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## **WeChat as Infrastructure: The Techno-Nationalist Shaping of Chinese Digital Platforms**

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In the current research on media and communication, Western internet companies (e.g., Google and Facebook) are typically described as digital platforms, yet these actors increasingly rely on infrastructural properties to expand and maintain their market power. Through the case study of the Chinese social media application, WeChat, we argue that WeChat is an example of a non-Western digital media service that owes its success first to its platformization and then to the infrastructuralization of its platform model. Moreover, our findings showed that the infrastructuralization of the WeChat platform model in China is shaped by markedly techno-nationalist media regulations and an increasingly overt cyber-sovereignty agenda. Drawing on the results of the analysis of technical documentation, business reports, as well as observations and interviews, we first present WeChat as both a platform and an infrastructure, and then we contextualize WeChat in the history of ICT infrastructure and the development of the internet in China. Finally, we analyze the specific role of the WeChat Pay service in establishing a new monetary transaction standard. We conclude by inquiring whether this emerging techno-nationalist model could be a plausible platform regulation in the future.

**Keywords:** China, e-commerce, infrastructure, internet, platform, regulation, social media, techno-nationalism, Tencent, WeChat

### **Introduction: One Billion Users**

In December 2016, Difan lost her smartphone: after walking away from the Shanghai Bund, the 25-year old DJ realized the device was no longer in her coat pocket. Perhaps she had dropped it somewhere, perhaps it was pickpocketed while she was walking through the throngs of people shuffling around the waterfront. As she recounted a few days later, this experience made her suddenly realize how important the smartphone had become in her life. Specifically, the issue was that she had suddenly lost access to one app: WeChat. According to Difan,

All of a sudden, I had no way of contacting my friends to tell them what happened. My parents freaked out because I was outside, and they couldn't reach me by phone, and I was not replying to their messages on WeChat. I could only call them hours later when I managed to borrow a phone from a friend. And I didn't have much cash with me because I usually pay stuff with WeChat Pay, so I couldn't even buy something to eat, or get a cab.... [I]t's crazy how much we rely on it.

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By then, Difan had bought a new smartphone and recovered her number as well as the social media accounts connected to it, including WeChat. Although it was brief, the lack of access to a smartphone application left her with the clear awareness of how much social media platforms had become critical infrastructures of everyday life in China.<sup>1</sup>

The existing research in communication studies has described how the properties of platforms reorganize business and sociability in various sectors (Gillespie, 2010; Helmond, 2015; Langlois & Elmer, 2013; van Dijck & Poell, 2013; van Dijck, Poell, & Waal, 2018). These authors extensively analyzed the current *platformization* (Helmond, 2015) of many aspects of society, whereby platforms restructure economic activity and sociability to the advantage and profit of the companies that own them. The present article contributes to this scholarship by showing that dominant internet companies base their power on more than the platform properties that these previous scholars have described, such as participation, modularity, and programmability. Increasingly, platforms include properties that are typically associated with infrastructure, such as scale, ubiquity, and criticality of use. Resulting from such encounters are hybrid entities that rely on the properties of both configurations to maintain and extend their social and market power.

The infrastructuralization of digital platforms (Plantin, Lagoze, Edwards, & Sandvig, 2018) concerns several sectors that are familiar to Euro-American users, such as social media (Facebook and Google), transportation (Uber), mapping services (Google Maps), and even academic publications (e.g., Academia.edu). Moreover, it is usually discussed with reference to policy debates and regulatory frameworks in Europe or the US. In this article, we investigate the characteristics that this process assumes in non-Western, non-Anglocentric sociotechnical contexts. Focusing specifically on China, we ask the following questions: Are digital platforms undergoing similar infrastructuralization in the Chinese context? If so, what are the interactions between Chinese platforms and existing internet infrastructures? What is the role of the Chinese government in overseeing the emergence of digital platforms and regulating their infrastructural ambitions?

We answer these questions by focusing on the Chinese social media application WeChat. Developed by Tencent Holdings, one of the largest Chinese internet conglomerates, WeChat has arguably become the most popular mobile application in China today. Outside China, WeChat is often depicted in business reports and technology journalism as a paradigmatic Chinese digital platform that is poised to replace Facebook or Google as the leading model of innovative products (Chan, 2015; Horwitz, 2014). Moving beyond these simplistic accounts, our focus on this application responds to recent calls for attention to the regional nature of digital platforms (Steinberg & Li, 2017; Lamarre, 2017) and the general goal of internationalizing internet studies (Goggin & McLelland, 2009). Moreover, by showing that WeChat now combines the properties of both platforms and infrastructure (Plantin et al., 2018), we both challenge and contribute to the debates on the issues of platform expansion, regulation, and social consequences, which are current in the Euro-American public discourse.

