as an adaptive system, where large master plans encounter unplanned events, and tactics inherited from the revolution were used to attract foreign investments, reform lands, etc. The Special Economic Zone of Shenzhen is a prime example of this dynamic. Originally designed as a model city and a zone for experiments, it quickly became an Eldorado for those willing to reap the benefits of China's recent opening. Millions of Chinese workers relocated to the SEZ, where a new *dagong* lifestyle emerged around factories and spread across China (Florence 2017). This lifestyle was associated with the hi-tech image of the electronics the city produced. A prototype of a larger societal and economic project, Shenzhen was hi-tech since its inception and would continue to stand at the crossroads of the country's urban and digital transformation.

China's urban population has gone from slightly over 100 million to more than 800 million people⁸ at the time of writing. Looking at these incredible numbers, it can be argued that one of the major factors of Internet adoption in China was the need for people arriving in new cities to stay in touch with their families and friends at home. Until recently, the mobile phone was known as the "first urban purchase" for rural migrants arriving in a Chinese city (Wallis 2013). What better opportunity for Internet companies than hundreds of millions of people on the move who need to communicate? From apps to cable laying, many of the companies that emerged around the Internet in China have relied on tasks usually associated with infrastructure building (Plantin & De Seta 2019).

Tencent offers an interesting case of the interrelation between urban and digital development in China. At a time where intercity phone calls were still relatively expensive on the mainland, the company began providing a messaging service called QQ that allowed for text and call chat online. Based in Shenzhen, it quickly grew to reach hundreds of millions of users, expanding to include a blogging platform, online avatars, and even a digital currency in 2005—the year Facebook officially launched. With the arrival of mobile technologies, a new application called *WeChat* was created as a side project that eventually became a central piece in almost every aspect of digital personal and professional life in China, with chat, apps, payment and booking systems, etc.

Alibaba, another famous company, has taken up the task of facilitating commerce across China with digital technology. Originally known as the first digital company in China to attract substantial foreign investment, it arrived at a time when it was still difficult to source, buy and sell products outside of a few major cities in China. Alibaba took up the role of intermediary between factories, resellers and consumers, building the spine of China's logistics and distribution network. Moreover, the Chinese population was discovering consumption after years without private property. Online marketing and

8 Estimation by the World Bank, 2018.



CYBER CAFES, CHINA.

Before mobile connectivity, cyber cafes (*wangba*, 网吧) were the most important venue for Internet access in China's urban and rural communities. Reports from the China Internet Network Information Center estimate more than 400 million people accessed the Internet from cyber-cafes between 2006 and 2010.

sales played an important role in training Chinese city newcomers to consume in the urban environment by delivering advertisements and goods closer to them.

Interestingly, both companies evolved to provide digital payment services. In China, the relatively low penetration of credit and debit cards allowed them to address cash management directly with their own Internet-based solutions. More than just profitable “start-ups,” their mission was understood as part of a larger—national—agenda of development: to provide access to banking and cash facilities to the majority of the population. China’s regulators supported these companies with national policies, and in return outsourced tasks such as data collection to their care.⁹

To some extent, these companies can be perceived as public service providers for the country. Compared to Western counterparts that have often focused on middle-class urban users, Chinese big tech companies serve a billion highly diverse people, from farmers in remote mountains to the highest spheres of China’s urban elite.

