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Incomplete Infrastructure: State-Building and the Early History of China's Long-Distance Telephone Network, 1900–1937

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Abstract

This article explores the hitherto understudied development of long-distance telephony in early 20th century China. It first explores the development of long-distance telephony before 1927 when it first appeared in China and was developed by foreign actors, the Qing government and various warlord regimes. The article then turns to the Nanjing Decade (1927–1937) and compares the efforts of the Nationalist government in building long-distance telephone infrastructure with those of the Guangdong provincial government and other regional regimes. The article uses the case of long-distance telephony to make two larger arguments about state-building in Republican China (1912–1949). First, it brings in telecommunications development as a major element of state-building of both central and regional regimes. Second, building on recent work by scholars of Chinese Republican-era state-building, it emphasizes the importance of studying state-building from the vantage point of both central and regional regimes in Republican China. Additionally, the article demonstrates the value of an infrastructural approach to the study of political competition and formation in China during the Republican era.

Keywords: China; long-distance telephone; telecommunication; state-building; warlords

On 25 December 1928, shortly after the Chinese Nationalist Party had established their new government in Nanjing in eastern China, Minister of Communications Wang Boqun submitted a report on the development of telecommunications to the government. In the report, Wang advocates for the concentration of control over telecommunications in the hands of the central government. He mentions three main elements of telecommunications, namely the telegraph,

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municipal telephone services and long-distance telephony, and highlights their interdependence:

Indeed as telecommunications are closely related to the people of the nation and telephone and telegraph closely linked, they cannot be separated. To give an analogy, the telegraph is a human's body, the municipal telephone is its hands and feet, and the long-distance telephone is its blood vessels. They have to be connected as one. Only then can they support and use each other.¹

Wang's report reflects that he saw long-distance telephony as an integral part of the national telecommunications infrastructure. Similarly, Wang's successor Zhu Jiahua, who headed the Ministry of Communications between 1932 and 1935, also saw the development of long-distance telephony as a major task of his tenure as Minister of Communications.² Not only in the capital in Nanjing, but also in provincial capitals throughout China, officials recognised the importance of establishing long-distance telephone communications and made it a key part of their plans for provincial development.³

This article uses the development of long-distance telephony to study state-building during the Chinese Republican period (1912–49) between the beginning of the Chinese republic in 1912 and the outbreak of the Second Sino-Japanese War in 1937. While the beginning of Chinese long-distance telephony precedes the year 1912 by several years, long-distance telephony in China witnessed its main initial growth during the Republican period. This study engages with and contributes to the literature on state-building in Republican China in two major ways. First, it adds to recent balanced views of Republican state-building, which emphasise both limitations and strengths in the state-building efforts of the Republican period, but brings in telecommunications as a new important dimension of the state-building process in Republican China. While older scholarship held largely negative views of state-building during the Republican period,⁴ more recent studies have provided a more nuanced picture of Republican state-building.⁵ By highlighting both the accomplishments in the development of long-distance telephony of different Republican governments, including the Nationalist central government, which acceded to power in 1927, and, at the same

¹Wang Boqun, 'Guanyu quanguo heli weichi dianhua shiye de baogao' (25 Dec. 1928), in *Wang Boqun wenji*, ed. Tang Tao (Shanghai, 2018), 56–58.

²Zhu Jiahua, 'Wo zai Jiaotongbu rennei de zhongyao gaige' (without date), in *Zhu Jiahua xiansheng yanlunji*, ed. Sun Bin and Wang Yujun (Taipei, 1977), 415. On Zhu's tenure as Minister of Communications lasting from 1932 to 1935, see Yang Jialuo, *Minguo mingren tujian dier ce* (n.p., 1936), 8: 26.

³See, for instance, Guangdong jiansheting bianjichu, *Jianshe jihua* (Guangzhou, 1930); Zhejiang jiansheting, 'Zhejiang diyiqi jianshe jihua', *Jianshe*, 8 (1930), 52–75.

⁴See, for instance, Lloyd E. Eastman, *The Abortive Revolution: China under Nationalist Rule, 1927–1937* (Cambridge, MA, 1974). Also see, Ernest P. Young, *The Presidency of Yuan Shih-k'ai: Liberalism and Dictatorship in Early Republican China* (Ann Arbor, 1977). An exception is Arthur N. Young, *China's Nation-Building Effort, 1927–1937: The Financial and Economic Record* (Stanford, 1971).

⁵See, for instance, Julia C. Strauss, *Strong Institutions in Weak Politics: State Building in Republican China, 1927–1940* (Oxford, 1998); Hans J. van de Ven, *War and Nationalism in China, 1925–1945* (2003); Felix Boecking, *No Great Wall: Trade, Tariffs, and Nationalism in Republican China, 1927–1945* (Cambridge, MA, 2017).

time, explicating the limitations of these efforts, this study further contributes to a more balanced view of state-building in Republican China.

More importantly, however, this article also adds the dimension of telecommunications to our understanding of state-building in Republican China. In doing so, I am building on Stephen Halsey's recent positive assessment of late Qing state-building. In his analysis, Halsey stresses the importance of communications for state-building and discusses at length Qing efforts of developing telegraph infrastructure.⁶ In contrast to Halsey's emphasis on telecommunications infrastructure, the scholarship on Republican state-building has neglected telecommunications. This article demonstrates that particularly between 1927 and 1937, both the central and regional governments made substantial efforts to develop long-distance telephony and contends that telecommunications need to be taken into account as an important part of the record of state-building during the Chinese Republican period.

A second major way in which this article contributes to the scholarship on state-building in Republican China is that it develops a larger argument about the decentralised nature of state-building and the development of technological systems in Republican China. Recently, several historians of modern China have called for the decentering of the Chinese central state when studying state-building during the Republican period. Instead, they draw our attention to the state-building endeavours and accomplishments of the various regional regimes that coexisted with successive central governments and the ways in which these different regional regimes and central governments competed and cooperated with each other in their state-building efforts. They argue that political disunity was not necessarily detrimental to state-building.⁷ Building on these insights, this article uses the case of long-distance telephony to juxtapose and compare the state-building performance of central and regional regimes, focusing in particular on the Nanjing Decade (1927–37) and the efforts of the central government in Nanjing and the provincial government of Guangdong in establishing long-distance telephone lines. To illuminate this juxtaposition, this article also draws on the work of historians of technology to connect the discussion of state-building of central and regional regimes with the literature on the development of technological systems. In particular, I make use of the differentiation between regional and national technological systems and the evolution of the former

⁶Stephen R. Halsey, *Quest for Power: European Imperialism and the Making of Chinese Statecraft* (Cambridge, MA, 2015), quotation on 213.

⁷See the special issue in *Twentieth-Century China*, 47 (2022). Of the individual short roundtable contributions, see in particular Xavier Paulès and David Serfass, 'Questioning the Teleology of the Central State in Republican China', *Twentieth-Century China*, 47 (2022), 3–10; Kristin Stapleton, 'The Rise of Municipal Government in Early Twentieth-Century China: Local History, International Influence, and National Integration', *Twentieth-Century China*, 47 (2022), 11–19; Emily M. Hill, 'War, Disunity, and State Building In China, 1912–1949', *Twentieth-Century China*, 47 (2022), 20–9; Xavier Paulès, 'Warlords at Work: Four Crucial Realms and Four Dynamics of State Building in Republican China, 1916–1937', *Twentieth-Century China*, 47 (2022), 40–9; Xiaoqun Xu, 'A Critical Dimension of State Building: Taxation in Nationalist China, 1928–1949', *Twentieth-Century China*, 47 (2022), 50–9. On the point that state-building progressed despite disunity during the Republican period and for an analysis that also moves away from the central state and focus a more local perspective, also see Elizabeth J. Remick, *Building Local States: China during the Republican and Post-Mao Eras* (Cambridge, MA, 2004). The aforementioned special issue goes beyond Remick by also transcending the framework of the central state when looking at the building of local states. See Paulès and Serfass, 'Teleology', 6–7.

into the latter to trace how different long-distance telephone systems in modern China developed.⁸

This article argues that throughout the Beiyang period (1912–27) and the Nanjing Decade, the development of long-distance telephony proceeded in a decentralised fashion and regional regimes played a key role in developing regional telephone networks and China's long-distance telephone infrastructure more broadly. While the central government in Nanjing planned the construction of a national long-distance telephone system during the Nanjing Decade, these efforts eventually failed and remained incomplete and reliant on cooperation with regional regimes. By the end of the Nanjing Decade, no truly national telephone system existed, and China's long-distance infrastructure instead continued to be dominated by regional systems. Although the development of China's long-distance telephone infrastructure during the Republican period, and in particular during the Nanjing Decade, was overall significant, this development was to an important extent due to the contributions of regional regimes and thus further underlines their important role in state-building during the Republican Period. Thus, this article further endorses the need of studying the process of Republican state-building from the vantage points of both central and regional regimes. Moreover, as we will see, military necessities caused by internal and external strife during the Republican period were an important driving force for the development of long-distance telephony, an insight that adds to the wider literature on the connection between warfare and state-building in Republican China.⁹

This article unites these two argumentative angles – the importance of telecommunications for state-building and the study of state-building from the perspective of both central and regional regimes – by using the concept of 'infrastructural power', which Michael Mann sees as a key dimension of state power and development. He describes it as 'the capacity of the state to actually penetrate civil society, and to implement logistically political decisions throughout the realm'. Mann particularly highlights communications as a key determinant of infrastructural power.¹⁰ Daniel Ziblatt has stressed the crucial role of the infrastructural power – as opposed to military power – of political subunits in political formation – more specifically federalism – in the European context. He argues that the degree of infrastructural power subunits developed was crucial in determining their relation and negotiations with a central state trying to unify a territory.¹¹ Using the concept and lens of infrastructural power not only emphasises the importance of telecommunications infrastructure

⁸See, for instance, Thomas P. Hughes, 'The Evolution of Large Technological Systems', in *The Social Construction of Technological Systems: New Directions in the Sociology and History of Technology*, 2nd edn, ed. Wiebe E. Bijker, Thomas P. Hughes and Trevor Pinch (Cambridge, 2012), 45–76. For a good overview, see Lena Ewertsson and Lars Ingelstam, 'Large Technical Systems: A Multidisciplinary Research Tradition', in *Systems Approaches and their Application*, ed. Mats-Olov Olsson and Gunnar Sjöstedt (Dordrecht, 2004), 291–309. Telephone systems are a common object of study of those studying technological systems, see, for example, Arne Kaijser, 'From Local Networks to National Systems: A Comparison of the Emergence of Electricity and Telephony in Sweden', in 1880–1980, *Un siècle d'électricité dans le monde*, ed. Fabienne Cardot (Paris, 1987), 7–22. Kaijser differentiates between local (i.e. municipal), regional and national telephone systems. My understanding follows this hierarchy.

⁹For a survey of this literature, see Hill, 'War, Disunity, and State Building'.

¹⁰Michael Mann, 'The Autonomous Power of the State: Its Origins, Mechanisms and Results', *European Journal of Sociology*, 25 (1984), 185–213, quotation on 189.

¹¹Daniel Ziblatt, *Structuring the State: The Formation of Italy and Germany and the Puzzle of Federalism* (Princeton, 2006).

for state-building. It also allows this article to use the case study of long-distance telephony to make larger comparisons and observations about state power and development across different central and regional regimes in Republican China, including the limited success of central regimes in consolidating their power vis-à-vis regional regimes.