Our study relied on a mixed-methods approach that was centered on the analysis of primary and secondary Chinese sources: First, we examined documents published by Tencent, such as technical documentation regarding the WeChat Application Programming Interface, or API (especially its WeChat Pay integration) and official WeChat blog posts detailing the features of Official Accounts and Mini Programs. Second, we searched industry reports, technology press reports, discussions on developer forums, and sources that highlighted how specific publics engage with WeChat's features (e.g., how developers work with WeChat's APIs). Third, our

study was based on vignettes extracted from observations and interviews conducted among Chinese social media users between 2015 and 2017 in Shanghai, which offered a lively account of WeChat usage in China. Our mixed-methods approach allowed us to study WeChat as both a technological and a discursive object, that is, a digital platform that is both used and discussed pervasively by different publics and actors. This approach helped us to determine the infrastructural features emerging from its integration in the everyday lives of its users.

In this article, we present two key arguments: First, WeChat is a paradigmatic example of a digital media service that owes its success first to its platformization and then to the infrastructuralization of its platform model. Second, the development of WeChat, which is situated in the specific context of China's ICT industry, reveals how the platform model functions as a meeting ground for both the business ambitions of internet companies and the infrastructural ambitions of the Chinese authorities. In combination, these two arguments show that on one hand, the platform model that is currently embraced by internet companies worldwide has been successful in China because of its features, such as programmability, adaptability, and modularity. On the other hand, because this model has been shaped in China by markedly techno-nationalist media regulations (Qiu, 2010) and an increasingly overt cyber-sovereignty agenda (Hao, 2017). It not only serves business purposes but also functions as a new model of infrastructure building. In China's techno-nationalist context, where technological development is mobilized to secure national interests and advantages (Suttmeier & Yao, 2004, p. 3), entities such as WeChat achieve infrastructural scale and criticality through well-documented platform dynamics. Simultaneously, these platform companies are allowed (and at times even encouraged) by government authorities to achieve their infrastructural ambitions as long as they are aligned with economic development and security interests.

We first describe the dual nature of WeChat. Although it relies on characteristics typical of platforms, such as user participation and third-party development, the application increasingly has adopted the infrastructural properties of scale and criticality. Then we contextualize the infrastructuralization of WeChat in relation to the development of the internet in China, focusing on its regulatory context. Lastly, we connect WeChat's platform properties to its increasingly infrastructural nature through an analysis of the success of the WeChat Pay system. We conclude by positing that the Chinese case serves as a relevant counterpoint to current debates in the US and Europe regarding the role of platforms in society and the regulation of their infrastructural ambitions.

## **1. WeChat: From Platform to Infrastructure**

Scholars have recently begun to chart the social implications of WeChat's configuration as a platform by approaching this mobile application through the socio-cultural analysis of communication patterns and practices. This body of work has examined specific aspects of WeChat, such as the aesthetics of selfies and other genres of vernacular photography (de Seta & Proksell, 2015), the circulation of user-generated content (de Seta, 2016), the use of stickers and other visual resources in everyday communication (Zhou, Hentschel, & Kumar, 2017), the identity construction of ethnic minorities (Grant, 2017), and the affect-centric design logics through which Tencent captures the attention of its young users (Peng, 2017). Although the existing research on WeChat offers a dazzling picture of its variety of uses, functions, and social roles, in this section, we show how WeChat's platform features have coalesced to form an entity that has now acquired an infrastructural scale.

### *The platform logic of WeChat*

In 2011, Tencent released the mobile-oriented messaging application *Weixin* (“micro-message”), which is known in English as WeChat. Tencent applied its experience in messaging applications and content provision (especially its messaging service QQ), and rapidly augmented WeChat with social networking functions, such as the *pengyouquan* (“friend circle”) content feed, and the possibility of following the *gongzhong pingtai* (“public platform”) official accounts run by brands, organizations, and news outlets. Other functions that were added to the platform over the years included WeChat Pay, which is a digital wallet enabling users to perform mobile payments and send money to each other, City Services, which is a booking system for different kinds of public and private services in urban areas, and WeChat Search, which is a proprietary in-app search engine.

