

The Application of ICTs and Digital Divide in Rural China*

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Abstract. In this article, we explored rural China's digital divide problem from a social structure perspective, especially regarding the practical process and mechanism of the digital divide forming in different village structures. Traditional village and industrialized village represent two types of rural China's social structure, which provide a good case for studying the digital divide between different types of villages. We consider the gap formed in possessing information and communication technologies (ICTs) as the primary divide, and take the gap formed in using ICTs as the secondary divide. Moreover, a "mutual reproduction" effect exists between the divides formed in the course of possessing and using ICTs. Finally we pointed out that cell phones, as a mobile network, may become the first carrier of the integration of the future information technology and an effective agent weapon helps bridging the digital divide.

Keywords: Digital Divide, Social Structure, Traditional Village, Industrialized Village, Mobile Network.

1 Introduction

Since the late 1970s, China's market-oriented reforms have been through a full three decades. This reform originated in the rural areas, then extended to urban areas, and had brought about profound changes in Chinese society. When China was experiencing the reform, the world's economy becomes more globalized and the third wave of information technology revolution is surging. The mankind is embracing a new society—network society, which is not only a new social formation, but also a new social system [2]. It enables information technology network to constitute a basic human survival situation, and greatly influences the people's everyday life. Where will human society develop? Generally speaking, there're two opposite views: the convergence theory argues the development of information technology will ultimately

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make the human society into a “one world”, the digital divide theory argues that the development of information technology will make a greater gap between the informational rich and the informational poor. The latter point of view is increasingly becoming the focus of people’s concern, and the various issues raised by “digital divide” have been widely concerned by countries in the world.

For contemporary China, digital divide is a structure problem in the transformation of Chinese society. For a long time, urban-rural division is a significant feature of Chinese society. After three decades’ reform, although this dual structure has been weakened, the duality of Chinese social system fundamentally remains strong. During this course, the “executive-dominated dual structure” in the planned economic system has been changed into “market-dominated dual structure” under market economic system[6]. And the existence of this dual structure essentially determines and shapes resource allocations. Thus the most important digital divide problem in China is the digital divide between urban and rural areas. Meanwhile, rural China has its own digital divide between east and west, coastal and inland, namely “regional digital divide”. The perspectives above on digital divide in rural China have much influence, but they failed to reflect the internal structural changes in China’s rural society caused by the market-oriented reform. So what changes in rural social structure have happened during three decades’ reform? A general assessment is that the current rural China has been a highly structure-differentiated areas. Thus exploring the “internal digital divide” of rural China becomes of great significance.

To fully explore the internal digital divide in rural China, we should first develop an alternative paradigm to transcend the conventional dichotomies, such as “coastal and inland”, “east and west”, “rich and poor”, to examine the fundamental transformations in the social structure of Chinese villages. These dichotomies are too superficial to capture some profound structural factors. Traditional villages and industrialized villages represent two types of social structure in rural China. While the traditional villages mainly rely on agricultural industries and remain a relatively simple and traditional rural life, the industrialized villages develop non-agricultural industries and enjoy a semi-urbanized and modern life. To rephrase research topics of rural China’s digital divide, this paper will explore the digital divide problem in contemporary rural China from a social structure approach, paying special attention to the practical process and mechanism of digital divide formation under different village structures.

2 Literature Review and Research Framework

The “digital divide” is a widely used and contested concept. Based on different positions and questions, scholars usually give very different definitions [See7, 9,1,12]. But generally speaking, the so-called digital divide mainly refers to the gap between the informational rich and informational poor. From the point of view of research level, the scholarship on digital divide includes both global digital divide and domestic digital divide [11]. The former mainly explores the digital divide among countries and regions in the world, while the latter mainly discusses the digital divide within one country or region. From the point of view of research perspective, the digital divide literature covers economy, gender, technology, education, ethnicity, linguistic, and regional approaches [See 3, 9, 10]. From the point of view of research method,

there are quite a few quantitative studies on digital divide, while qualitative studies are neither sufficient nor systematic. The aspects above briefly reflect the achievements and problems in the scholarship on digital divide, and provide important references for exploring the digital divide in rural China.

At present, while many researches about rural China's digital divides concentrate on urban-rural and regional digital divide, they pay insufficient attention to the internal digital divides among different villages. How to explore this type of rural digital divide? This paper argues that digital divide is not only a technological phenomenon, but also a social phenomenon. From a sociological perspective, purchase and usage of ICTs are socio-economic behaviors, which are always embedded in specific social structures. Thus the problem of embeddedness is the premise basis for exploring how people possess and use ICTs. Meanwhile, we consider the gap formed in possessing ICTs as the primary divide, and take the gap formed in using ICTs as the secondary divide. In this article, "digital divide" refers to a kind of structural relationship formed among different social groups in the practical process of their owning and using ICTs.