Even though long-distance telephony was an integral part of Chinese efforts in telecommunications development, existing scholarship has largely neglected its development before 1937. Much has been written about the development of the telegraph in modern China.¹² Likewise, telephone communications on the municipal level have also attracted the attention of historians.¹³ In contrast, only a few short dedicated studies that cover specific aspects of the development of long-distance telephone communications during the Nanjing Decade (1927–37) exist.¹⁴ Larger studies of the development of communications in modern China have also largely neglected long-distance telephony.¹⁵ Likewise, accounts that highlight the importance of the development of communications for the economic growth China witnessed in the decades before 1937 also only mention long-distance telephone communications in passing.¹⁶ Thus, we so far lack a detailed account of the development of long-distance telephone communications in pre-1937 China that covers both national and provincial efforts and traces the origin of developments during the Nanjing Decade back to the beginning of the twentieth century. This article remedies this lacuna by tracing the

¹²See, for instance, Erik Baark, *Lightning Wires: The Telegraph and China's Technological Modernization, 1860–1890* (1997); Roger R. Thompson, 'The Wire: Progress, Paradox, and Disaster in the Strategic Networking of China, 1881–1901', *Frontiers of History in China*, 10 (2015), 395–427; Wook Yoon, 'Dashed Expectations: Limitations of the telegraphic service in the late Qing', *Modern Asian Studies*, 49 (2015), 832–57; Shuge Wei, 'Circuits of Power: China's Quest for Cable Telegraph Rights 1912–1945', *Journal of Chinese History*, 3 (2019), 113–35.

¹³See, for example, Huo Huixian, 'Dianhua tongxun yu 1877–1937 nianjian de Shanghai shangmin shenghuo', *Chongqing youdian daxue xuebao*, 25 (2013), 72–7; Jin Gengxing, 'Meijie de chuxian: Shanghai huojing zhong de qideng, zhonglou he dianhua', *Xinwen yu chuanbo yanjiu*, 12 (2015), 62–80.

¹⁴A recent short article by Zhao Haifeng focuses on the efforts of the central Nanjing government to connect nine provinces via long-distance telephone: Zhao Haifeng, 'Kangzhan qian Guomin Zhengfu de changtu dianhua jianshe', *Suzhou Xueyuan xuebao*, 34 (2019), 23–6. Song Weisong has studied long-distance telephony in Shandong during the Nanjing Decade, covering the years before 1927 only in passing: Song Weisong, *Shandong shengban changtu dianhua shiye yanjiu*. MPhil Diss. Central China Normal University, 2014. Song focuses on the efforts of the provincial government but also briefly explores how the central government developed long-distance telephony in Shandong, discusses conflicts with the provincial government and compares certain aspects of long-distance telephony run by the central government and the provincial government in Shandong.

¹⁵See, for instance, Elisabeth Köll's recent overview chapter, which does not cover long-distance telephony at all: Elisabeth Köll, 'Transport and Communication Infrastructure', in *The Cambridge Economic History of China*, ed. Debin Ma and Richard von Glahn (2 vols.; Cambridge, 2022), II, 457–95. Another example is Frank Dikötter's discussion of communications in modern China, which only mentions long-distance telephone connections very briefly in passing. See Frank Dikötter, *Things Modern: Material Culture and Everyday Life in China* (London, 2006), 148–149. Zhang Yunyan's doctoral dissertation aims to provide a comprehensive discussion of telecommunications development during the Nanjing Decade from the perspective of the central Nanjing government. As part of this discussion, he covers the development of long-distance telephony to a limited extent and in passing elaborates on the relationship between the central and provincial governments in this regard. See Zhang Yunyan, '1927–1937 nian Zhongguo dianxinye yanjiu' (Ph.D. thesis, Nanjing University, 2008).

¹⁶Thomas Rawski, *Economic Growth in Prewar China* (Berkeley, 1989), ch. 4.

development of the Chinese long-distance telephone network on both the national and provincial levels in detail from the beginning of the twentieth century to the outbreak of the Second Sino-Japanese War in 1937.¹⁷ Accordingly, one other major contribution of this article is that it provides the first detailed and dedicated study of long-distance telephony in modern China before 1937 that pays proper attention to the development of long-distance telephony on the level of both central and regional government.

Finally, beyond China, this article also hopes to contribute to the wider literature on the history of the telephone. In the introduction to a recent special issue of *History and Technology* on the history of the telephone, Balbi and Berth have noted that ‘histories of the telephone have been narrated as a series of national histories and so many transnational, regional or local histories were not considered’. They lament the ‘scarcity of works dealing with Asian, African or Latin American experiences’.¹⁸ By focusing on China and analytically considering both the national and regional level, this article speaks to both of these problems.

This article first explores the beginnings of long-distance telephone communications before 1927. The article then turns to the Nanjing Decade and first traces the ultimately unsuccessful efforts of the central government to bring long-distance telephony under its control and establish a national telephone system. Finally, the chapter contrasts these efforts with the development of long-distance telephony in the provinces. In particular, the article will focus on Guangdong province in southern China, which remained largely autonomous from Nanjing for much of the Nanjing Decade but carried out an ambitious programme for the development of long-distance telephony.

The beginnings of long-distance telephone communications in China

At the turn of the twentieth century, when the first long-distance telephone service appeared in China, the telegraph and telephone had already been in use in China for some time. The telegraph entered China in the 1870s and subsequently a telegraph network was established. By the end of the nineteenth century, the Chinese telegraph network extended to all provinces and in 1908 measured over 45,000 kilometres in length.¹⁹ The first municipal telephone system was established in 1881 in Shanghai’s International Settlement. In 1900, the Chinese government

¹⁷When discussing long-distance telephony, this article focuses on wired long-distance telephony. While the pre-war period saw wireless telephony in China, its use was limited. On the national level, by mid-1936, it had not gone beyond the testing phase domestically. See Zhongyang dangbu guomin jingji jihua weiyuanhui, *Shinianlai zhi Zhongguo jingji jianshe* (Nanjing, 1937), 3: 14. In Guangdong, only one connection between Guangzhou and Shantou was opened before the outbreak of war. See the brief discussion below.

¹⁸Gabriele Balbi and Christiane Berth, ‘Towards a Telephonic History of Technology’, *History and Technology*, 35 (2019), 105. The caveat is that this judgement does not seem to take Chinese-language scholarship into account. As I explain above, studies on the telephone in China exist in Chinese and cover the municipal, provincial and national level, even though long-distance telephony is understudied. The only China-related publication they cite is a short, non-academic and superficial book chapter in German that briefly comments on the telephone in China in the PRC. See Yang Boxu, ‘Das Telefon als Medium der Entwicklung: Das Beispiel China’, in *Fern-Sprechen: Internationale Fernmeldegeschichte, -soziologie und -politik*, ed. Jörg Becker (Berlin, 1994), 251–8.

¹⁹Thompson, ‘The Wire’, 396–406.

opened the first Chinese-run telephone installation in Nanjing and exchanges in Beijing, Tianjin in northern China and Guangzhou in southern China followed in 1903. In the following years running up to 1927, telephone exchanges were established by the central government, provincial governments and private entrepreneurs.²⁰ In 1926, the *North-China Herald* could report that ‘Telephone Installations, whether Government or privately owned are to be found in all the principal cities of China.’²¹

The development of long-distance telephony in China started in 1900. During the instability of the Boxer Uprising, a Chinese anti-foreign uprising that occurred in the north of China from 1899 to 1901, the Dane Carl Poulsen, who had previously been in the employ of the Chinese Tianjin Telegraph School (*Tianjin Dianbao Xuetang*), established a long-distance telephone connection from Tianjin to Beitang and Tangu and in 1901 extended it to Beijing, thereby linking the capital of Beijing with the two sea entries at Beitang and Tangu, located to its south-east, and the commercial and political centre Tianjin, also situated to the south-east of Beijing. In 1905, the long-distance telephone line was taken over by the Qing government’s Imperial Chinese Telegraph Administration.²² In 1900, Germany also established a telephone connection between Tianjin, Tangu and Dagu near Tianjin.²³ In 1904, the Qing government itself added another telephone line between Tianjin and Beijing and in the following two decades more lines were added, so that by 1918 five pairs of lines existed between the two cities. Further lines were added in the following years and by 1928, eleven pairs of lines ran between Beijing and Tianjin.²⁴ In 1909, the Qing central government had already bought back the line between Tianjin, Tangu and Dagu originally established by Germany. Later, connections between Tianjin and Cangzhou and Yanshan further south were also added.²⁵ The Tianjin–Beijing long-distance telephone service thus emerged as an important regional telephone system, with 402,873 calls made in 1928, which far exceeded any other system or region listed in the long-distance telephone statistics of the Ministry of Communications.²⁶ Nevertheless, at least the late Qing state seems to have shown little interest in long-distance telephony except for the Tianjin–Beijing long-distance telephone service and there is no evidence of other major lines having been constructed during this period.²⁷

²⁰Zhao Zengjue, *Zhongguo zhi dianxin shiye*, 2nd edn (Shanghai, 1947), 21.

²¹‘The Connecting Links’, *North-China Herald* (20 Mar. 1926), 63.

²²Zhao, *Zhongguo zhi dianxin shiye*, 23; ‘Readings for the Week’, *North-China Herald* (8 May 1901), 877; Jiaotongbu jiaotongshi zuan weiyuanhui, Tiedaobu jiaotongshi zuan weiyuanhui, *Jiaotongshi dianzheng-bian* (n.p., 1936) [hereafter DZB], 3: 5. For the contract of sale between the Imperial Chinese Telegraph Administration and Poulsen and some of the relevant payment receipts, see Tianjinshi danganguan, *Tianjinshi danganguan guancang zhenpin dangan tulu (1655-1949)* (Tianjin, 2013), 158–60. Some sources suggest that the entire line was established in 1900. See, for instance, DZB, 3: 5. On Poulsen, see Knight Biggerstaff, *The Earliest Modern Government Schools in China* (Ithaca, 1961), 67; Baark, *Lightning Wires*, 162; Yu Benfa and Xiong Xianjun, *Zhongguo jiaoyu fazhan shi* (Wuhan, 1999), 335.

²³Zhang Xinwei, *Zhongguo xiandai jiaotong shi* (Shanghai, 1931), 480.

²⁴DZB, 3: 5; *Tianjin dianxin shiliao, diyiji*, ed. Zhu Zhengang (Tianjin, 1990) [hereafter TJDXS], 50, 293–4.

²⁵Zhang, *Zhongguo xiandai jiaotong shi*, 491.

²⁶Jiaotongbu, *Jiaotong tongji nianbao: Zhonghua Minguo shiqi nian* (Nanjing, 1931), 126.

²⁷Zhao also notes that the very early appearance of long-distance telephony did not immediately lead to much more progress in the Chinese development of long-distance telephone infrastructure, although he does not specifically talk about the Qing and rather seems, like me, to identify the next spurt in the

The connection between Tianjin and Beijing quickly proved popular with business-people, which probably was an important reason for its swift growth. As early as 1910, a group of merchants from Tianjin reported to the government that telephone communication with Beijing for business purposes had become a daily necessity.²⁸ More generally, long-distance telephone communications presented several advantages to users in China. As the Chinese journalist Hollington K. Tong explained in 1919:

The Chinese like to telephone. This is shown by the fact that the calling rate in Peking [Beijing] and Tientsin [Tianjin] is higher than the calling rate in corresponding cities of the United States or Europe. The reason is that the telephone offers a direct means of communication. Any dialect can be used in talking to one's friend at a distance. The long distance telephone is even more appreciated by those who have urgent business to transact with those who are more than two hundred miles away – that is the approximate distance between Shanghai and Nanking – and are able to complete it in a few minutes. At present it takes them at least five hours to transmit a message from Shanghai to Nanking by telegraph, and much longer to go by train.