\*\*\*Table 1 about here\*\*\*

The features that Tencent has added to WeChat during its development follow a platform logic the characteristics of which have already been extensively described for Western platforms (Helmond, 2015; van Dijck & Poell, 2013; van Dijck et al., 2018). They evidence Tencent’s “platform bundling” expansion strategy (Staykova & Damsgaard, 2016). The WeChat ecosystem relies on the active or passive *participation* of its users (Langlois; & Elmer, 2013). It is *generative* (Zittrain, 2008) and even *performative* (van Dijck, 2013), as the outcome of the interaction on the platform—while framed by controlled settings—is not necessarily known in advance.

WeChat maintains APIs and allows developers to create applications. The Official Accounts (*gongzhong pingtai*, “public platform”) and the Mini Programs (*Weixin Xiaochengxu*, “WeChat small program”) are both typical examples of platform *programmability* (McKelvey, 2011). Official Accounts are public profile pages capable of hosting simple scripted interactions and functionalities developed by third parties that are run by the WeChat software. These “in-app channels” can be followed by regular users, allowing content dissemination, audience management, and other functions, such as online news syndication and online commerce. Mini Programs are applets that run inside WeChat without the need to be downloaded on a phone. Discovered through a dedicated internal search engine, when “installed,” the Mini Programs appear as icons in a scrollable dock at the top of the WeChat conversations window, and they can be launched by a single tap inside the WeChat interface.

In both Official Accounts and Mini Programs, the *decentralization* of software architecture combined with the *re-centralization* of its data flows are necessary processes in the platformization of social media (Gerlitz & Helmond, 2013; Helmond, 2015). WeChat allows access to its APIs to foster third-party development while maintaining control over the data that are accessed and the applications that are created. However, WeChat’s programmability is differentiated by a particularly closed environment. Official Accounts are “nested apps” rather than standalone applications (Tiwana, 2014), which exist only within WeChat’s application environment. Similarly, Mini Programs are applets that are positioned between WeChat’s Official Accounts and fully-fledged mobile applications (e.g., those available for downloading in the Apple and Android stores). Additionally, Mini Programs, although based on JavaScript, are written in Tencent proprietary coding languages derived from CSS and XML, which do not allow direct outlinking to web content. They rely on WeChat’s APIs, which restrict them to the

platform's ecosystem. In addition to the learning curve that this proprietary language imposes on developers, the code of Mini Programs cannot be used outside WeChat.

The features of Official Accounts and Mini Programs foreground WeChat's platform logic in a way that is more immediate and striking than its original messaging functions were. Both Official Accounts and Mini Programs allow third-party developers to create applications while confining them to the WeChat environment. This restriction is evidence of a centralizing process that encloses growing amounts of information and interactions inside the platform, which then begins to exhibit properties that are usually associated with information infrastructure.

### *The infrastructuralization of WeChat*

In recent years, many key internet companies, such as Google or Facebook, have moved one step beyond the platform model described above to attain levels of use, scale, and critical role in social life that characterize infrastructure (Plantin et al., 2018). Hybrid entities result from this combination. On one hand, the major internet companies still rely on the properties of platforms (as described above) to achieve network effects and to gain market power. On the other hand, they constitute large-scale sociotechnical projects that are aimed at the ubiquitous and reliable provision of a service, thus becoming similar to the traditional mandate of infrastructure (Edwards, 2003; Parks & Starosielski, 2015). This phenomenon can be observed not only in Silicon Valley companies but also in Chinese companies, such as Tencent.

If WeChat is understood not as a platform but as an infrastructure, its large scale immediately becomes a defining property that is unequivocally mapped onto its massive user base. The increasing numbers regularly boasted by Tencent and echoed by business reports, such as one billion users after the 2018 Spring Festival (Weixin Pai, 2018), also evidence a smaller but noticeable presence in other national contexts. Similarly, WeChat has scaled up through the increasing number of services bundled in the application (Table 1), which compete with (and sometimes successfully replace) several services, such as monetary transactions, and administrative tools as well as cultural and social features. This proliferation of functions has led analysts to describe WeChat as "a portal, a platform, and even a mobile operating system" (Chan, 2016).

