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COMMUNICATION TECHNOLOGY IN TRANSFORMING CHINESE SOCIETY: RESEARCH NOTES

Le tecnologie della comunicazione nella trasformazione della società cinese. Alcune note su una ricerca

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Abstract

This paper considers the development of communication technologies in China. By analyzing the literature, this work aims to view technology as a driving force of social transformation and how the state government can use communication as a control mechanism.

Questo documento presenta una riflessione sullo sviluppo delle tecnologie di comunicazione in Cina. Attraverso l'analisi della letteratura, l'obiettivo di questo lavoro è quello di riflettere sulla tecnologia come motore della trasformazione sociale e su come le comunicazioni possono essere uno strumento di controllo gestito dallo Stato.

Keywords: communication technologies, social transformation, social control, China.
Tecnologie della comunicazione, trasformazioni sociali, controllo sociale, Cina.

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Communication is vital to maintaining the basic functions of a society. Forms of communication vary from regular chats, talks, speeches, and lectures to the modern technologies of the telephone, broadcast, email, postal service, and printed materials. The breadth and depth of the different forms of communication reveal the sophistication of human civilization. Just as the ticktock of telegraph machines are still sounding somewhere on earth, Tik Tok, the online video platform, is downloaded onto many cellphones. Due to the interest in the study of the history of communication within China, research into communication technologies has bloomed over the past decade with the publishing of several important scientific achievements like *The Chronology of Communication Technologies* (Zhenhuan Jiang 2019), *Mechanical Engineering and Electrical Engineering in the Republic of China* (Shoutai Wang 2009) and *A brief history of Everything Wireless: How Invisible Waves Have Changed the World* (Launiainen 2020).

However, as the Edinburgh School of the History of Science has argued, science and technology emerge from societies that are simultaneously shaped by the application of those new sciences and technologies (Shapin 1982, 157-211). In the case of China, society and communication are entangled together in a long history.

In ancient China, traditional communication networks – *Yichuan* System – were consistently constructed but only operated by the government. Many restrictions were applied to prevent usage by the common people. However, since the 19th century, the introduction of modern means of communications to China was achieved through governmental and private investment, allowing access to public and private society and revealing the unique transformation of communication and society in late imperial China. This article aims to provide a holistic view of the features of Chinese communications, followed by a discussion of their modernization and impact on Chinese society since the 19th century. Analyzing the history of communication in China provides a clear lens through which to view and understand the characteristics of modern communication in contemporary China.

Review of related scholarship in China

Reviewing the research on Chinese communication history, historical factors, and the historiography of science creates a hypothesis for the Chinese modernization in the late Qing period. The late contact and development of science and technology in China created an opportunity for scholars to thoroughly investigate the relationship of society, communication, and science.

The diversity of communication has led to research about every aspect of communication. In the case of China, *The Short History of Chinese Communication* (Weiqing Zhu 2011), *The History of Communication Discipline in China* (CAST 2010), and the masterpiece *A Brief History of Communication Technology* fundamentally discussed the development of communication technologies in China (Shengjun Zhou 2022). Related organizations like postal offices, telegraph companies, and the ancient mailing system have also attracted researchers' attention, revealing the features of traditional and modern communications and how those features have changed. The interest in how ancient China communicated has inspired many publications. For instance, *Late Qing Telegraph and Its Media ideology 1860-1911* (Li Sun 2007), *A History of Telecommunications in Pre-war Hong Kong, the development of Chinese You and Yi* (Guanyao Ma 2017), and *The Development of Communication Technologies* (Chunbo Mao 2016) all focused on various aspects that maintained the functions of communication in pre-modern Chinese societies. Communication organizations have changed along with changes in societies and countries over time, which indicates the importance in studying communication in time and space. For instance, *The System of Song Yi* (Xiaoxuan Zhao 1983) and *A Study on the Post System in Southwest China of the Ming Dynasty* (Pinglue Zhao 2021) are two essential references for scholars of the postal system in ancient China. Recently, scholars have paid further attention to the mutual impacts between communication forms and social transformations. Especially in modern society, the rapidly changing communication science and technologies in the modern period have trans-

formed the ways people have understood each other and their own identity, while old technologies kept their influence in daily life. The three monographs *Late Qing Telegraph Construction and Social Change* (Weiqi Xia 2012), *Historical Analysis on Chinese Internet Politic: Telegraph and Late Qing Politics* (Yongming Zhou 2013)*, Telegraph Technology Transfer from the West to China in Qing Dynasty* (Xue Li 2013) are essential volumes for the discussing the relationship between innovative technologies and social change.