In China telegrams, which have to be put in code and to [sic] be decoded, are more costly in comparison with the telephone. A conversation between Peking and Tientsin can be held by means of the telephone for five minutes and costs only less than one [Chinese] dollar. During this period, brief though it may be, much business can be transacted. That is why the toll [long-distance] lines between these cities are popular.²⁹

The cost differential between telegraph and telephone can be further illustrated if we compare Tong's example of Shanghai and Nanjing in terms of a telegraph message and a phone call between the two locales. In 1936, a standard telegram between the two cities would have costed 10 Chinese cents per Chinese character. In contrast, a normal three-minute call between Shanghai and Nanjing would have costed only around 1.40 Chinese dollars.³⁰ The higher speed and lower cost of the telephone compared

1920s. Following his description of the development of the Tianjin-Beijing service during the late Qing Dynasty, Zhao also mentions limited line construction in Shanxi and Hunan provinces, but without stating any details or a clear time period when these took place. He clearly does not view these as significant though. See Zhao, *Zhongguo zhi dianxin shiye*, 23–24.

²⁸Tianjin dianhua ju cheng ben bu jinjing changtu dianhua xianju qianshang qing yi qishici wei du yangqi heshi bing', *Jiaotong guanbao*, 15 (1910), 16.

²⁹Hollington K. Tong, 'Modern Telephone Systems to Girdle China', *Millard's Review of the Far East* (11 Oct. 1919), 226–9. On Tong, see Wei, 'News as a Weapon: Hollington Tong and the Formation of the Guomindang Centralized Foreign Propaganda System, 1937–1945', *Twentieth-Century China* 39 (2014), 123–5.

³⁰Chao-Ying Shih and Chi-Hsien Chang, *The Chinese Year Book, 1936–37, Second Issue* (Shanghai, 1936), 1108, 1120. The source gives 10 Chinese cents as the price 'per word' for a normal Chinese telegram. I have taken 'word' to mean 'character' here. As the long-distance telephone charges given in the source are provided according to distance, I have taken the rough equal of Tong's 200 miles and given the price for a three-minute conversation for locales 325 kilometres apart. While the source points out that in certain cases 5 minutes were still used as a unit for calls, the Shanghai-Nanjing fee given here is for 3 minutes as this connection is also listed in 'Jiaotongbu changtu dianhua ganxian lianluo tonghua', *Shenbao* (1 Sep. 1936), 3, which gives three minutes as a unit for long-distance calls. An advertisement from 1937 gives 1.20 Chinese

to the telegraph combined with the directness of communications through the telephone and the fact that, unlike with the telegraph or other written communications, the telephone did not bind its users to the written language and allowed for the use of dialects, made use of long-distance telephony advantageous. While speed, cost and directness might be seen as the more obvious advantages, the ability to communicate in one's own dialect should not be underestimated in a country as linguistically diverse as China.³¹ A good illustration of this appears in the memoir of Huang Shaohong, a native of Guangxi in southern China who in 1937 became the chairman of the Hubei provincial government in central China. On the occasion of the inauguration of the long-distance telephone line between Wuchang in Hubei province and Guangzhou in Guangdong province, Huang spoke to Guangdong chairman and native Huang Musong. Huang Shaohong marvelled at their being able to converse in Cantonese and even though three provinces separated them, it was 'like chatting in the Liangguang region [i.e. Guangdong and Guangxi provinces]'.³² That being said, the development of long-distance telephony did not mean a halt in the use of the telegraph, which was likely due to the advantage of the existing network the telegraph possessed. According to an official Chinese government publication, while in 1932 3,974,085 telegrams were sent domestically, this number stood at 6,575,192 during the fiscal year from July 1935 and June 1936. This compared to 1,094,878 long-distance phone calls in 1932 and 3,329,384 long-distance phone calls in the fiscal year 1935/6.³³

Other regional long-distance telephone systems also sprang up during this period. In 1914, Japan attacked the German leasehold at Jiaozhou Bay in Shandong province in northern China and came to occupy parts of the province until 1922. In 1922, in what some have seen as a success for Chinese diplomacy, China and Japan came to an agreement about the return of the occupied territories to China at the Washington Conference.³⁴ During its occupation, Japan established a long-distance telephone connection along the railway between the coastal city Qingdao and the provincial capital Jinan with a branch line from Zhangdian to Boshan, both of which lie east of Jinan. This was taken over by the Beiyang government's Ministry of Communication in 1923.³⁵ The Beijing–Tianjin and Jinan–Qingdao long-distance telephone connections were of foreign origin and later were taken over by the Chinese government. However, after China descended into internal warfare and disintegration following

dollars as a fee for a call from Nanjing to Shanghai City (*Shanghai shiqu*). See 'Ministry of Communication's Long Distance Telephone Service', *The China Press* (12 Mar. 1937), 2.

³¹On this diversity, see, for instance, Gina Anne Tam, *Dialect and Nationalism in China, 1860–1960* (Cambridge, 2020).

³²Huang Shaohong, *Huang Shaohong huiyilu* (Beijing, 2011), 315, 324–5. On Huang Shaohong and Huang Musong, see *The China Weekly Review*, *Who's Who in China: Biographies of Chinese* (Shanghai, 1933), 53, 55.

³³Guomin Zhengfu Zhujichu Tongjiju, *Zhonghua minguo tongji tiyao* (Chongqing, 1940), 174, 176.

³⁴Lukas K. Danner, 'Occupation during and after the War (China)', in *1914–1918-online: International Encyclopedia of the First World War*, ed. Ute Daniel, Peter Gatrell, Oliver Janz, Heather Jones, Jennifer Keene, Alan Kramer, and Bill Nasson (Berlin, 2018), <https://encyclopedia.1914-1918-online.net/article/occupation-during-and-after-the-war-china/>. For a positive view of the Chinese diplomatic performance related to Shandong at the Washington Conference, see, for instance, Shi Yuanhua, *Zhonghua minguo wajiaoshi* (Shanghai, 1994), 194–6.

³⁵Zhang, *Zhongguo xiandai jiaotong shi*, 492; Qingdaoshi shizhi bangongshi, *Qingdao shizhi: youdian zhi*, (Beijing, 1994), 114.

the fall of the Qing Dynasty in 1912, different regional warlord regimes also developed long-distance telephony. Unlike the ad-hoc take-over of long-distance telephone connections of foreign origin, these efforts by warlord regimes were more serious extensions of infrastructural power through long-distance telephony.

A first example of such development can be found in Manchuria in north-eastern China, which was under the control of warlord Zhang Zuolin during the 1920s until his death in 1928.³⁶ By 1923, long-distance telephone lines for military use had already been established between Fengtian, Jilin, Harbin and Changchun, all cities in north-eastern China.³⁷ Between 1922 and 1924, long-distance telephone connections covering a distance of at least 1,022 kilometres were established in Fengtian, Jilin and Heilongjiang provinces in north-eastern China. In this case the relevant report suggests that creating additional income seems to have been a prime motivator.³⁸ In December 1924, shortly after Zhang Zuolin had emerged victorious from the Second Zhili-Fengtian War and, together with Feng Yuxiang, had gained control of the central government in Beijing, the Ministry of Communications started work on a long-distance telephone line between Tianjin and Fengtian. Over 600 kilometres in length, it was linked with the provincial Telephone Bureau (*dianhuaju*) in Fengtian and the line successfully connected on 15 April 1925. Zhang stressed the importance of the line for the military and communications (*jiaotong*), and his army was directly involved in its laying.³⁹ By 1926, several lines existed in the provinces of Heilongjiang, Jilin and Fengtian.⁴⁰

Two further examples are Wu Peifu and Sun Chuanfang, two other major warlords active in pre-1927 China. Based in Luoyang in Henan province in central China between 1920 and 1924, Wu established long-distance telephone connections between Baoding

³⁶Zhang 'rose to rule Manchuria as a virtually autonomous state from 1919 to his death' in 1928. See Howard L. Boorman, *Biographical Dictionary of Republican China: Volume I* (New York, 1967), 115.

³⁷Jilin Military Governor to Civil Governor of Fengtian (5 May 1923), in *Liaoningsheng difangzhi ziliao congkan, diwuji*, ed. Liaoningsheng difangzhi bangongshi (Shenyang, 1987) [hereafter *LNSDFZ*], 131.

³⁸Minguo 10 nian zhi 13 nian (1921–1924) Feng Ji Hei Dianzhengqu yingye baogaoshu (*dianhua bufen*), *LNSDFZ*, 133. The report also mentions that most long-distance telephone lines were established with funds raised locally. Overall, it is unclear whether the figures of established long-distance telephone lines in the report represent the totality of all established long-distance lines in the region for the time period covered. I have converted measurements given in *li* here to kilometres by multiplying it by 576 metres, the conversion rate given (despite its acknowledgement that there was wide variation in measuring standards in China) in John Scott Keltie and M. Epstein, *The Statesman's Year-Book: Statistical and Historical Annual of the States of the World for the Year 1925* (1925), 763. Except for the Nationalist government's 1928 plan for the development of long-distance telephony discussed below, all other conversions from *li* to kilometres in this article come from sources from after 1929, when the Nationalist government fixed that one *li* equals 500 metres (for the relevant law, see Kwei Chungshu, *The Chinese Year Book, 1935–36, Premier Issue* (Shanghai, 1935), 1817–19) and I have converted these accordingly.

³⁹Zhang, *Zhongguo xiandai jiaotong shi*, 492–3; Zhang Zuolin to Fengtian Civil Governor (21 Jan. 1925), *LNSDFZ*, 137–8. Zhang, *Zhongguo xiandai jiaotong shi*, says that the Ministry of Communications started plans (*xingban*) for the line in 1924 without giving a more specific date, but clearly states that construction started in December of that year. The Zhenwei Army (*zhenwei jun*) mentioned in the second source was under Zhang's command. See Xu Che and Xu Yue, *Zhang Zuolin zhuan* (Beijing, 2010), 76. On Zhang Zuolin and the Second Zhili-Fengtian War, see Bruce A. Elleman, *Modern Chinese Warfare: 1795–1989* (2001), 163–5; Arthur Waldron, *From War to Nationalism: China's Turning Point, 1924–1925* (Cambridge, 1995).

⁴⁰Zhang, *Zhongguo xiandai jiaotong shi*, 492–3, 508–10.

in North China and Luoyang, Zhengzhou and Kaifeng in Henan province by 1922.⁴¹ In early 1924, preparations were also made for the construction of a long-distance telephone line between Luoyang and Wuchang in Hubei province, which is also in central China, which promised to be useful militarily. Wu sent an engineer of the Ministry of Communications, which at the time was under Wu's control, to Hubei to survey the line together with authorities there.⁴² In eastern China, Sun Chuanfang ruled over the five provinces of Jiangsu, Zhejiang, Fujian, Jiangxi and Anhui between late 1925 and 1926 until his power declined with the advancement of the Northern Expedition from the second half of 1926.⁴³ During his rule, Sun planned the establishment of a large long-distance telephone network that was to connect all five provinces he controlled. Shanghai and Nanjing were to be amongst the main hubs of the network.⁴⁴ Sun was not able to realise his plans, though a telephone line between Shanghai and the nearby city of Wuxi was put into operation during his rule, which was to be part of a longer line between Shanghai and Nanjing. The Shanghai–Nanjing connection was only to be completed after the establishment of the new central government in Nanjing though.⁴⁵

Before the establishment of the Nationalist central government in 1927, long-distance telephony was only developed regionally. There is no evidence of a comprehensive plan towards the establishment of a national telephone network and the development that was carried out in the years immediately before 1927 was driven by local military needs.⁴⁶ As we have seen, it was regional regimes that drove and carried out the expansion of long-distance telephony. Indeed, when describing the recent progress of long-distance telephony in 1926, the *North-China Herald* explained that it 'is in no small measure the result of military activity, commanders seeking to

⁴¹'Wu Peifu choushe Zheng Han changtu dianhua', *Jingbao* (19 Nov. 1922). On Wu being based in Luoyang and in control of Henan during this period, see Guo Jianlin, *Wu Peifu dazhuan, xia* (Beijing, 2012), 337–8; Odoric Y.K. Wou, *Militarism in Modern China: The Career of Wu P'ei Fu, 1916–1936* (Canberra, 1978), 59, 281 n. 1. Wou also mentions Wu's plans for long-distance telephony between Henan and Hubei, but gives Hankou as the southern end point. See Wou, *Militarism in Modern China*, 67.