Both the massive usage scale and the plethora of services translate into a phenomenon that is impossible to miss for anyone who has been in China during the past five years. In a classic example of network effects, most of the authors' contacts in China have moved their online presence from services like QQ and Sina Weibo to WeChat by asking to be added by phone number or quick response (QR) code, setting up chat groups, and starting to post regular updates on its Moments function.

A third feature of infrastructure is that it becomes indispensable in social life (Edwards, 2003, p. 187). Because of the ever-increasing number of WeChat's functions, it has become increasingly hard to live in China without a WeChat account. Zhao Bo is a 35-year old Beijing resident related to one of the authors who boldly and brilliantly illustrates this phenomenon:

I am the only Chinese person living in China that I know of who doesn't use WeChat; I always wanted to find who else there is, but I can't find them. [...] For a Chinese living in China, the hardest part of resisting WeChat is dealing with the fact that almost all organizations (school classes, enterprises, *danwei* [units], *shequ* [local communities], social groups) use WeChat to manage their members. I just saw a leaflet posted by a local village government offering free access to

tourist resorts to disabled people, requiring a WeChat account and a smartphone to process. This proves how social organizations at the local community level have already become symbiotic with WeChat – one is forced to use WeChat in order to get the welfare provided by the local government. (Interview with one of the authors in February 2018)

WeChat is an exemplary case of the infrastructural evolution of platforms that have succeeded commercially because of their properties, such as participation and programmability. They have become hybrid entities by rapidly achieving the scale and criticality of infrastructure. In the following section, we connect this process to China's condensed history of infrastructure projects and ICT development.

## **2. Building ICT Infrastructures in China**

The development of an infrastructure is never a standalone project. It depends on networks that build on and grow in relation to the existing infrastructure (Bowker & Star, 1999; Edwards, 2010). Similarly, different political and regulatory contexts result in different patterns of system building (Hughes, 1983). In applying these two insights to the study of WeChat, we suggest that the infrastructural expansion of this platform needs to be understood in relation to the broad context of ICT development in China. In addition to countless similar applications and services, WeChat benefits from three decades of large-scale infrastructure projects that have been pushed by multiple Chinese leaders whose overall success relies on techno-nationalist policies and substantial investments.

### *The rise of the Chinese Internet*

The internet arrived in China in 1987 through a precarious university connection between Beijing and Karlsruhe, yet stable internet access was not available until a decade later and to only a limited number of urban users (Zheng, 1994). The year 2000 was a significant turning point for China's internet development, as the growing enthusiasm of the Chinese leadership for the concept of the "information superhighway" resulted in a national informatization strategy that was articulated through quinquennial plans to pour massive investments into the telecommunications infrastructure (Hong, 2015). In addition, because of the growing popularity and affordability of commercial and private internet access, the early 2000s saw the birth of many of the largest players in today's digital industries, most of which started as online portals (e.g., Alibaba, NetEase, Sina, Tencent, etc.) and subsequently developed specialized domains including instant messaging, blogging, video streaming, video-gaming, e-commerce, and so on. Many of these companies, which were founded by pioneering entrepreneurs inspired by the Silicon Valley spirit (Tse, 2015), owed their early successes to their efforts to offer content and services that were tailored to the local needs of Chinese internet users. They offered Chinese-language interfaces, provided efficient input methods for Chinese characters, and catered to locally relevant news and entertainment (Austin, 2014).

However, at the end of the first decade of the 21st century, a shift began to occur. On one hand, government authorities required increasingly restrictive registration licenses to operate websites hosted inside China, and they continued to refine the "Great Firewall" of surveillance systems and control apparatuses that were established in the preceding decade (Barme & Sang, 1997). On the other hand, regional unrest and geopolitical turmoil (including heightened tensions in Xinjiang and threatening reverberations of the Arab Spring) prompted the Chinese

government impose several blockages on foreign (primarily American) internet companies. Consequently, massive social networking services, search engines, and content platforms, such as Facebook, Twitter, Google, and YouTube, joined the growing list of internet resources that were inaccessible by internet users in China.