In the 17th century, Western missionaries first brought science, technology, and engineering instruments to traditional China and its literati to promote Christianity. Although the missionaries failed in their mission to convert China to Christianity, western sciences and technologies survived despite years of setbacks. Because of a series of military defeats and diplomatic humiliations, China in the late 19th century started to consider western learning to rescue the Empire through modernizing Chinese society. Along with other modernization schemes, modern communication technologies were introduced to China but were soon embroiled in a wide-spread debate about whether the innovative technologies should replace or merge with the traditional communication systems such as the postal system, which played a significant role in the socio-political context of China.

Communication and society from ancient to modern China

In 221 BC, China was united under the first emperor of the Qin Dynasty. The new empire immediately faced the challenge of managing a vast territory with many different peoples. This challenge has puzzled rulers in mainland China for centuries. Without the modern technologies of communication, the government could only control the society by human connection, making ancient China a gentry society. The gentry class was needed to handle the communication and negotiation between the public and civil sectors in traditional Chinese society. The gentry, a prestigious social class in imperial China, was made of retired bureaucrats and their heirs who were leaders of local communities and consistently enjoyed the trust of the ruling classes (Fei Hsiao-Tung 1946, 1-17). Since the 6th century, the public service civil examination in China laid out a formal foundation to maintain the gentry class, aiming to favor those who were educated and rich. This system created a relatively stable social structure for running imperial regimes from the 11th century until its abolishment in 1905 (Elman 2013). Due to their socio-political status, Chinese gentries were allowed to utilize ancient communication infrastructure.

To access the government-dominated communication systems of the vast empire, government officials had to travel far to serve their roles. However, this trip might risk their loyalty to the state due to their inability to stay connected with families at home. To solve loyalty risks and other concerns that arose due to this travel, it became necessary for the government to institute the *Yichuan*, or public communication system (Tongbing Su 1969). The career of serving the state and the prestige of being social leaders after retirement made bureaucrats the few in ancient China allowed frequent access to the governmental communication system.

Features of ancient communication in China

Due to the frequent military confrontations and chaos during the "warring-states" period, little evidence exists of a nation-wide communication system prior to the Qin Dynasty (221 BC-207 BC). Individual states separately built transportation and postal systems, but only the royal and aristocratic members could use these, rulers using such systems only for political and military reasons. Without a comprehensive communication network to serve each state, only emergencies or the most valuable information was passed through the services (Guangsheng Liu 1999). The unification of China by the Qin Empire was

mainly created by military conquest; however, the conquest by soldiers in shining armor was also due to technological innovations that overcame the communication difficulties of effectively managing valuable information in a timely manner.

In 1975, private letters were discovered in a tomb from the early Qin period. In those letters, two brothers in the Qin army discussed family affairs, asked for uniforms, and recounted their fighting in the frontline. The letters were delivered between Huaiyang and Anlu, two areas separated by 400 kilometers (about 248.55 mi). Furthermore, the letters were delivered during fierce battles around 224 BC (Jisen Li 2017, 60-61). Despite no further evidence of a postal system in the Qin Dynasty, according to the contents of the letters, a trustworthy communication system was established from the frontier to the heartland of the Qin Empire, and even functioned during wartime. However, the myth of the ancient Chinese communication system remains. Did the Qin army develop a military postal service to tighten connections between soldiers and their families? Or were the letters smuggled through the official military communication network? Or were these letters delivered due to someone's friendship or a personal favor? With questions unanswered from archeological discoveries, these letters implied that ordinary soldiers on the frontlines could have their own means of communication when necessary. The empire could have very possibly had a sophisticated communication network to help win the war, unify China, and manage a vast empire.