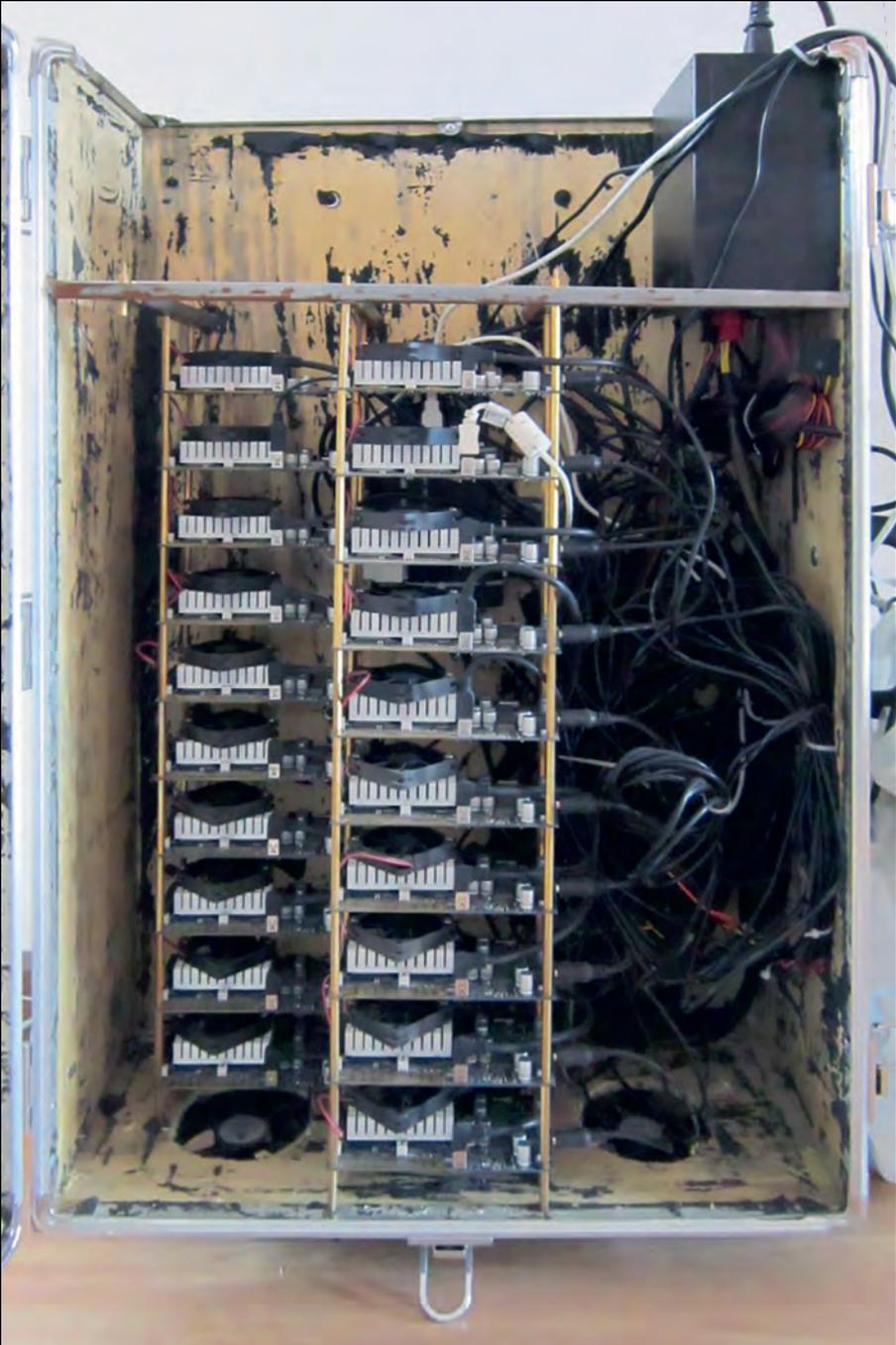
Supporting versatile life experiences, Chinese Internet companies provide infrastructure, capital and occasionally high-profile role models—like Jack Ma from Alibaba or Pony Ma from Tencent. Their services have become not only a daily habit but an important constituent of social stability. As builders of the key infrastructures of a new Chinese society, they operate not only closer to the government but as an integral part of the country’s administration—even though they may have been privately structured. The exclusion of US Internet players such as Facebook or Google, often presented as censorship or economic protectionism, could also be considered as a way to build and retain a national infrastructure of services.

THE ADMINISTRATION OF CONTROL

The integration of these diversified private companies into the core competencies of public institutions somehow contradicts the image of digital technology in China as a centralized government. Companies, as providers of advanced writing and logging systems, have mandates—either solicited or imposed—to perform tasks for public service. For instance, Alibaba now operates online semi-autonomous tribunals to settle the numerous conflicts that arise during payment litigations and fraudulent activities on its own platforms. Case instruction processes are automated, and hearings are handled by sworn judges via remote video calls.

In many regards, the build-up of China’s legal and administrative system is happening in the digital age. Compared to centuries of jurisprudence in the US or Europe, the PRC’s legal system is relatively new, with concepts imported from traditions as different as Germanic-style civil law, socialist law and

⁹ For instance, by instituting a mandatory clearance by a state institution. See Wildau, Gabriel. 2017. “China Targets Mobile Payments Oligopoly with Clearing Mandate.” *Financial Times*, August 9, 2017.