Conveniently, because the major players of the global platform economy (Srnicek, 2017) were unable to access the growing population of hundreds of millions of Chinese internet users, local internet companies and content providers had free rein to experiment and develop a national market as well as compete for audience niches and media formats. Combined with the massive uptake in mobile connectivity that the country was experiencing, microblogging services, such as Sina Weibo, and video-streaming platforms, such as Youku and Tudou, became increasingly popular (Voci, 2014; Wallis, 2011). Finally, the conjunction of pervasive smartphone ownership and 4G mobile internet penetration across the country during the 2010s contributed to funneling Chinese internet users away from the web toward platform applications that operated over the tightly guarded national network infrastructure.

These parameters resulted in the “Chinese internet” that we know today, which is dominated by the Baidu, Alibaba, Tencent trio (BAT), an acronym that echoes the GAFAs “stacks” (Google, Amazon, Facebook, Apple) that are often discussed as the leaders of the global platform economy (Bratton, 2015; Galloway, 2017; Srnicek, 2017). Beginning as a search engine (Baidu), an e-commerce website (Alibaba), and a messaging software (Tencent), these three internet companies have expanded to massive conglomerates that operate across multiple domains (e.g., artificial intelligence, cloud computing, financial services, mobile payments, video-on-demand services, video-gaming, etc.) similar to the ways in which companies, such as Alphabet, Amazon, and Facebook, operate in other regions. Tencent’s WeChat platform was developed and fostered in this context.

### *Golden projects and infrastructure building*

The rise of large Chinese platforms followed two decades of the development of the Chinese internet. The history of the ICT infrastructure in China and its role in sustaining the Chinese techno-nationalist project (Qiu, 2010) are equally key in understanding the scale and power of digital platforms. Among all the large-scale infrastructure projects that emerged in China in the mid-1990s, the so-called “Great Firewall,” which is an ensemble of social media regulations, IP blacklists, keyword filters, data gateways, and human censors, is regularly invoked to explain online surveillance and internet censorship in China (Tsui, 2007). The Great Firewall is perhaps the most well-known example of Chinese ICT infrastructure. However, it is less known that the technologies that coalesced to form the Great Firewall originated in the “Golden Shield” project, an initiative launched by the Chinese government in the mid-1990s. Twelve other “Golden Projects” were supposed to increase the accountability of administrative departments and governmental agencies through the use of electronic technology (Hachigian, 2001, p. 127). In addition to the Golden Shield, these Golden Projects included the “Golden Bridge” (which was dedicated to providing central and local governments with updated economic data), the “Golden Sea” (which was aimed to exchange information among government leaders), the “Golden Customs” (which was designed to improve the operations of customs taxation) and the “Golden Card” (which was tasked with issuing credit cards, establishing a unified payment clearance system, and paving the way for e-commerce), among several others.

The Golden Projects were implemented in the wake of the establishment in 1993 of the Joint Committee of National Economic Informatization. Their implementation was outlined in



the Ninth Five-Year Plan for Economic Development. Their purpose was declared to substantiate economic planning, streamline central decision making, and build an infrastructural backbone for the future “information superhighway.” At that time, the leadership was not interested in global connectivity (Kluver, 2005, p. 26). These infrastructural endeavors were touted as important components in establishing a functioning e-government framework that privileged the stabilization of the Chinese Communist Party and state authorities over citizen empowerment (Kluver, 2005, p. 76). With their emphasis on informatization and networked data-driven decision making, the Golden Projects were infrastructural efforts that were intricately interwoven with techno-nationalist rhetoric and the government’s will to establish China as a modern and developed state (p. 82).

Even though the Golden Projects collapsed because of fragmented allegiances, patronage (Zhang, 2002), and ineffective technological solutionism (Kluver, 2005, p. 92), their history informs the rise of large-scale digital platforms, such as WeChat. The examples of mobile payment and WeChat Pay, which are analyzed in the following section, show that WeChat relies on platform properties to position itself as a de facto infrastructural standard. Indeed, their infrastructuralization might prove to be an infrastructure-building model that is more efficient than previous state-supported efforts were.

### **3. WeChat Pay as Transaction Standard**

WeChat’s Pay digital wallet service was introduced in 2013. By 2015, it had swept across China. WeChat Pay has the social, temporal, and spatial features of a standard because of its capacity to occupy vacant social niches and to compete against the limitations of the Chinese banking infrastructure. By inserting itself in social practices and the Chinese banking infrastructure, the WeChat Pay feature has become a de facto payment standard in China, that is, a “set of agreed-upon rules” that links multiple communities of practice across space and time into a coherent action (Bowker & Star, 1999, pp. 13–14). WeChat Pay’s QR codes provide strategic gateways for this payment standard adoption, effectively positioning WeChat Payment as an intermediary for the multiple parties of a commercial transaction.