The ancient forbidden "high-way" in China

Without the benefit of historical precedence, the Qin Empire had to quickly learn how to go from a military victory to managing a vast territory in the 3rd century. Shortly after the end of the military campaigns, a standard road network across the country was established by the emperor's order. Like the saying "All roads lead to Rome", the Qin built a paved road linking major cities and military encampments to the capital of Xianyang to deliver information and transport the troops needed to manage the empire. This road network was completed two hundred years before the Roman Empire's highway system.

Right after the Qin's unification, *chidao*, or a special "highway," was constructed exclusively for the emperor's need to travel around the country. The *chidao*, like modern transportation systems (Morgenthau 1964), was a symbol to illuminate imperial glory and the emperor's authority, a tool to collect critical information for control purposes, and a way to share bureaucratic duties with local authorities. The highway was a prestigious way for the royal family, and occasionally imperial officials when given permission, to travel the country. With the necessary development of a highway network, an administration was created to handle the demand for communication, thereby allowing the emperor to rule over the massive territory (Zijin Wang 2020).

Based on the foundation of the Qin Dynasty, the Han Dynasty (202 BC-222 AD) inherited the previous dynasty's infrastructure and left much evidence to modern historians about its communication system. Although the construction of transportation was further expanded, the Han government, like its predecessor, kept the injunctions against allowing regular people and governmental officials from accessing the official road system for personal reasons. All personal correspondence had to go through private channels. However, the internal friction and corruption in the court during the late Han Dynasty eventually weakened imperial control over society. Religious unrest by armed rebels occurred throughout the empire, damaging the central authority and its control over communication. As the government lost its control, the religious network in turn provided an alternative for communicating its rebellious actions. In the case of the Huangjin Rebellion and its suppression by the Han government, the region could accommodate a network of communication for various needs. With the unofficial network of religious-based communication, messages could be easily passed from the top down to the believers, local gatherings,

and even rebel commanders. The impact of religious communication in the 4th century has similarities to early 20th century China (Congshan Wei 2020, 120-122), a coincidence which highlights the historical continuity of Chinese society.

Limited impact of the gentry society to traditional system

Even as many dynasties in China rose and fell, the restrictions against accessing the official communication systems remained. The public communication network still differentiated the needs of private users from royal needs except in times when governmental power was weak. However, the creation of the public service civil examination created a chance to form a gentry society in China with the Song Dynasty (960 AD-1279 AD) serving as the turning point in this transformation (Chen Song 2017, 141-182). For centuries after the Song Dynasty, emperors had to rely on gentry-bureaucrats to rule the country, and subsequently had to allow civil servants to legally access government communication networks for personal reasons (Xiaoxuan Zhao 1983). However, the unrestrictive use of the communication network eventually overloaded its capacity and efficiency. The overload of the communication network continued until the late Qing Dynasty in early 20th century. To satisfy the civil demands of communication, the civil communication organization Minxin Ju was created in the Ming Dynasty (1368 AD-1644 AD). This bureau of postal services served as the first commercial facility of mail and post in China, allowing the acceleration of the speed of the service through different prices. However, as ancient China was co-ruled by gentries and government officials which shared socio-political benefits with each other, the development of the civil postal services was limited and is unclear to historians. Later, by the end of Qing Dynasty (1644 AD-1912 AD), after hundreds of years development and expansion, Minxin Ju only served the major commercial cities alongside the coast and the river basins. The vast interior of the empire still lacked communication channels for ordinary people (Jianguo Xu 2017). Most of the population in inland and rural China were still unable to enjoy the dawn of modern communication unless revolutionary social changes occurred.

Modern communication to China

The First Opium War in 1840 has been seen as the starting point of the modernization in Qing China (Suwanthanin Waroonporn 2022, 1-12). In the almost one hundred years that passed after the First Opium War, the traditional Chinese communication system and western communication facilities were all checked, inspected, and tested by promoters of Chinese modernization. After long negotiations and near confrontations, a new system of communication arose in China from the ruins of the old system. In the late 19th century, large numbers of western merchants, diplomats, military service men, and sailors poured into China. As the counterparts to the Qin soldiers of two thousand years ago, these men stationed in remote China wanted to maintain contact with their friends and families at home. In addition, foreign companies, commercial enterprises, and political authorities also required a reliable way to communicate with their men in China. Unfortunately, China in the late 19th century possessed no communication system that could satisfy foreign needs.