⁴²'Wu Luo changtu dianhua', *Shuntian shibao* (10 Jan. 1924), 7. On Wu and his Zhili clique being in control of the central government at the time, see Howard Boorman, *Biographical Dictionary of Republican China: Volume III* (New York, 1970), 444–50.

⁴³Boorman, *Dictionary of Republican China: Volume III*, 161–2.

⁴⁴'Wusheng changtu dianhua zhi guihua', *Taiping daobao* (27 Apr. 1926), 29; 'From the Chinese Press', *The China Weekly Review* (1 May 1926), 241.

⁴⁵Zhang, *Zhongguo xiandai jiaotong shi*, 494. This source seems to suggest involvement by the Beiyang government's Ministry of Communications but does not give any specifics beyond the fact that the Ministry drew up regulations, liaised with other telephone companies and operated the line. The line started operations in May 1926. See 'Long Distance Telephone between Shanghai and Wusih', *The Oriental Engineer*, 7 (Jul. 1926), 36.

⁴⁶Zhao, *Zhongguo zhi dianxin shiye*, 23–4. The time span of Zhao's judgement about the military and regional nature of long-distance telephone developments and the absence of a comprehensive plan is somewhat unclear from his writing. While he clearly includes the immediate period before the establishment of the central Nanjing government, it is unclear whether his judgement also pertains to the Jinan–Qingdao and Beijing–Tianjin lines, which were of foreign origin, or provincial lines in Shanxi, Hunan and elsewhere, which he mentions before his discussion of the Jinan–Qingdao railway are also included. In any case, with regard to a comprehensive national plan, I have not found any evidence of such a plan from before 1927. The regional fragmentation of infrastructure we see here in terms of long-distance telephony is similar in pattern to the development of railways during this period: Köll, 'Transport and Communication Infrastructure', 473.

tie up their territory by telephone'.⁴⁷ For these warlords, the development of long-distance telephone lines promised not only a means of fast communications when at war, but potentially also a useful revenue stream.⁴⁸ The fact that military needs due to ongoing Chinese internal warfare took centre stage during this period should not distract us from the accomplishments made in terms of the development of long-distance telephony though.⁴⁹

The efforts of the central government's Ministry of Communications remained very limited and, as we have seen in the case of Zhang Zuolin and the Tianjin–Fengtian line, even if the Ministry nominally carried out a project, warlord regimes could be involved in a major way.⁵⁰ Given the shifting control over the central government and general disunity of the country, the fact that the Ministry of Communications could not play a major role in developing long-distance telephony and that regional regimes emerged as the driving force is not surprising.⁵¹

Despite these limitations, the development of long-distance telephony in China during the period between 1912 and 1927 should not be overlooked either. As [Figure 1](#), which shows the length of long-distance telephone lines and telephone cables listed in a statistical publication of the Ministry of Communications, indicates, shortly after the Nationalist government had taken power, some long-distance infrastructure certainly existed in different regions.⁵² In particular, we can highlight that in the provinces of

⁴⁷'The Connecting Links', *North-China Herald* (20 Mar. 1926), 63.

⁴⁸Wou, *Militarism in Modern China*, 67.

⁴⁹Paulès makes a similar point by using the Hegelian concept of 'cunning of reason' to argue that 'although warlords who sought to extend transportation systems were motivated mainly by concerns about their own military strength, their actions converged to create a significant expansion of China's network of transportation and communications'. See Paulès, 'Warlords at Work', 43–4. I am hesitant though to speak of such a network convergence between the efforts of different regimes in the case of long-distance telephony.

⁵⁰Beyond his direct involvement in laying wires, Zhang of course was in control of the Beijing government at the time as discussed above. Besides the Tianjin–Fengtian and the Shanghai–Nanjing lines discussed above, Zhang, *Zhongguo xiandai jiaotong shi* also mentions Ministry efforts in northern Jiangsu and in the construction of the Beijing–Suiyuan line. However, while few details about the former region are provided the latter was also constructed on the request of a warlord, specifically Feng Yuxiang. See Zhang, *Zhongguo xiandai jiaotong shi*, 493–5. Other accounts that make similar claims without providing further details are Zhongyang dangbu guomin jingji jihua weiyuanhui, *Shinianlai zhi Zhongguo jingji jianshe*, 3: 12; Zhao, *Zhongguo zhi dianxin shiye*, 23–4. With regard to the Beijing–Suiyuan line, Zhang does not directly refer to Feng but rather to the *Xibian bianfang duban* (Superintendent of the Defence of the North-western Border), who asked for the establishment of the line in Jan. 1925. This was a position that Feng had occupied since May 1923 and that he was appointed to again on 4 Jan. 1925. See James E. Sheridan, *Chinese Warlord: The Career of Feng Yü-hsiang* (Stanford, 1966), 149. Sheridan translates the post as 'Tupan of Northwestern Defense'. He does not explicitly mention the appointment in 1925. On the appointment in 1925, see Jiang Tiesheng, *Feng Yuxiang nianpu* (Jinan, 2003), 68. On the first appointment in 1925 also see Yu Lunian, *Zhongguo guanqian dacidian* (2 vols.; Harbin, 1992), II, 1125. In addition, I have not found any evidence that anyone else would have held this position in Jan. 1925, so the person in question is bound to be Feng.

⁵¹While he comments little on long-distance telephony, Zhang describes the stagnation of the developments of telegraphy by the Ministry during the Beiyang period. See Zhang, *Zhongguo dianxinye*, 28–33.

⁵²The discrepancy between telephone lines and telephone cables is due to the fact that more than one cable could be laid between two locales on a telephone line. This is why in several cases the cable length is greater than the line length.

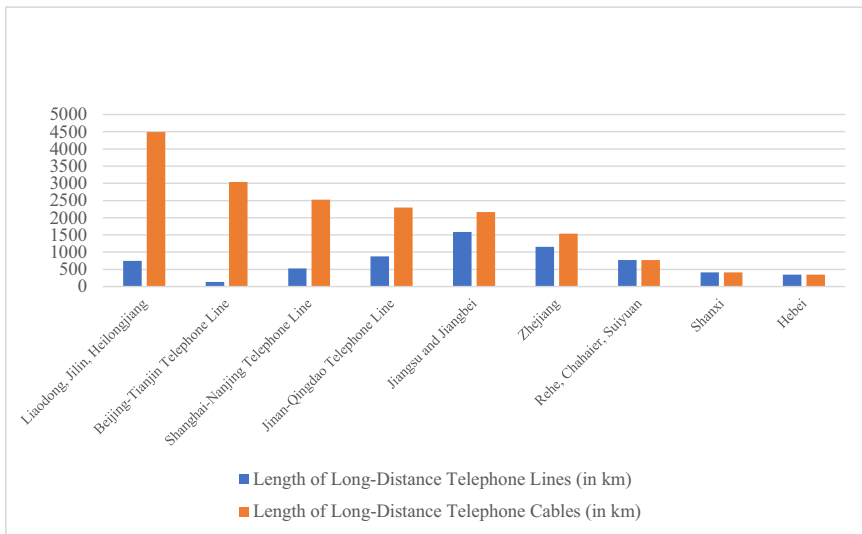


Figure 1. Length of Chinese Ministry of Communications Long-Distance Telephone Lines and Cables, 1928. (Source: Jiaotongbu, *Jiaotongbu tongji nianbao: Zhonghua minguo shiqi nian*, 126.)

Jilin, Heilongjiang and Liaodong (Fengtian) in north-eastern China, which had been under the rule of Zhang Zuolin, the long-distance telephone infrastructure had been developed to a certain extent. That being said, it would only be during the Nanjing Decade that long-distance telephony would be developed in China on a large scale. From the vantage point of infrastructural power, we can conclude that certain regional warlord regimes managed to develop infrastructural power through the establishment of long-distance telephone infrastructure to a certain extent, whilst the central government's accomplishments in this regard were minimal.

The Nanjing government and long-distance telephony

In 1927, the Chinese Nationalists established a new government in Nanjing. The Chinese Nationalists were committed to nationalism, anti-imperialism, modernisation and state-building. In 1928, they completed their Northern Expedition and, for the first time since the fall of the Qing Dynasty, China had a relatively strong central unified government again. Yet, the actual control of this new Nanjing government over many of the provinces remained limited. Numerous regional leaders were unwilling to submit to the central government and warfare to bring them to heel ensued. Several important provinces, including, as we will see, Guangdong in the South, up to 1936 retained autonomy from the central government. In addition, the Nationalists waged war against the Chinese Communist Party and were faced with a growing external threat and military encroachment from Japan.⁵³ Part of the government's state-building effort was the establishment of a national long-distance telephone system. In

⁵³For a good introduction to the Nanjing Decade, see Lloyd E. Eastman, Jerome Chen and Suzanne Pepper, *The Nationalist Era in China, 1927-1949* (Cambridge, 1991); Diana Lary, *China's Republic* (Cambridge,

the end, the Nationalist government made some progress towards constructing such a national system and thereby developing infrastructural power through long-distance telephony but failed to establish a truly national telephone system and remained reliant on the cooperation of regional leaders who controlled regional systems.

As already indicated at the beginning of this article, long-distance telephony was high on the agenda of successive ministers of communications of the Nationalist government. In 1928, the Ministry of Communication authored a comprehensive plan for the reform and development of China's communications infrastructure. The plan mentioned long-distance telephony as a major part of telecommunications development and included a detailed scheme for its expansion.⁵⁴ The detailed scheme first explained that China's long-distance telephone lines were underdeveloped and measured less than 6,000 kilometres in length. It stressed the importance of the telephone for the welfare of the people (*minsheng*), a key pillar in the ideology of the Chinese nationalists, and economic development and that long-distance telephony needed to be developed because the people needed it. Most importantly, the scheme called for the development of a 'national long-distance telephone service'.⁵⁵ Specifically, the Ministry envisioned a three-phase development plan. Each phase was to last three years. In total, the scheme was to see the construction of long-distance telephone connections so that the total length of long-distance telephone connections in China was to reach more than 57,000 kilometres. It lists over 200 lines and 600 different nodes. In great part, the plan relied on the existing telegraph infrastructure. Due to the limited resources of the government, costs were to be reduced by using existing telegraph poles and hanging telephone lines onto them. The plan also explained that the development of long-distance telephony was to be carried out by the Ministry of Communications. Finally, the Ministry made clear at this point already that this was only the first plan for the development of long-distance telephony and that a second plan would be necessary in the future. The plan was clearly national in scope, covering all eighteen provinces of 'China proper', the traditional heartland of China.⁵⁶ It would have clearly transcended any of the previously existing regional long-distance telephone systems.

2006), ch. 3. On the Guomindang, see, for example, Robert E. Bedeski, *State-Building in Modern China: The Kuomintang in the Prewar Period* (Berkeley, 1981). On the Guomindang's state-building efforts, also see, for instance: Strauss, *Strong Institutions in Weak Politics*; Young, *Nation-Building Effort*. Young briefly mentions accomplishments in long-distance telephony as well. See Young, *Nation-Building Effort*, 393–4.