BITCOIN MINING FARM PROTOTYPE, BEIJING, CHINA.
The first "baby mining farm" built in a suitcase of 20 stacked FPGAs in an apartment in Haidian district, Beijing, in 2012.

Chinese Imperial law. To cope with the lack of extended jurisprudence, the administration is relying more and more on the vast amounts of data produced by the population, via tech companies or the administration itself.¹⁰ The integration of data into a national infrastructure allows the Chinese government to create new bureaucratic solutions to regulate its territory—partly realizing Lessig’s claims that *Code is Law*.

An interesting example can be found in banking regulation. Chinese people have traditionally accessed credit through their family and social networks—through *tontines* and shadow banking. Recently, banking and social networks have merged, giving rise to a P2P lending sector where individuals lend money to each other through mobile messaging apps such as Alibaba’s Alipay. To face the fast-growing issues of insolvency and bankruptcy, the government tasked Alibaba to create a score that linked credit history data with user accounts in order to make sure people were solvent and insurable. Inspired by its Anglo-Saxon equivalent, Alibaba’s *Sesame Credit* is meant to recreate a buyer–seller or buyer–lender trust and verification system. It is based not only on credit history, but also on payments, previous litigations and in-app social relationships. Poor rates can lead to being “blacklisted” which can go as far as blocking the user’s access to his bank account, or reporting them to the police in cases of recurrent fraud.

Beyond the quest for efficiency via automation stands the larger project of building a technological system able to transform not only society but each individual. Social apps and websites exist in this process as major instruments to redefine not only practical abilities but also spaces of representations where new possibilities appear. Like the novels of 19th-century Europe, the new digital writing system aims at making humans more prolific and exemplary by spreading moral, behavioral and financial injunctions. While the in-app credit score is a prominent example in China, it echoes the case of millions of drivers, freelancers, shop owners and workers worldwide whose work increasingly depends on social platform rankings.

TOWARDS A GLOBAL WRITING SYSTEM

The emergence of a civil society in China has been supported by online discussions and campaigns (Yang 2003), and so did its control and regulation. Not only can regulators now access vast amounts of data for decision purposes, but they can also rely on digital interfaces to enforce these decisions. This integrative writing system offers a new level of control to the administrators. Navigating cities relies extensively on digital apps, from taxis, payments, video surveillance and even facial recognition, providing data to refine and enact new forms of statistics-based policies. Beyond smart city narratives, urban areas also act as a large data field that informs the rest of the country. While very large companies have emerged from China’s first wave of coastal urbanization, the country’s development towards inner and rural countryside is creating new

¹⁰ Several existing and planned applications were presented during the *World Artificial Intelligence Rule of Law Forum* (世界人工智能大会法治论坛) organized by the Shanghai Law Society in September 2019.



CHINESE NEW YEAR'S EVE CHOREOGRAPHY WITH 540 ROBOTS & 29 DRONES.
The Chinese New Year Gala is broadcast on Chinese TV every year. An integral part of the Chinese Spring festival experience, it is the most watched TV show in the world (eclipsing even the final of the World Cup). In 2016, 540 robots & 29 drones danced to the lyrics of a famous singer.

private operators. Firms like Pinduoduo have focused on third and fourth-tier cities, developing new links between local production and national reseller networks. Alibaba has also reinforced its *Taobao Villages* program to extend existing supply chains to rural areas via direct online sales towards the mainland and abroad. Once again, digital technology is used as a direct vector for the country's economic, industrial and administrative integration.