 Qing China did not possess civil communication services for ordinary people let alone foreigners. The Qing government adhered to the prevailing political tradition and kept the official communication system accessible only for public affairs, constantly overlooking the rising private needs. Even worse, the Chinese communication network was totally disconnected from other countries, making international communication impossible. To overcome the communication obstacles in China without interfering with the political situation, foreign postal services created their own overseas branches in major Chinese cities

as part of their international network of connections. These overseas branches served foreigners' communication needs through the existing network of postal offices (Committee on Youdian History 1984). One scheme of Qing modernization, the Maritime Custom Service, started its mail delivery service in 1866 under the supervision of western officers. Under the leadership of Inspector-General Sir Robert Hart, the Maritime Custom Service Postal Service initially only transported official documents but soon started to deliver letters for foreign citizens in 1868 (Liangren Zhang 1935).

Modern communication network for civil needs in China

The foreign postal service and Maritime Custom Service postal service gradually set up offices in more cities to expand business within China. With the growing interest in modern postal services, the telegraph, a high-tech communication method, drew the Chinese government's attention. Before 1871, western telegraph companies, like the Great Northern Company from Denmark and the Great Eastern Company from England, had unsuccessfully tried to expand their business to China. However, the Chinese government distrusted foreigners, not their technology. Until 1871, after losing some critical battles against England and France, the Chinese government gradually realized the telegraph could be the key for winning the next war due to its fast exchange of information. Due to this change in the government's attitude, Qing authorities signed the contract with the Great Northern Company to build telegraph lines from the capital of Beijing to the treaty-port city of Shanghai. By the end of 1890s, with sufficient imported materials and the assistance of foreign engineers, the Qing government finally built a telegraph network linking major cities across the country. As the domestic network was completed, the Qing government realized this novel communication technology could be used for international communications as well (Weiqi Xia 2012). The network of telegraph lines was further expanded northward into Russia, overseas to Japan, and southward to Hong Kong. In sum, the Postal Service and the telegraph allowed China to merge with global communications systems for the first time.

While innovative technologies such as the telegraph linked China with the world, the old communication methods persisted. The telegraph was good enough to transfer the message faster than the traditional Youyi System; however, the cost of this innovative technology was also a heavy burden for the Chinese people. Most of the materials and the engineers were from overseas, so Chinese people had to employ foreign engineers and use the telegraph at extremely unaffordable prices. For a long time, the telegraph was only allowed to transport emergency messages such as urgent military intelligence or diplomatic reports. Another problem was that the construction of telegraph lines required time and resources. Starting in 1871 and after 30 years of construction, the telegraph only covered the major cities of China. The small towns, the frontier garrisons, and cities in rural areas were not connected to the telegraph network. The traditional Youyi System had been in place for centuries, serving as a symbol of imperial authority and emperor's glory; however, due to modernization, the traditional Youyi and modern telegraph systems were forcibly integrated for the development of China. However, the early compromise of integration was chaotic. Local officials were often hesitant to make the choice between sending reports via telegraph or through the old Youyi system. Also, the maintenance of this dual communication system was costly. In 1906, to facilitate the integration, the Qing government set up a new ministry, Youchuan Bu (Ministry of Postal and Communication), to oversee the Youyi System, the telegraph, and the Postal Service (Quanyou Su 2005). The selection of the term Youchuan, meaning postal and communication in Chinese, signaled the integration of the traditional and newer forms of communication under one administration. The government hoped that this strategy could save financial expenses without losing efficiency.

The goal of building Youchuan Bu was unsuccessful. Resistance came both internally and externally. On one hand, the military kept control of the Youyi System, and the Ministry of Defense used the excuse of

national security to challenge the authority of Youchuan Bu until the collapse of Qing Empire in 1911. The military argued that military intelligence was vital for the survival of the country; therefore, the army and navy must maintain their own communication network in the form of the Youyi System. However, the Maritime Custom Service Postal Service was taken over by the Qing government. This political move increased the foreign Postal Service's distrust in the administrative ability of the Chinese government, especially when most of the offices were still controlled by Great Britain, France, Russia, and other western states. During World War One and the subsequent advantages China received from joining the Allied Force, the Chinese Republican government seized the opportunity and abolished some of the foreign Postal Service offices. In the 1950s, the Chinese communist government finally took over full control of all the postal services (Committee on Youdian History 1984). This history of administration transformation reveals the complicated relationship between the development of new communication technologies and the political atmosphere in modern China.