⁵⁴For the general plan, see Jiaotongbu, *Jiaotong shiye gexin fangan* (Nanjing, 1928). The annex specifically dealing with long-distance telephony is printed in *Tielu gongbao: Huning Huhangyong xian* 44 (1928). As this document falls before 1929 (see n. 38), I have again followed the conversion rate given in *The Statesman's Year-Book* (see M. Epstein, *The Statesman's Year-Book: Statistical and Historical Annual of the States of the World for the Year 1928* (1928), 751), which, at the same time, again, also acknowledges the wide variety of measuring standards in China) and multiplied the figures in *li* given in the document by 576 metres to arrive at the figure in kilometres.

⁵⁵I use here the English term from an English summary of the communications plan published by Wang Boqun in the *Far-Eastern Review*: Wang Boqun, 'General Plan of Communications', *The Far Eastern Review* (Sep. 1928), 389–93. The annex mentioned in n. 54 uses the term 'quanguo changtu dianhua xianlu'.

⁵⁶The provinces of China proper are Anhui, Fujian, Gansu, Guangdong, Guangxi, Guizhou, Henan, Hubei, Hunan, Jiangsu, Jiangxi, Shaanxi, Shandong, Shanxi, Sichuan, Yunnan, Zhejiang and Zhili. The source refers mostly to Zhili province, but in one instance also to Hebei province. Zhili province was renamed 'Hebei' following the establishment of the Nationalist government.

Two years later, Zhuang Zhihuan, Director General of Telegraphs and Telephones, lamented in the *Far Eastern Review* that still ‘very few toll [long-distance] lines’ existed. As Zhuang explained, due to the poor state of both local and long-distance telephones, the Ministry of Communications was contemplating ‘a comprehensive scheme to develop the local and long distance telephone system into a national unit’. As Zhuang continued, ‘the proposed toll and long distance telephone system’ would allow ‘all political centers throughout the whole country to converse directly ... [a]ll commercial centers which have close connection [sic] throughout the whole country to converse directly ... [and] [a]ll districts in the country to have at least one toll [long-distance] cut-in station’. While several six-year plans would be necessary to achieve this goal, the first six-year plan was to include several trunk lines. The discussion in the article in the *Far Eastern Review* suggests that the first six-year plan would have also covered all eighteen provinces of China proper.⁵⁷

Early on the central government’s Ministry of Communications also made clear that it controlled and supervised the development of communications in China. In Wang Boqun’s petition quoted at the beginning of this article, he already vehemently asserted these rights.⁵⁸ In 1929, the Nationalist government published its Telecommunication Regulations (*dianxin tiaoli*). These clearly specified that the central government and specifically the Ministry of Communications were in charge of telecommunications. Public and private entities and local governments were only allowed to operate telecommunications under very narrow circumstances and if

⁵⁷Joonvin T. Chwang (Zhuang Zhihuan), ‘Official Program for the Development of Local and Telephone Systems in China’, *The Far Eastern Review* (June 1930), 287–9. On Chwang acting as Director General of Telegraphs and Telephones at the time of publication of this article, see George F. Shecklen, ‘Shanghai, the Radio Central of China’, *The Far Eastern Review* (June 1930), 291. On Chwang, see *The China Weekly Review, Who’s Who in China: Biographies of Chinese Leaders, Fifth Edition* (Shanghai, 1936), 70. As for the geographical coverage of the first six-year plan outlined in the article, only certain trunk lines are listed. The nodes mentioned in these trunk lines cover all eighteen provinces of China proper except Anhui and Henan. The list of lines also includes 3,000 kilometres of branch lines for each year of the first six-year plan, but these are not further specified. It is likely that Henan would have been covered through a node by the Hankou–Beiping line listed amongst the trunk lines. The mentioned trunk line between Hankou and Shanghai likely would have included a node in Anhui. This seems to be confirmed by the two maps that accompany the article. They both carry the caption ‘Plan for the Location of Main Lines of the Chinese National Long Distance Telephones’ and cover all eighteen provinces of China proper, including nodes in Anhui and Henan. Unfortunately, few further details are given about the maps and their relation to the plan outlined in the text, but given that the article states that ‘[t]he work to be done during the second period will be determined after completion of the first period work’ and the details about the construction of specific lines are about the first six-year plan, it is fair to assume that the maps also pertain to the first six-year plan. While the maps are not fully congruent with the lines explicitly named in the text of the article (mainly in terms of lines on the maps not appearing in the list of lines in the text; only in a few instances do lines mentioned in the text not seem to appear in the maps), this is likely mainly due to the fact that the textual description leaves room for unspecified branch lines for each year of the plan as explained above and the lower map only shows major nodes. While the legend of the upper map gives ‘political line’ as its only type of line, the lower map gives both ‘political line’ and ‘commercial line’ without elaborating further on the difference. I have taken these two different types as being equal lines of the same national system.

⁵⁸Wang Boqun, ‘Guanyu quanguo heli weichi dianhua shiye de baogao’ (25 Dec. 1928), in *Wang Boqun wenji*, ed. Tang Tao (Shanghai, 2018), 56–8.

the central government had given its permission.⁵⁹ Clearly, the projection of infrastructural power through telecommunications infrastructure was meant to remain a prerogative of the central government.

Despite the grand plans for the establishment of a national telephone system, the Nanjing government's initial efforts to develop large-distance telephone lines remained largely limited to the improvement of existing lines before 1931.⁶⁰ The Ministry cracked down on privately run long-distance telephone lines though. In 1930, it reported that the Ministry had already banned most of the long-distance lines established privately by private telephone companies in Zhejiang province in eastern China.⁶¹ This pattern of moving against privately run long-distance telephone connections that had not obtained prior permission from the Ministry or were not congruent with the Ministry's plans for telecommunications development was more widespread.⁶² It is thus not surprising that private entrepreneurs did not come to play a major role in long-distance telephony.⁶³ However, as we will see, the central government was in a much weaker position vis-à-vis the development of long-distance telephony by provincial governments.

After 1931, the Ministry of Communications more actively pursued the construction of important long-distance telephone trunk lines. Besides trunk lines within individual provinces, a good number of trunk lines connecting different provinces were constructed.⁶⁴ At the same time, the central government also had to acknowledge the progress of the provinces in the construction of long-distance telephone infrastructure. In 1933, a new law was introduced that allowed provincial governments to open and manage long-distance telephone lines within their respective provinces. The legal text affirmed that long-distance telephony was supposed to be controlled by the Ministry of Communications. At the same time, it acknowledged that many long-distance lines had been opened locally. This led to competition and conflicts with the central government. Moreover, the legal text conceded that financial means were limited. Thus, some autonomy was to be given to the provinces in terms of establishing long-distance telephone lines. While the legal text provided a number of guidelines for managing long-distance telephony between provinces and the Ministry of Communications, it also explained that the Ministry should negotiate specific regulations with each province.⁶⁵ However, only Zhejiang Province came to an agreement

⁵⁹Zhang, *Zhongguo dianxinye yanjiu*, 46, 49–50.

⁶⁰Zhongyang dangbu guomin jingji jihua weiyuanhui, *Shinianlai zhi Zhongguo jingji jianshe*, 3: 12–13; Zhao, *Zhongguo zhi dianxin shiye*, 24.

⁶¹'Jiaotongbu zhengzhi gongzuo baogao, minguo shijunian sanyue zhi shiyue', in Luo Jialun, Huang Jilu, Du Yuanzai, Xiao Jizong, Qing Xiaoyi, *Geming Wenxian* (117 vols.; Taipei, 1953–89), xxvi, 167.

⁶²Zhang, *Zhongguo dianxinye yanjiu*, 58–61.

⁶³On the small number of private telephone companies engaged in long-distance telephony, see Zhang, *Zhongguo dianxinye yanjiu*, 54.

⁶⁴Zhongyang dangbu guomin jingji jihua weiyuanhui, *Shinianlai zhi Zhongguo jingji jianshe*, 3: 13–14.

⁶⁵'Jiaotongbu weituo sheng zhengfu daibai changtu dianhua yuanze' (7 Jul. 1933), Jiaotongbu dianzhengsi, *Jiaotongbu dianzheng faling huikan, di er ji* (Nanjing, 1933), 243–8. I am referring here to both the fourteen regulations of the law and the justifications (*liyong*) given in the legal text.

with the Ministry of Communications.⁶⁶ Even in Jiangsu province, where the capital Nanjing was located, the 1933 law was met with resistance.⁶⁷

An important feature of the growth of long-distance telephony during the Nanjing decade that showed some continuities with the pre-1927 warlord period was that military necessities could lead to the growth of telephone infrastructure. For instance, in response to the 1932 battle of Shanghai against Japan, a long-distance telephone line between Yantai and Zhifu Island was erected in Shandong in North China for exclusive military use. When the line fell into disuse, the proposal was made to have it transferred to the Yantai telephone bureau and opened to the public and arrangements were made accordingly.⁶⁸ Similarly, due to the military action in Shanghai against Japan in 1932, long-distance telephone lines for military use were established in Jiangsu and Zhejiang and, after the end of the hostilities, the Ministry of War asked the Ministry of Communications to take over these lines.⁶⁹

In a work report from 1935, the Ministry of Communications said that due to the intensity of the military efforts of suppressing the Communists in Sichuan province (*chuansheng jiaofei junshi*) in South-west China, in its telecommunication efforts in the province, the Ministry had made specific plans for the establishment of long-distance telephony and completed lines between Chengdu and Baxian and Chengdu and Emei, as these were seen as particularly important for the suppression of the Communists.⁷⁰ Likewise, the long-distance connection between Baxian and Guiyang in Guizhou province in south-western China was also established by the Ministry of Communications based on the needs for suppressing the Communists. The line connected Baxian, Zunyi and Guiyang by phone and was also linked up with the lines between Chengdu and Baxian and Chengdu and Emei.⁷¹ In 1936, the Ministry of Communications explained that the lines between Baxian and Chengdu and Baxian and Guiyang were initially only used for military purposes. However, their establishment had been costly and if exclusive military use was continued, the costs for establishment

⁶⁶'Jiaotongbu weituo Zhejiang sheng daiban changtu dianhua banfa' (2 Jul. 1934), Jiaotongbu fagui weiyuanhui, *Jiaotong fagui huibian* (Nanjing, 1935), 380–1. On the 1933 law and the agreement with Zhejiang, also see Zhao, 'Changtu dianhua jianshe', 24; Song, *Shandong shengban changtu dianhua*, 43–4 and Zhang, *Zhongguo dianxinye*, 52–4, 74. Song states that no evidence exists that any other provinces came to a similar agreement with the central government. I have also not been able to find any related evidence.

⁶⁷'Wei Jiaotongbu weituo shengzhengfu daiban changtu dianhua yuanze nijiu besheng shiji xuyao qingxing zhuxiang qianzhu yijian zishang jiaotongbu dingjing shifou kexing tiqing gongjue' (7 Dec. 1934), 1054-1934-001-0029-0088, Jiangsu Provincial Archives, Nanjing.

⁶⁸'Jiaotongbu ershiyi nian ba yuefen gongzuo baogao', Academia Historica, Taipei (hereafter AH), 017000000283A, 1812. According to all available evidence, the Yantai telephone bureau (Yantai dianhuaju) was under the control of the Ministry of Communications. For a brief history of the bureau, see Shandong sheng difang shizhi bianzuan weiyuanhui, *Shandong shengzhi, youdian zhi, shangce* (Jinan, 2000), 75. Song also describes the municipal telephone service of Yantai as being run by the Ministry. See Song, *Shandong shengban changtu dianhua*, 55. The fact that the taking over of the line is discussed in the work report of the Ministry also supports the view that the bureau was run by the Ministry.

⁶⁹'Jiaotongbu ershiyinián jiuyuefen gongzuo baogao', AH, 017000000283A, 1834.