#### *An infrastructure for the digital economy*

When Tencent introduced mobile payment as a WeChat feature in 2013, it faced the dual challenge common to all platforms: the ability to convince not only users to record their financial credentials on the app but also third-party merchants to set up online stores and payment accounts. WeChat solved this problem with its existing social features. During the Chinese New Year holiday in 2014, a new function called “Lucky Money” was introduced in the app, through which users could exchange digital *hongbao* (“red envelopes”) as chat attachments. Available in both one-to-one and randomly split group versions, these red envelopes were monetary transactions that familiarized users with their WeChat Pay wallets (Chan, 2016). One year later in 2015, during the Chinese New Year holiday, WeChat was partnered with the CCTV Spring Festival gala to distribute money offered by sponsors among lucky users who were quick enough to shake their phones when prompted by on-screen notifications on their TVs. Again, the clever combination of holiday customs and trans-media promotion bootstrapped the active use of WeChat Pay by pouring sponsored money into users’ wallets, thus dramatically increasing the user base for this service.

To understand the success of WeChat Pay and its rise as an infrastructural standard, such payment features must be framed beyond the well-documented interplay between private

companies and the state. They must be considered in the broad context of the rapidly growing Chinese digital economy, particularly the role of finance capital (Jia & Winseck, 2018). This context includes the entrepreneurial drive of individual users engaging in e-commerce, service provision, and innovation (Yu, 2017). In this context, the success of WeChat Pay (as well as other online payment services, such as Alipay, which is now operated by the Alibaba affiliate Ant Financial) has resulted to large extent from its capacity to compensate the limitations of the existing Chinese banking infrastructure. State-owned financial institutions traditionally offer extremely low interest rates. Historically, they have provided loans mainly to large enterprises and local governments, whereas households and small companies have had difficulty in accessing credit (Ong, 2012). In contrast to this model, the internet finance industry uses the platform's logic by positioning itself between the actors engaged in a transaction (e.g., a buyer and a seller or a friend transferring money to another friend). In 2017, this successful model was used to process 60% of all online payments in China (Loubere, 2017, p. 14).

#### *QR code as gateway*

Gateways are a sociotechnical component of strategic importance in the growth of infrastructure, as they provide the “plugs and sockets that allow new systems to be joined to an existing framework easily and with minimal constraint” (Edwards et al., 2007, p. 16). In WeChat Pay, a key gateway relies on the combination of two technologies: the QR code and the smartphone camera. Tencent did not invent this two-dimensional barcode (which originated in the Japanese automotive industry). However, its integration into WeChat Pay has been a main factor in driving the popularity of machine-readable encoding in everyday Chinese life. When it is scanned by the camera in a mobile device that is connected to the internet, the QR code transmits application metadata, a URL, or information about a monetary transaction, thus seamlessly bridging physical surfaces (i.e., a restaurant counter), computational devices (i.e., a customer's smartphone) and user data (i.e., WeChat wallet credit). WeChat has recently launched an entirely proprietary version of this encoding format, which is recognizable by its rounded, colorful, and image-rich design. At present, it is used only as a quick way of linking to Mini Programs, effectively reinforcing the lock-in of user activity inside the WeChat ecosystem, which is described in section one.

\*\*\*Figure 1 about here\*\*\*

Because of their social implications, standards are subject to oversight by legal bodies. Such oversight currently applies to WeChat Pay in the form of a post hoc regulation drafted by the People's Bank of China (PBOC), which is the central Chinese bank. In 2017, the bank announced that it aimed to reassert its control over transactions made by third parties (Hersey, 2017). Since June 2018, the PBOC has obliged WeChat Pay and 44 other financial firms to transfer all their transaction data to a nationwide “clearing house.” This measure is aimed to compensate the current incapacity of the PBOC to track and monitor the flow of capital exchanged between third parties, which allegedly facilitates money laundering and other irregularities. By setting up this clearing house as a platform between the two parties engaged in a financial transaction (Zhang, 2017), this measure illustrates that the PBOC has adapted to the platform logic of online banking to carry out its mission of financial oversight.