Changing communication technology leads to institutional change, and institutional change should push the government to generate new administrative functions. However, ordinary Chinese people might have felt apathetic towards these technological changes and social impacts. In the beginning, the postal services, whether the foreign Postal Service or the Maritime Custom Service Postal Service, aimed to serve foreigners rather than the Chinese people. Moreover, the telegraph was supposed to serve the whole of Chinese society just as it did in western societies. The telegraphs services in Qing China were divided into four categories. The first class only served the royal members and diplomats, the second class was for high-ranking officials, the third class was for low-ranking officers, and the fourth class was for civilians. Furthermore, due to political traditions and social norms, for a long time, telegraph services for the government were provided free of charge. Simply, the government carried the cost to construct and manage the network; therefore, the telegraph company must provide free service to the government for these costs. This explains why the telegraph was always full of official reports and rarely for civilian purposes (Bin Shi 2012). Government officials frequently enjoyed the communication network, and the ordinary people could only use the network sparingly.

The prohibitive cost and governmental domination over the modern communication system of the telegram scared many ordinary people away from using the service. However, the cheaper and easier to use traditional Youyi System could still carry out the functions of serving both public affairs and civil needs. The expansion of postal services to cover most of the Chinese population took time, and its speed depended on the economic conditions in China. Most Chinese people in early 20th century still lived traditional lifestyles and followed the doctrines from their ancestors' teachings. For communication, people were still waiting for letters and news from far away relatives and friends to arrive via an unreliable communication network. However, although slow, modern technologies did ultimately change this society.

Impacts of circulating information by new communication

The prohibitive cost finally made the government unable to cover all the expenses of building the telegraph network; the government needed private investment. To motivate private investors, the selling of telegraph communication service was seen as a way to continue construction without increasing the financial burden. The common solution of issuing bonds and treasury bills in the West now became the solution to save the telegraph network in late imperial China. This solution invited ordinary Chinese people from civil society to experience innovative technologies, namely the telegraph and postal services. The demands and uses of the new communication system by ordinary people varied widely. In addition to the conventional function of delivering letters and news, rumors also became a part of modern China. Newspapers were a foreign concept to China in the late imperial period with the Chinese *Dibao* being the

only similar counterpart to western way of circulating information. Some researchers regard *Dibao* as the prototype for the newspaper in China. However, only governmental information such as emperor's activities and officials' decisions could be posted in *Dibao*. Without modern public media in China and with the government controlling communication, *Dibao* was the only media that delivered information all around the country (Jiayong Qian 2020). With the introduction of the telegraph and Postal Service network, modern newspapers soon started to circulate messages to Chinese civil society by more conveniently and cheaply providing access to modern communication systems. Foreign publications in coastal port cities provided the first newspapers but were later followed by Chinese copycats with *Shenbao* being one of the most famous newspapers in China. Founded in 1872 by British and American merchants in Shanghai, it became the symbol of Chinese commercial newspapers and an example of a Chinese newspaper that served local citizens. The first editor group was influenced by traditional Chinese culture, and the publication concerned local affairs.

Following the fast growth in the market, the competition between various newspapers became fierce in Republican years. In an attempt to dominate the market through the immediate dissemination of news, *Shenbao* opened a correspondence office in Beijing and rented an exclusive telegram line to send information to Shanghai. Despite the telegraph being too expensive for regular people to use, reading news on *Shenbao* offered an inexpensive alternative. In addition, *Shenbao* could extract information from *Dibao* and quickly distribute the information as its own news to the citizens of Shanghai. This efficiency allowed *Shenbao* to deliver immediate news, making it the most popular newspaper in both Shanghai and all of China. With help from the modern communication technologies and networks, the social image of *Shenbao* became even more vital when Chinese citizens became eager to read about news and safe zone locations during wartime, especially during the Second Sino-Japanese War (Jiayong Qian 2020).