⁷⁰'Jiaotongbu ershisinián bayuefen gongzuo baogao', AH, 017000000289A, 1012.

⁷¹'Jiaotongbu ershisinián shiyuefen gongzuo baogao', AH, 017000000289A, 1088–1089. Zhao also briefly mentions the connection between military needs and the development of long-distance telephony during this period in general and for connections in Sichuan and Guiyang in particular. See Zhao, 'Changtu dianhua jianshe', 25. On Sichuan and Guiyang, also see Zhang, *Zhongguo dianxinye*, 73.

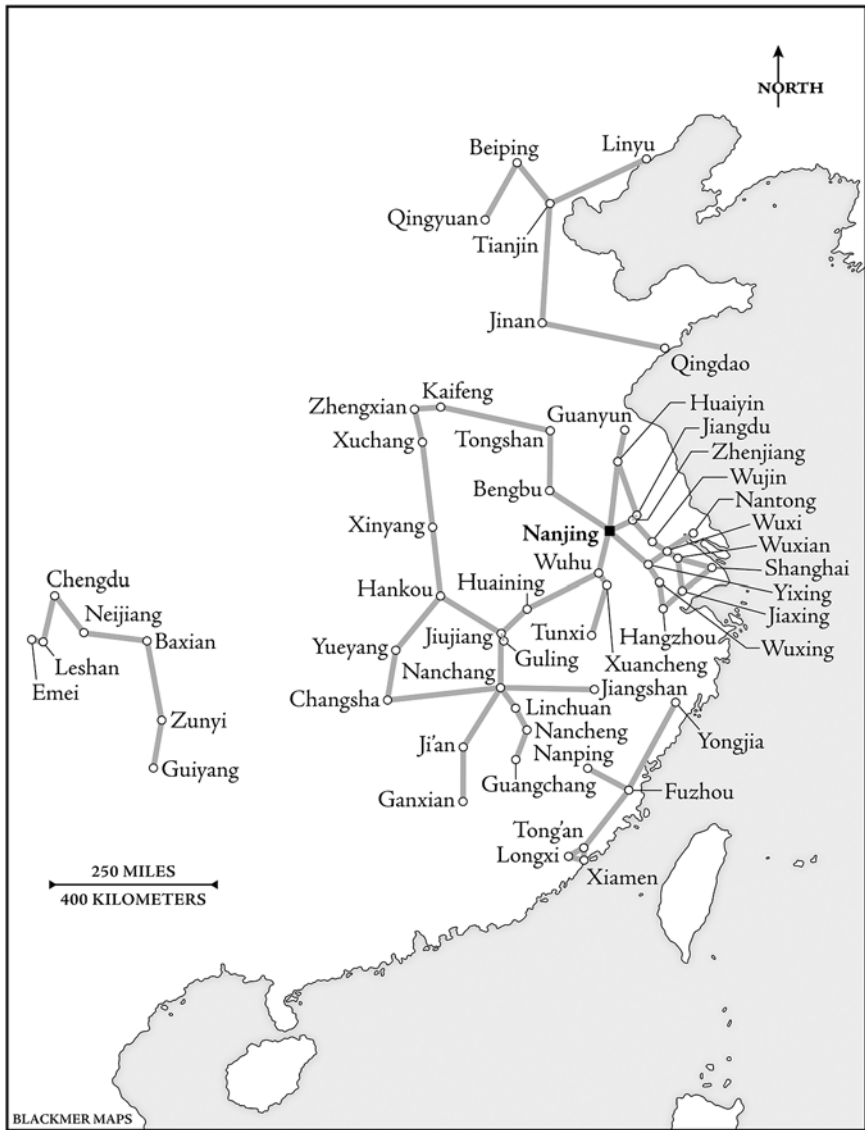


Figure 2. Operational Trunk Long-Distance Telephone Connections of the Ministry of Communications, 1 September 1936. Adapted from 'Jiaotongbu changtu dianhua ganxian lianluo tonghua', *Shenbao* (1 September 1936), 3. Map by Kate Blackmer.

and maintenance could not be recouped. Moreover, in this way the lines would also not be of benefit to merchants. Subsequently, both lines were transferred to commercial use by June 1936.⁷² It is unclear when the connection between Chengdu and Emei was opened to the public. However, as Figure 2 shows, by 1936 Chengdu, Emei, Baxian,

⁷²'Jiaotongbu ershiwunian liuyuefen gongzuo baogao', AH, 01700000290A, 267.

Zunyi and Guiyang had become important nodes in the Ministry's regional telephone system in western China and were openly advertised.⁷³ All in all, we thus see that military reasons – caused by both external conflict with Japan and internal conflict with the Communists – were an important driver of long-distance infrastructure establishment and thus the development of infrastructural power. This is not surprising given that from the early 1930s, 'the need to prepare for war and actual war drove the Nationalist to devote their energies to state-building, with the military at its core'.⁷⁴ At the same time, we also see that an exclusive military focus for such lines does not seem to have been feasible financially. Moreover, the Ministry of Communications also seems to have been keen to serve commercial interests such as merchants with its long-distance telephone infrastructure.

The most important project for the extension of Chinese long-distance telephony before 1937 was the Ministry's scheme to build a 'Nine-Province Telephone Net-Work' for which work was begun in 1934.⁷⁵ As Minister of Communications Zhu Jiahua explained in 1935, this 'nine-province network of trunk lines ... will afford direct communication between any two principal cities in [the provinces of] Kiangsu [Jiangsu], Chekiang [Zhejiang], Anhwei [Anhui], Kiangsi [Jiangxi], Hupeh [Hubei], Hunan, Honan [Henan], Shantung [Shandong] and Hopei [Hebei]', thus covering provinces in eastern, south-eastern, central and northern China. Later, this network was to be expanded to the north-west.⁷⁶ The motivation for this project was that while the Ministry possessed several important telephone trunk lines, these were not properly interconnected.⁷⁷ Another reason was that 'most of the long-distance telephones previously in existence represent individual efforts of various provincial governments', so that 'no coherent plan was ever devised to link them up while being built'.⁷⁸ This again pointed to the fact that the provinces played a major role in the development of long-distance telephony during this period. More broadly, Zhu elsewhere explained that considerations

⁷³As for the two other nodes of the western long-distance telephone complex shown in [Figure 2](#), i.e. Neijiang and Leshan, Neijiang is already mentioned as a node in the Baxian–Chengdu–Emei complex in 1935. See 'Jiaotongbu ershisinian shiyuefen gongzuo baogao', AH, 017000000289A, 1088–1089. While there is no information available on Leshan, it likely from the start was also a node of the Chengdu–Emei connection.

⁷⁴Van de Ven, *War and Nationalism*, 15. Van de Ven traces this drive towards state-building mainly to the external threat of Japanese aggression, but, as we see in the case of long-distance telephony, the campaign against the Chinese Communists also played a role. On the connection between foreign intervention and state-building, see also Ja Ian Chong, *External Intervention and the Politics of State Formation: China, Indonesia, and Thailand, 1893–1952* (Cambridge, 2012).

⁷⁵See Chu Chiahua [Zhu Jiahua], *China's Postal and Other Communications Services* (Shanghai, 1937), 186. After explicating the development of long-distance telephony in China, Zhu says that 'the most important development in China's telephone communication is undoubtedly the nine-province telephone network'. Zhao, 'Changtu dianhua jianshe' also points out that this was the most important project in the pre-war development of long-distance telephony.

⁷⁶Chu Chiahua [Zhu Jiahua], *The Ministry of Communications in 1934*. (Shanghai, 1935), 7–8. Zhu also notes that 'there was also another project of a Kiangsu [Jiangsu] provincial telephone network, forming part of the larger scheme, but it has been decided to transfer some of the materials intended for the Kiangsu project to Kiangsi [Jiangxi] and Fukien [Fujian]'.

⁷⁷'Jiaotongbu ershisian nian san yuefen gongzuo baogao', AH, 017000000286A, 352.

⁷⁸Chu, *China's Postal and Other Communications Services*, 186.

of commerce, the transmission of political orders and national defence were behind the plans for the project to connect these nine provinces.⁷⁹

In addition to certain existing lines, at the core of the project was the construction of five new trunk lines. The network as a whole was to measure over 4,000 kilometres.⁸⁰ While the central government carried out this larger project, its overall planning also relied on the provinces. As Zhu explained in 1937: 'While the [nine-province telephone] network serves to provide trunk lines between the principal cities of these provinces, each province thus served is expected to build up its local systems so as to bring parts of the province in contact with the main network.'⁸¹ Even then, so Zhu continued, the nine-province telephone network would only 'form the foundation of a truly national network to be built up in due course'.⁸² Zhu was correct insofar as even this ambitious project only covered nine of the eighteen provinces of China proper. By the middle of 1937, shortly before the outbreak of war, construction of the nine-province long-distance telephone network had been completed but it was still in the process of being gradually opened up for communications.⁸³

By the outbreak of war in July 1937, the efforts of the central government had borne fruit to a certain extent. As [Figure 2](#), a map adapted from an advertisement of the Ministry of Communications from autumn 1936, shows, by that time the Ministry operated a set of trunk lines. Besides smaller regional clusters in North China (covering Shandong and Hebei provinces), South-east China (covering Fujian and Zhejiang provinces) and western China (covering Sichuan and Guizhou provinces), most importantly there existed an interconnected core cluster that spanned the provinces of Jiangsu, Zhejiang, Anhui, Henan, Hubei, Hunan and Jiangxi. Thus, these trunk lines covered twelve of the eighteen provinces of China proper.⁸⁴ This mirrored the fact that by late 1936 the central government politically controlled eleven provinces within China proper.⁸⁵ This core cluster was most dense in the lower Yangtze region, which was the central government's power base. At the same time, this system clearly was not national in scope. The trunk lines did not cover large swathes of China proper, such as Guangdong and Guangxi provinces in South China, Yunnan province in South-west China or Shaanxi province in North-west China. [Figure 3](#), based on a list of long-distance connections between major cities from the same advertisement, shows that certain cities by 1936 enjoyed substantial long-distance telephone connectivity. In particular, Shanghai, Nanjing, Wuxian, Wuxi and Zhenjiang each possessed over 200 connections to other major cities.⁸⁶ However, a closer look here also reveals certain

⁷⁹Zhu, 'Wo zai Jiaotongbu rennei de zhongyao gaige', 415. On military considerations, also see Zhao, 'Changtu dianhua jianshe', 25; Zhang, *Zhongguo dianxinye*, 73.

⁸⁰Chu, *China's Postal and Other Communications Services*, 186–7.

⁸¹*Ibid.*, 187.

⁸²*Ibid.*

⁸³'Zhongguo dianhua gaikuang', *Nanhua ribao* (9 June 1937). Zhang, 'Changtu dianhua jianshe' wrongly claims that complete service was opened as early as April 1936.

⁸⁴I identified the covered provinces using the relevant files from 'Provinces in Republican China' by Christian Henriot and Pierre-Henri Dubois (<https://www.virtualshanghai.net/Maps/Base?ID=2210>).

⁸⁵Eastman et al., *The Nationalist Era in China*, 35.