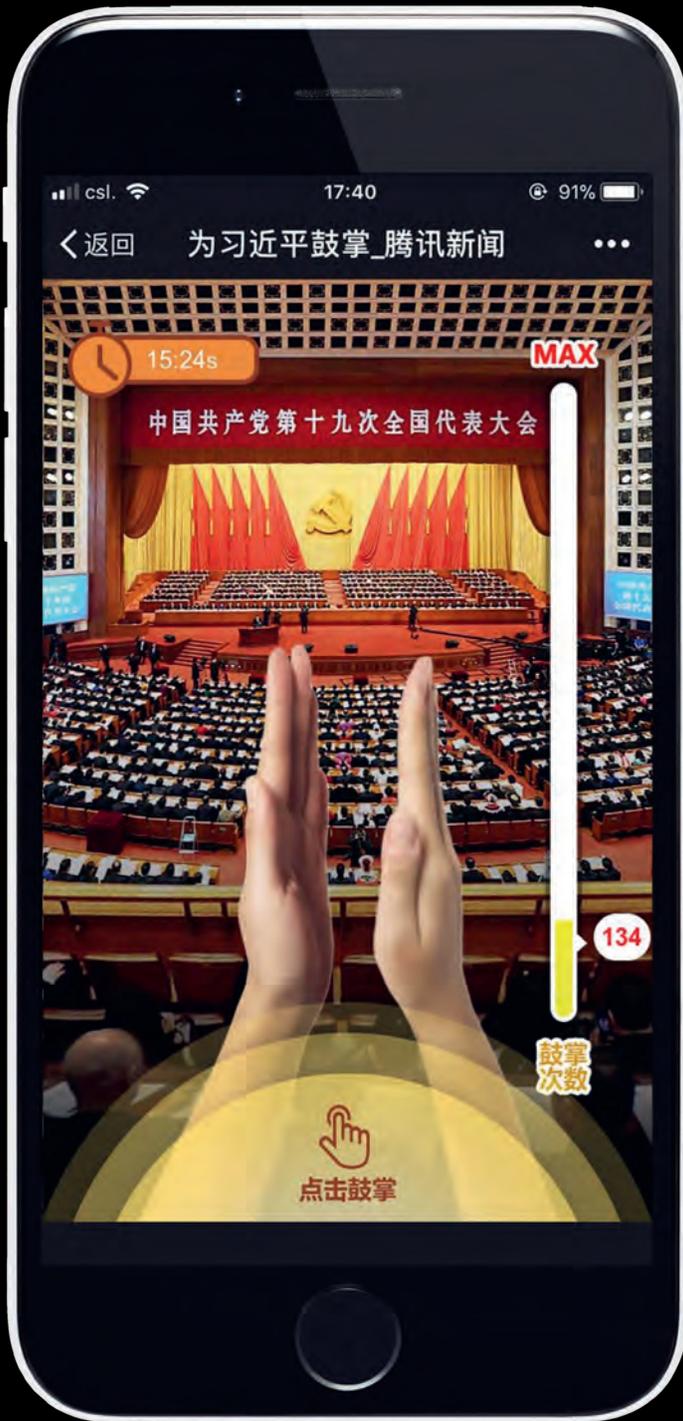
China's writing infrastructure has expanded far outside the country. The city of Shenzhen stands as the storefront¹¹ of vast investment programs facing towards the Middle East, Eastern Africa and Europe—such as the Belt and Road Initiative. For policy planners, the Shenzhen SEZ was originally designed as a working prototype of the (post) industrial city. Today, SEZs following this model have opened in different places around Africa and Southeast Asia. The whole Pearl River Delta region is being integrated into a single giant urban hub, bringing together tens of millions of people and the biggest industrial capacity on Earth, with heavy investments in sectors like robotics, genomics and energy. Such gigantic integrative dynamics rely not only on projections in time and space, but also on the extension of digital technologies to administer new domains of activities and life in a world of limited resources.

CONCLUSION

Technologies developed in China have now become central pieces of our global writing infrastructure. To understand their significance requires stepping back from national contexts and considering them as an expression of a common and planetary historical momentum, where the emergence of a new writing and control capacity coincides with major changes in natural ecosystems. The early framing of the Internet in China as a remote manifestation of technocratic hubris has contributed to recreating the traditional view of China as a self-centered and isolated area of the world. This discourse provided comfortable support for different economic and political interests in China and worldwide but has also prevented us from considering the important entanglements and similarities between writing systems worldwide.

With the dwindling of natural reserves and automation growing worldwide, digital networks are increasingly being used to regulate behaviors. These new written forms are redefining not only borders and boundaries, but generally regulating our relationships with our surroundings and environment. Beyond nation-states, our new conditions of existence require the building of new critical narratives, where the ascent of digital writing stands as a common endeavor.

¹¹ Shenzhen is home to some of the largest tech companies in China such as Huawei, Tencent, DJI or BGI.



CLAP FOR XI JINPING.

The application Clap for Xi Jinping (为习近平鼓掌) was released on October 18, 2017, by Tencent Media for the Chinese Communist Party's 19th National Congress. Users could watch the president's speech and had 19 seconds to tap the bottom of the screen as many times as possible to clap along. The game was played hundreds of millions of times just a few hours after its release.

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