#### **4. Shaping Digital Platforms into National Infrastructures in China**

If the analysis stopped at this point, we could provide a straightforward description of WeChat through existing theories of platform capitalism and the political economy of platforms. However, the Chinese case presents normative differences from the Euro-American context. American digital platforms, such as Facebook and Google, have global ambitions and seek to bypass national governments (which leads to socio-economic controversies and regulatory pushbacks), whereas Chinese internet companies that own the country's largest digital platforms have tight (albeit sometimes conflictual) relationships with national policy-making and regulatory authorities. These relationships are intimately linked to the broad history of internet development and ICT infrastructure building described in section two, and they result in a platform model that is simultaneously shaped by the characteristics of Chinese national media regulations and allowed to flourish as a vector of infrastructure building. In this concluding section, we connect the example of WeChat to the broad context of what we identify as a "Chinese model" of platform infrastructuralization, and we hint at its usefulness in the current debate about platform regulation.

#### *The techno-nationalist shaping of digital platforms*

In China, the authorities have strived to maintain control of digital communication technologies since the first internet providers were established in the country. The emergence of digital platforms has also been met by regulation and oversight. A speech by Chinese President Xi Jinping in 2017 during a seminar on cyber-security indicated recognition of the centrality of platforms on the current internet and the importance of their regulation:

As a broad *social platform* through which millions upon millions of users obtain and exchange information, the internet has a profound influence on the way people acquire knowledge on the way they think, and also on their values and views [...]. A sound atmosphere for the expression of opinion online [...] means that people are not permitted to conflate right and wrong, circulate rumors, cause trouble, violate the law, or commit crime [...]. An important means of doing this will be to exert the role of public scrutiny, including scrutiny on the Internet [emphasis added]. (Xi, 2017, pp. 363–365)

In addition to the "Great Firewall" described in section two, the "scrutiny" of the internet has taken multiple and widely discussed forms during the past two decades, such as real-name registration requirements (Wang, 2010), specialized "Internet Police" units for surveillance and cybercrime (Austin, 2014, p. 65), and content guidelines for delegating censorship to online platforms (Bamman, O'Connor, & Smith, 2012). While a tight techno-nationalist grip on the internet expectedly leads to a conflictual compliance of digital platforms with regulations and directives, when it comes to infrastructural ambitions, local internet companies and Chinese authorities see more eye-to-eye. The protectionist environment resulting from the demanding regulatory conditions to operate in the Chinese market and the outright bans of foreign companies still allows Chinese platforms to easily reach the criticality and scale (at least on a national base) required to nullify competition by the few foreign companies still allowed to operate inside China.

The "Chinese model" of platform infrastructuralization therefore comprises two facets: On one hand, the once-massive "national champions" of the internet industry, such as Tencent, have achieved a solid grasp on certain infrastructural properties through platforms such as

WeChat. They can easily pursue infrastructural ambitions by modulating the programmability of their platforms and by using them as a means of establishing infrastructural standards. On the other hand, when they are confronted with this emerging process, Chinese authorities allow these ambitious companies to disrupt inefficient public sectors, as long as they do not compromise sociopolitical stability and remain aligned with the techno-nationalist pursuit of cyber-sovereignty. Based on the description of WeChat Pay as a highly successful example of the infrastructuralization of a platform feature shaped by techno-nationalist policy (section three), it could be provocatively argued that WeChat Pay and similar services by other technology companies have managed to succeed in building an infrastructure that the decade-long Golden Card project struggled to do, that is, create an integrated nationwide payment system that supported the growth of e-commerce and online financial services.

### *The “Chinese Model” as the future of platform regulation*

Infrastructuralized platforms have a global reach. The question of how these platforms should be regulated is currently being asked in Euro-American contexts (Andrews, 2016; Helberger, Pierson, & Poell, 2017; Mansell, 2015). Calls for the nationalization of digital platforms, such as Facebook, Google, Amazon, and Uber, the dissolution of their expanding monopolies, and the enforcement of tax regulations are often framed as solutions for remediating the social wrongs of platforms, such as data privacy, misinformation, unfair competition, and illegal labor practices. The case of WeChat and the broad regulatory context of the “Chinese model” of platform infrastructuralization offer some answers regarding specific aspects of the regulations in practice.