⁸⁶The source for [Figures 2](#) and [3](#) does not differentiate between Shanghai's Chinese city, the International Settlement and the French Concession. This is because the network of the Shanghai Telephone Company, which covered the International Settlement and French Concession, was integrated

limitations. If we take the aforementioned five cities with over 200 connections and look at the locations of the long-distance telephone connections, these were mostly located in Zhejiang and Jiangsu provinces in eastern China, thus showing once again the geographical limitations of the long-distance telephone lines under the control of the Ministry of Communications.⁸⁷

If we look at the length of the telephone network, the Nationalists' record also was mixed. According to the Ministry of Communication's published statistics, the length of China's long-distance telephone lines grew from 6,564 kilometres in 1928 to 37,519 kilometres in June 1935. While this growth seems impressive, the regions included in the statistics varied over the years and in general their number increased over time. Moreover, it is not entirely clear to what extent the lines included were constructed and operated by the Ministry of Communications. This makes these statistics less reliable and clear for assessing the accomplishments of the central government. For instance, the big jump from 20,988 kilometres length in June 1934 to 37,519 kilometres in June 1935 is in part due to the addition of over 3,000 kilometres of long-distance telephone lines in Guangdong to the statistics, even though, as will be discussed below, the province was not under the sway of Nanjing until 1936 and there is no evidence that the Ministry of Communications had established any long-distance telephone lines there.⁸⁸

It is clear, then, that the central government failed to construct a national long-distance telephone system as it had envisioned in 1928. Rather, even though it might have exceeded other regional systems established by provincial governments discussed in the next section, the Ministry of Communication's system of trunk lines remained regional in scope. While the Nationalist government thus made some strides in developing infrastructural power through long-distance telephony between 1927 and 1937, it failed to do so on a truly national level as planned and also had to give up on maintaining a monopoly in the development of long-distance telephony vis-à-vis provincial governments.

with the long-distance telephone network of the Ministry of Communications. See 'Shanghai's Public Utility Services', *The China Journal of Science and Arts*, 22 (1935), 254. I have not found any evidence that the Shanghai Telephone Company had their own separate long-distance telephone connections. As for the large number of connections Wuxian, Wuxi and Zhenjiang show, these can be traced back to their vicinity to and position between the capital Nanjing and China's economic centre Shanghai in the long-distance telephone network (as can be seen in Figure 2), where the network was likely particularly developed (this can already be seen in Figure 1). For a similar point about Wuxi profiting from its vicinity to Shanghai and position between Shanghai and Nanjing, see also Toby Lincoln, *Urbanizing China in War and Peace: The Case of Wuxi County* (Honolulu, 2015), 1–2, 183.

⁸⁷See 'Jiaotongbu changtu dianhua ganxian lianluo tonghua', *Shenbao* (1 Sep. 1936). This list, on which Figure 3 is also based, provides a further pointer towards the limitations of the Ministry of Communications' long-distance telephone lines. It points out that the list of interconnected major cities was limited to the listed cities as certain installations of equipment had not yet been completed. Zhang also briefly talks about the connections amongst major cities including Nanjing, for which he gives a seemingly incomplete very low number of only 'over twenty' (*ershi yu*) for July 1937 though. See Zhang, *Zhongguo dianxinye*, 74.

⁸⁸The discussion here is based on the section on long-distance telephony in the statistical series published by the Ministry of Communications: *Jiaotongbu, Jiaotongbu tongji nianbao* (Nanjing, 1931–6).

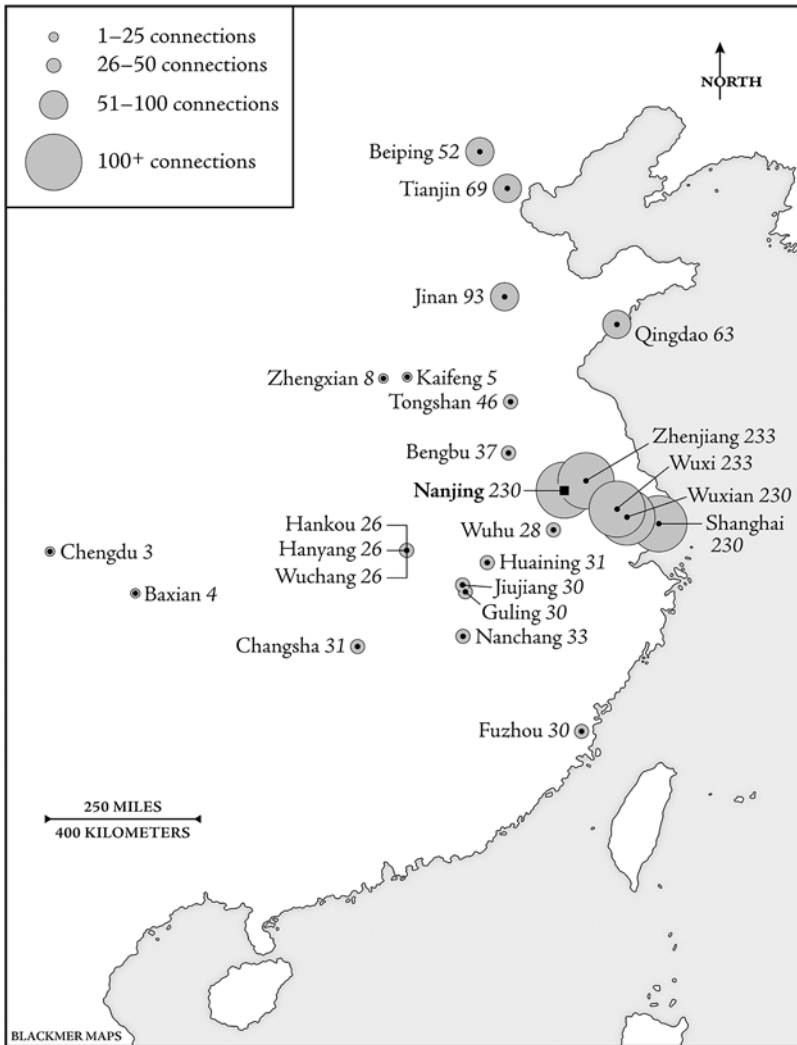


Figure 3. Major Cities and Number of Mutual Long-Distance Telephone Connections to Other Major Cities, 1 September 1936. Source: 'Jiaotongbu changtu dianhua ganxian lianluo tonghua', *Shenbao* (1 September 1936), 3. Map by Kate Blackmer.

Long-distance telephony in Guangdong

As already pointed out at the beginning of this article, long-distance telephony also became a part of the development plans of provincial governments. Even after the establishment of the Nationalist government, the phenomenon of warlordism did not disappear and '[m]any warlords continued to command personal armies, control territory, and retain tax revenues after 1928'.⁸⁹ In this section, I will first focus on the

⁸⁹Quotation from Sheridan, *Chinese Warlord*, 15. Also see Alfred H. Y. Lin, 'Building and Funding a Warlord Regime: The Experience of Chen Jitang in Guangdong, 1929-1936', *Modern China* 28 (2002), 177-212; Paulès, 'Warlords at Work'.

example of Guangdong, a province that enjoyed significant autonomy from Nanjing during the Nanjing decade, particularly under the warlord Chen Jitang between 1931 and the latter's defeat at the hands of Chiang Kai-shek in 1936.⁹⁰ This province made significant strides in developing its own long-distance telephone infrastructure and thereby extending its infrastructural power as a regional regime. Then, I will discuss more broadly the emergence of regional long-distance telephone systems at the provincial level during this period.

As early as 1928, the Construction Bureau (*jiansheting*) of the provincial government of Guangdong issued an initial plan for the development of long-distance telephone lines in the province. According to this plan, long-distance telephone communication was particularly beneficial for the development of industry and commerce. The plan cited the example of major ports that already used long-distance telephony to great effect and lamented that Guangdong had not developed long-distance telephone communications. The plan envisioned the initial construction of five major lines, all starting in the provincial capital Guangzhou, including a connection with the British colony of Hong Kong. The Guangdong provincial government first approved the construction of the Guangzhou–Hong Kong line.⁹¹ The line was inaugurated in September 1931.⁹² It soon carried over 80,000 calls per year.⁹³ In 1930, the Construction Bureau also drew up an extensive plan for the supervision and encouragement of the establishment of long-distance lines by cities and counties.⁹⁴

The Three-Year Administrative Plan (*Sannian shizheng jihua*) instituted under Chen Jitang in 1933, which focused on the economic development of the province, likewise stressed the importance of developing long-distance telephony. In a report on the Three-Year Administrative Plan, Lin Yungai, chairman of the provincial government of Guangdong, explained that unfortunately so far the province only possessed long-distance telephone connections between Guangzhou, which is in central Guangdong, and four locales, namely Foshan near Guangzhou, Huizhou east of Guangzhou, Shaozhou in northern Guangdong and Hong Kong, and did not properly span the entire province. Over the three-year period, an extensive extension of long-distance telephony was planned, including wireless telephony to supplement wired long-distance telephony. Overall, during the three-year period, long-distance telephony

⁹⁰James E. Sheridan, *China in Disintegration: The Republican Era in Chinese History, 1912–1949* (1975), 193–5; John Fitzgerald, 'Increased Disunity: The Politics and Finance of Guangdong Separatism, 1926–1936', *Modern Asian Studies*, 24 (1990), 745–75; Lin, 'Building and Funding a Warlord Regime'; Emily M. Hill, *Smokeless Sugar: The Death of a Provincial Bureaucrat and the Construction of China's National Economy* (Vancouver, 2010), 4–10. Paulès also refers specifically to Chen when discussing the state-building efforts of regional regimes. See Paulès, 'Warlords at Work'.

⁹¹Shiqi nian shier yue jiansheting niban Guangdong quansheng changtu dianhua diyi qi jihua', *Guangdong Jianshe*, 5 (1930), 15–16; 'Guangdong sheng zhengfu di si jie weiyuan hui di yibai yishiba ci yishilu' (18 Dec. 1928), in *Minguo shiqi Guangdong sheng zhengfu dang'an shiliao xuambian*, ed. Guangdong sheng dang'an guan (11 vols.; Guangzhou, 1987–89), II, 90–91. Neither of these sources mentions the existing (admittedly short) long-distance connection between Guangzhou and nearby Foshan (see n. 95).

⁹²'The Hongkong–Canton Trunk Telephone', *South China Morning Post* (2 Sep. 1931).

⁹³Zidong dianhua guanli weiyuanhui, *Guangzhoushi zidong dianhua gaikuang* (Guangzhou, 1934), 135.

⁹⁴Shijiu nian yiyue jiansheting niban ducu gexianshi fushe changtu dianhua zhi jinxing chengxu ji wancheng shiqi', *Guangdong Jianshe*, 5 (1930), 17–21.

was to be 'developed as much as possible for the benefit of the people'.⁹⁵ The Three-Year Administrative Plan included plans for the establishment of the Provincial Office for the Management of Long-Distance Telephony (*Quansheng changtu dianhua guanlichu*) under the Construction Bureau for the central holistic planning of long-distance telephony.⁹⁶ The tasks of the Provincial Office for the Management of Long-Distance Telephony were to include sorting out and improvement of existing lines, the planning and completion of connections already settled on previously and the testing of short-wave wireless telephony.⁹⁷ The Provincial Office for the Management of Long-Distance Telephony was established in December 1933 by the Construction Bureau and was subordinate to it.⁹⁸

In Guangdong, we once again also see how military necessities were a driving force for the development of long-distance telephony. In 1929 and 1930, long-distance telephone connections between Guangzhou and Huizhou, Guangzhou and Shaozhou and Guangzhou and Qingyuan and Hua County (Huaxian) were established. These were initially for military use only but were later transferred to civilian use with the Three-Year Administrative Plan and the establishment of the Provincial Office for the Management of Long-Distance Telephony.⁹⁹ This important role of military needs as a driving force for infrastructure development is not surprising given that, as Alfred H. Y. Lin has shown for the case of finance, Chen Jitang's prime concern in Guangdong was his military strength. Chen 'needed a strong military to ward off external threats

⁹⁵Lin Yungai zai lianhe jinianzhou zuo guanyu Guangdongsheng sannian shizheng jihua de baogao' (2 Jan. 1933), in *Chen Jitang yanjiu shiliao (1928-1936)*, ed. Guangdongsheng dangangan (Guangzhou, 1985), 168. On the Three-Year Administrative Plan, see Zhang Xiaohui, *Minguo shiqi Guangdong shehui jingji shi* (Guangzhou, 2005), 171-2. On Lin Yungai, see *The China Weekly Review, Who's Who in China: Biographies of Chinese Leaders, Fifth Edition*, 293. It is not clear why Lin did not mention the long-distance connection between Guangzhou, Qingyuan and Huaxian here. The most likely reason is that it possibly had not been transferred to civilian use yet. A long-distance telephone connection between Guangzhou and Foshan existed as early as 1925. See 'Chinese in Canton Take Steps to Rival Hongkong as South China Seaport', *The China Weekly Review* (1 Nov. 1925), 29; 'Canton-Fatshan Telephone Service Completed', *South China Morning Post* (10 Mar. 1925), 9; Zidong dianhua guanli weiyuanhui, *Guangzhoushi zidong dianhua gaikuang*, 49-50. According to Zhang, by 1929 a connection between Guangzhou, Foshan and Shijing had also been completed. See Zhang, *Zhongguo xiandai jiaotong shi*, 510.