As soon as the modern communication network could easily reach users and circulate information for both public and civil needs, the power of civil society within China was able to strengthen to replace the traditional function of the imperial government. Public opinions started to form as civil society's power increased. In the first century of 20th century, *Tongdian* became the key media for political leaders to express their views on current events. *Tongdian*, meaning "general telegraph" in Chinese, was usually sent by political leaders such as governors of provinces, generals of armies, or leaders of social groups. The rise of *Tongdian* had its unique background in the 1920s as Republican China experienced long-term military confrontations and political conflicts. The danger of civil wars was constant and overwhelming. To persuade the people to support their army and to win the public's support, warlords disseminated *Tongdian* via telegraph stations to spread orders and news throughout the country. For some important *Tongdian*, newspapers were also circulated via the telegraph. On several occasions, *Tongdian* were intentionally delivered months before the fighting began (Cunling Gao 2019, 59-70). In these cases, researchers suspected that the warlords used *Tongdian* as a fighting strategy to interfere with their enemies.

The function of modern communication was also used beyond domestic conflicts. During the May Fourth Movement in 1919, the communication network again demonstrated its power over the Chinese political arena. At the end of the First World War, information about the peace talks in Paris were all over the headlines of Chinese newspapers. The Chinese delegation in Paris kept in communication with the government in Beijing by telegraph, and on May 2nd, unwelcome news about the Chinese failure at the negotiations in Paris reached Beijing. The failure ignited anger in young students prompting them to demonstrate on the street to protest the Beijing government, leading to arrests. On June 4th, a telegram from Beijing to Shanghai reported that the arrested students in Beijing asked for support from the citizens of Shanghai. The message was soon spread to northern China. From June 5th to June 10th, students, merchants, and workers from Shanghai, Nanjing, Ningbo, Zhenjiang, Suzhou, Changzhou, Wuxi, Yangzhou, Wuhu, Jiujiang, Hangzhou, Hankou, and Jinan all joined in the strike. The government was shocked by the brief time it took for cities all over China to join the strike. The modern medias of communication

intricately linked Chinese citizens in every corner of the country, putting them on a trajectory of patriotism towards a mentally united China. At last, access to reliable communication networks for everyone in society was opened. This freedom of communication would be amplified by the emergence of the new media outlets of a modern Chinese society.

Conclusion

Throughout the long history of ancient China, it was the government that controlled the communication network, restricting ordinary people from accessing or using the systems. This resulted in allowing the government to easily maintain its rule over a vast land while, due to lack of communication channels, the development of society met with many difficulties. In the history of modern China, the introduction of technology was regarded as the beginning of the change in Chinese society. From research into how ordinary people initially interacted with the telegraph, it became clear that the technology did not change the traditional way of Chinese life; the power of the telegraph was not easily accessible for ordinary people, though the opening of communication to ordinary people made newspapers and magazines possible to develop in China. The power of communication technologies was amplified by those media. In just 50 years, from the 1870s to the 1920s, Chinese society had developed public opinion which was strong enough to make warlords and intellectuals seek their support. The people that once sat on top of society now were threatened by ordinary people through just their words or thoughts. From that point, the real power of communication technology started to emerge.

Technology is born from a society's structure. When introducing innovative technology to society, the technology itself might initially only have a limited influence. Technology must be used and accepted by human beings in order to change people and society. This process usually does not happen in a natural or defined way. In the case above, it was the Western social structure, that every citizen had the same right to communicate, introduced into China by accident that allowed social changes in China. Before this introduction, the Chinese people lived in a society where the communication network was specifically used for public affairs. This way of life was perfectly embedded into Chinese civilization over a thousand years, and very few could imagine a unique way of life. The way western and eastern civilizations met shows the possibilities humans can reach; however, tradition maintained its power from history. The Chinese government and the Chinese society did not find a way to peacefully live together. The Great Firewall is a salient example of this unease. When the government tried to maintain control over communication, society tested the limits of such control. As is true with every country, China's special history led to its own particular problems. The solution to these problems might lie in the history or somewhere else.

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