The first answer is platform protectionism. As the growth of WeChat demonstrates, imposing commercial and security thresholds on platform companies that seek to expand their business internationally is likely to result in a national market where domestic platforms can thrive without having to compete with the networks of already established competitors, such as Facebook or the messaging application LINE. The second answer is governmental control. In a protectionist and tightly regulated environment, platforms are likely to make trade-offs with state authorities and enforce user surveillance guidelines in exchange for being allowed to continue to operate in the national market. The third answer is nationalization. Although WeChat increasingly resembles a public utility, through its active collaboration with Chinese authorities in the development of public services (e.g., ID cards, city administration, etc.), it is not nationalized. Instead, Tencent chairman Ma Huateng serves as a deputy on the National People’s Congress, and his company hosts Communist Party committees in its offices, which ensure a smooth relationship with the government. The company also allows authorities to tap into its data collection capabilities and to curb its infrastructural ambitions from the inside (Heilmann, 2017).

Based on these insights, we conclude that through infrastructuralization “with Chinese characteristics,” WeChat’s platform model is a vector for infrastructure-building endeavors that prove to be both more successful than their state-backed precedents, and more controllable than purely private entities. However, Chinese leaders and Chinese entrepreneurs have not resolved the thorny issues of regulating the platform economy or managing its infrastructural ambitions, which remain problematic, sometimes conflictual, and largely opaque because of high amount of behind-the-scenes dealing. Similar to the US context, platform companies shape policy through outreach, lobbying, and political participation (Kreiss & McGregor, 2018). However, in China, these practices are conducted through structures and strategies that suit the intricacies of the Chinese Communist Party governance. The “Chinese model” of platform infrastructuralization

therefore offers a thought-provoking alternative to the Silicon Valley model, which frames current regulatory discussions.

### **Conclusion**

This article has provided a detailed analysis of specific features of the internet platform WeChat and its Official Account, Mini Programs, and WeChat Pay in the context of China's ICT development. This focus was necessary to understand how the process of infrastructuralization is applied to digital platforms and how they are shaped by specific use cases and national policy decisions. By viewing Chinese digital platforms through an infrastructural lens, we hope to encourage the production of further nuanced comparative analyses of platforms in different regional, national, and local contexts. As indicated by the thoroughly infrastructural nature of the Great Firewall and by the techno-nationalist character of China's digital media governance, which was briefly mentioned in our article, the "Chinese model" of infrastructure building we identify is highly idiosyncratic. Hence, it is not meant to be a ready-made model that should be applied to all platform regulations and policy dilemmas. After all, the success of WeChat and similar platforms is strongly correlated to the heavy-handed ban on foreign competitors and to Tencent's compliance with government demands. Nevertheless, we argue that the "Chinese model" should not be reduced to platform capitalism "with Chinese characteristics" nor should it be dismissed as the outright authoritarian control of digital media. When it is framed by the context of the contemporary debate about the nationalization of digital platforms and the infrastructural ambitions of platform companies, this model could be a thought-provoking alternative that is not merely speculative but is currently being implemented in China, which has the world's largest population of internet users.

### **Note**

1. Difan shared her experience with one of the authors in late 2016.

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## Tables

Table 1. The Growth and Evolution of WeChat Evidencing the Scale of its Monthly Active Users (MAU) and Its Expanding Portfolio of Features

<b>Date</b>	<b>Monthly active users</b>	<b>Newly introduced features</b>
2011	50 million	Messaging, photo-sharing and voice and video clip functions; locational user search
2012	160 million	Rebranded to WeChat for the international market; Moments and Official Accounts functions launched; QR codes; voice and video call function; WeChat Web interface
2013	355 million	Stickers and personalized emoticons; social games; group chats; WeChat wallet
2014	500 million	Partnership with taxi-hailing app Didi Dache; WeChat in-app stores; account-to-account money transfers
2015	697 million	City Services feature; virtual “Red Envelopes” introduced on Chinese New Year
2016	889 million	Service charge for transfers between WeChat wallet and debit cards for transactions over 1,000 RMB
2017	963 million	Mini-Program function, search function added to news feed
2018	1 billion	Official Accounts app announced; 580,000 published Mini Programs

Figure



Figure 1. A variety of QR codes and platform affiliations (Baidu Take-out, WeChat, Alipay, Dianping, Meituan, E'leme) on stickers and plastic plaques displayed on the counter of a restaurant in Shanghai. Photo by the Gabriele de Seta, 2016.