⁹⁶Guangdongsheng zhengfu mishi chu, *Guangdong sheng sannian shizheng jihua shuomingshu* (Guangzhou, 1933), 259. A schematic chart titled 'Quansheng changtu dianhua guanlichu zuzhi xitong tu' at the beginning of *Quansheng changtu dianhua guanlichu, Guangdong quansheng changtu dianhua gaikuang* (Guangzhou, 1935) also shows the eventual subordination of the Office under the Construction Bureau.

⁹⁷Guangdongsheng zhengfu mishi chu, *Guangdong sheng sannian shizheng jihua shuomingshu*, 260-4.

⁹⁸Quansheng changtu dianhua guanlichu, *Guangdong quansheng changtu dianhua gaikuang*, 2, 5. For the Office's subordination to the Construction Bureau, see the schematic chart at the beginning of the same work.

⁹⁹Chen Yuanying, *Guangdong liangnianlai jianshe shiye zhi huigu* (Guangdong, 1934); Quansheng changtu dianhua guanlichu, *Guangdong quansheng changtu dianhua gaikuang*, 2-3, 5. A different source gives the years 1925 and 1932 for the establishment of the Guangzhou-Qingyuan-Huaxian and Guangzhou-Huizhou lines respectively instead. See 'Guangdongsheng changtu youxian dianhua tongji', *Tongji yuekan*, 2 (1936), 4:15. Quansheng changtu dianhua guanlichu, *Guangdong quansheng changtu dianhua gaikuang*, 5 says that Guangdong's long-distance telephone lines were initially all for military use but seems to refer here mainly to the three lines of Guangzhou-Shaozhou, Guangzhou-Huizhou and Guangzhou-Qingyuan-Huaxian.

[i.e. the central government in Nanjing and other warlords] and to wipe out bandits and communists within his domain'.¹⁰⁰ As pointed out above for other warlord regimes, this should not disvalue his success in establishing long-distance telephony infrastructure though.

By 1936, the three lines from Guangzhou to Shaozhou, Guangzhou to Huizhou and Guangzhou to Qingyuan and Hua County (the latter two located north of the provincial capital) – all under the control of the Provincial Office for the Management of Long-Distance Telephony – alone measured 660 kilometres in length. This does not include the line from Guangzhou to Hong Kong, which came to 181 kilometres in length.¹⁰¹ The provincial government encouraged the establishment of long-distance telephone lines on the county level.¹⁰² These lines by 1934 came to a length of almost 18,000 kilometres.¹⁰³ The provincial government also made plans for a wireless telephone service between Guangzhou and Shantou in eastern Guangdong.¹⁰⁴ On 20 October 1933, this wireless telephone connection between Guangzhou and Shantou was established.¹⁰⁵

All in all, we thus see that Guangdong province carried out its own programme for the development of long-distance telephony, including the establishment of related bureaucratic institutions, and thereby extended its infrastructural power in the province. Other provinces also showed progress in the construction of long-distance telephone lines. According to the 1935 *Shenbao Nianjian*, a yearbook published in Shanghai, Guangxi province possessed 1,981 kilometres and Shandong province 23,341 kilometres of long-distance telephone lines respectively not under the aegis of the central government. This compared to the Ministry of Communications having no presence in Guangxi and only 1,831 kilometres of long-distance telephone lines in Shandong.¹⁰⁶ Overall, clearly much development of long-distance telephony took place on the provincial level during the Nanjing Decade, with provincial regional regimes that enjoyed considerable autonomy from Nanjing, like those of Guangdong, Guangxi

¹⁰⁰Lin, 'Building and Funding a Warlord Regime', quotation on 183. Lin is not explicit about what he means by 'external threats', but the main external threats faced by warlords were attacks by other warlord regimes or by Nanjing. Lin himself for instance mentions the threat of Guangxi forces to Guangdong. On the threat of attacks from Nanjing on remaining warlords, see, for instance, Sheridan, *Chinese Warlord*.

¹⁰¹'Guangdongsheng changtu youxian dianhua tongji', *Tongji yuekan*, 2 (1936), 4:15; 'Yuesheng changtu dianhua gailvue', *Tongji yuekan*, 2 (1936), 4:16; 'Sheng Gang changtu dianhua gaikuang tongji', *Tongji yuekan*, 2 (1936), 4:20. In contrast to these three lines, the long-distance connection from Hong Kong to Guangzhou (and the line from Guangzhou to Foshan) was managed by the Guangzhou municipal government. See Guangzhoushi zhengfu, *Guangzhoushi zhengfu sannianlai shizheng baogaoshu* (Guangzhou, 1935), 135–7; Zidong dianhua guanli weiyuanhui, *Guangzhoushi zidong dianhua gaikuang*, 49–51, 76, 99–100, 165–70; Hu Ruixiang, 'Guangzhou shiying dianhua zhi yange ji gaikuang', *Diangong*, 8 (1937), 146.

¹⁰²Quansheng changtu dianhua guanlichu, *Guangdong quansheng changtu dianhua gaikuang*, 5.

¹⁰³'Minguo ershisan nian Guangdong sheng gexian changtu dianhua gaikuang tongji', *Tongji yuekan*, 2 (1936), 4:17–19. As this source points out, some of the data used therein comes from 1933.

¹⁰⁴'Shengfu choujian GuangShan wuxian diantai', *Guangdong jianshe yuekan*, 1 (1933), 9; 'Jiansheting choujian GuangShan wuxian dianhua tai', *Guangdong jianshe yuekan*, 1 (1933), 9.

¹⁰⁵'Communications', *Chinese Economic Bulletin*, 23 (4 Nov. 1933), 301.

¹⁰⁶Shenbao, *Disanci Shenbao nianjian* (Shanghai, 1935), 859–69. For Guangxi, the yearbook does not specifically mention county-level long-distance telephone lines. For Shandong it does and I have included these in the figure given here. For background on long-distance telephony in Shandong under Han Fujū specifically, also see Song, *Shandong shengban changtu dianhua*.

or Shandong, playing an important role in constructing long-distance telephone infrastructure.¹⁰⁷

Conclusion

The early development of long-distance telephony in China presented in this article contributes to our understanding of state-building in the Chinese Republican period. On the one hand, the case of long-distance telephony shows that telecommunications infrastructure occupied an important position within the state-building efforts of different regimes in Republican China.¹⁰⁸ On the other hand, we have seen that both before and after 1927, central as well as regional regimes made contributions towards the development of long-distance telephony. If we think of long-distance telephony during the Nanjing decade in terms of technological systems, we see that eventually several regional systems initiated by the Nationalist central government and provincial governments existed but had not yet evolved into a truly national system. This then, together with the development of long-distance telephony by regional regimes in the pre-1927 period, affirms the importance of studying state-building in Republican China not just from the perspective of central governments. In addition, this article has shown that the internal and external military conflicts that plagued China during the Republican period actually could have a positive effect on infrastructural development insofar as military necessities often drove infrastructure development.

Looking through the lens of infrastructural power, we can conclude that first, before 1927, it mainly was different warlord regimes that to a certain extent managed to build up infrastructural power through the establishment of long-distance telephone infrastructure. The central government was largely absent from this process. Then, after 1927, the Nationalist central government made the establishment of a national long-distance telephone system part of its state-building agenda. Although it made significant strides in establishing long-distance telephone infrastructure and thereby extended its infrastructural power, the projection of its infrastructural power remained regional. At the same time, provincial governments like that of Guangdong managed to build up infrastructural power of their own in their provinces through the establishment of long-distance telephone lines. All in all, we can thus see that between 1912 and 1937, Chinese central governments did not manage to use long-distance telephony to project their infrastructural power on a national level. At the same time,

¹⁰⁷On Guangxi and the Guangxi Clique, see Diana Lary, *Region and Nation: The Kwangsi Clique in Chinese Politics, 1925–1937* (Cambridge, 1974). On Shandong and Shandong Warlord Han Fuju, see Diana Lary, 'Treachery, Disgrace and Death: Han Fuju and China's Resistance to Japan', *War in History*, 13 (2006), 65–90; Diana Lary, 'Introduction: The Context of the War', in *China at War: Regions of China, 1937–45*, ed. Stephen R. MacKinnon (Stanford, 2007), 8. Song also stresses the important role and primacy of the provincial government in Shandong in developing long-distance telephony and from this also more generally highlights the role of provincial governments in developing long-distance telephony. He maintains though that ideally the central government should have developed long-distance telephony. See Song, *Shandong shengban changtu dianhua*.

¹⁰⁸Several of the short contributions in the aforementioned special issue in *Twentieth-Century China* (*Twentieth-Century China*, 47 (2022)) also touch upon infrastructure. See Paulès and Serfass, 'Teleology'; Paulès, 'Warlords at Work'; and Stapleton, 'The Rise of Municipal Government'. They thus also point towards the significance of infrastructure in Republican era state-building as discussed here and below.

regional regimes extended their own infrastructural power through long-distance telephony.

These insights and the important role infrastructure played in state-building during the Republican period in China – as evidenced by the case study of long-distance telephony discussed in this article – also suggest that an infrastructural perspective is a fruitful avenue for studying both political competition and formation during the Republican period. On the one hand, infrastructural power can provide a valuable lens to view rivalries amongst different central and regional regimes in early twentieth century China.¹⁰⁹ The dynamics between central and provincial efforts at constructing long-distance telephone infrastructure depicted in this article – and the compromises the central government had to make in this regard – are examples of such rivalries, but these could, for instance, also play out in a single province.¹¹⁰ On the other hand, we saw that the Nanjing government had to forfeit its prerogative of monopolising long-distance telephone development and eventually was unsuccessful in establishing and consolidating a national long-distance telephone system under its control before 1937. This shows that infrastructural power also provides a useful perspective for studying the process of regime consolidation and political formation in this period, particularly the successes and limitations of the Nanjing government's efforts at political unification.

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¹⁰⁹While not speaking about the Republican period specifically, Mary Bridges has recently pointed to 'infrastructural rivalry' as a potential future research avenue for historians studying infrastructure. See Mary Bridges, 'The Infrastructural Turn in Historical Scholarship', *Modern American History*, 6 (2023), 118. On rivalries between political regimes in Republican China, see Hill, 'War, Disunity, and State Building'.

¹¹⁰Song begins to uncover such conflicts between the central and provincial government for long-distance telephony in the province of Shandong. See Song, *Shandong shengban changtu dianhua*, 38–51. Zhang also touches upon some such conflicts in Zhejiang, see Zhang, *Zhongguo dianxinye yanjiu*, 53.

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