Methodologically, we followed the methodology of sociology of practice to employ research methods including ethnographic interviews and participant observation. We selected village Y in Shaanxi Province and village H in Jiangsu Province as field work sites. The comparative significances between the two villages exist in the following four dimensions: Firstly, for geographical position, while village Y is in northwest China, one of the main regions concentrated with traditional villages, village H locates in southeast China, which is one of the main regions concentrated with industrialized villages. Secondly, for historical culture tradition, the area that village Y locates in had a long agriculture cultivation tradition and the peasants were accustomed to be earth-bounded, while the area in which village H locates has been known for its tradition of energetic industrial and commercial activities and the peasants were also quite active. Thirdly, for economy structure, village Y has a typical traditional agriculture production pattern, in which peasants are still self-sufficient, while village H develops a typical industrialized production pattern, in which peasants generally enjoy an urbanized life. Fourthly, for national policies, when village Y follows the green agriculture policy which pays special attention to ecological environment protection, government encourages village H to advance industry and innovation development. For these two villages, the ICTs we investigated include television, fixed telephone, mobile phone and computer, which are usually used as indicators to measure digital divide by scholars. And television and fixed telephone belong to traditional ICTs, which are the products of Industrial Age; mobile phone and computer belong to new ICTs, which are the products of Information Age.

3 Traditional Village(Y) and Industrialized Village(H): A Comparative Analysis

Firstly we give an introduction of the two villages:

Village Y is located in the northern part of Shaanxi Province and is a typical traditional village. Because Mao zedong had stationed in this village from November 1947 to March 1949, it was named "China's famous historical and cultural village" in September 2005. The village covers an area of 7.8 square kilometers, has 289 households

and 1,153 individuals. Nearly 70% of the villagers are migrant workers, who work outside all the year round. They usually earn about 15,000 RMB a year. The peasants who stay in the village still mainly live on agricultural planting. They plant several kinds of grains and potatoes, which are mainly for their own consumption, while only a small amount for sale. The average per capita net income of the villagers in 2007 reached 2,400 RMB. It seems that the living conditions of villagers are getting better consistently, various forms of social security begin to be set up, but still far from sufficient. The villager committee has few village affairs to manage.

Village H is located in the southern part of Jiangsu Province and is a typical industrialized village. This village has won many honors, such as national township enterprises groups, civilization village of Jiangsu Province and Wuxi municipal industrial star village. The village covers an area of 1.64 square kilometers, with 977 households and 3,150 individuals. There are also about 1,000 non-native outsiders. More than 95% of the native villagers become factory workers. The average per capita net income of the villagers in 2007 reached nearly 20,000 RMB, and the net assets of village amount to 200 million Yuan. At present, the village-run enterprises specialized in textile, sports gears and metal processing. Meanwhile, the village also vigorously developed tertiary industry and achieved remarkable results. Villagers no longer do farming, and they buy their own food from market. Village H also enjoyed running water, electricity, gas and internet at the same time with urban residents of Jiangyin City. It is safe to conclude that the villagers has been enjoying an urbanized life.

Now we will analyse how villagers own and use their ICTs in the two villages.

3.1 Television

As a kind of ICTs, television was once of great significance for Chinese peasants. When prepared for a marriage, peasants always tried their best to purchase a television. Especially in the 1980s, the peasant income was very low, so a television would be very expensive. Thus owning a television was usually regarded as a symbol of achievements. Even today television has been widely available, as a material property, it still has the important cultural significance. As to village Y, nearly every family has a television set, but only a few enjoy the second set. They watch TV programs through “wan zi” (a satellite signal receiver), but channels are still limited. In village H, every family usually has at least 2 television sets, and most families are equipped with advanced rear-projection TVs. Moreover, village H had access to cabled programs relatively early, which were all converted into digital ones in 2007, so villagers can watch even more TV channels. Although there is a wide gap between village Y and H on the number of television sets per family, the quality of TV sets, and the number of program channels, the two villages still have similarities. For example, villagers in both villages like watching weather forecast, which is closely linked with their deep-rooted cultural traditions and customs, because Chinese traditional peasants mainly depended on weather for living. But villagers in H are also accustomed to watch news everyday to learn national policy and international news, which is closely related with their industrial production. The discrepancy of villagers’ television quantity in Y and H is gradually developing the discrepancy in the ways of watching TV. While villagers in Y usually watch TV together, villagers in H often watch TV separately in their own rooms. To some extent, the difference in the ways of watching TV

also reflects the difference in life styles: the former tends to enjoy a common life, while the latter pursues an individualized living.

3.2 Fixed Phone

Rural China is a society of acquaintances. For villagers, their daily interactions are face-to-face. The emergence of fixed phone makes distant communication possible. However, the penetration of telephone to rural areas was mainly promoted by the coercive state power at first. Under the impetus of National Informationization, nearly all the administrative villages had been equipped with at least a telephone to keep the contact with the outside world. But at that time, the fixed phones were usually located in the office of villager committee, acting as a public authority item. Fixed telephone really going into rural households as private belongings requires at least two basic conditions: 1) the improvement of informational infrastructure; 2) the decrease in installing fee. In Village Y, a three-phase project set up a phone cable in 1999. At present, there are around 30 fixed phones in the village and the installation rate is around 10%. Usually a rural household spends 20 to 30 Yuan each month for a fixed phone (including 20 Yuan compulsive “monthly rent”), as they use telephone answering calls more than making calls. Telephones in Village Y are so scattered that they only communicate villagers under certain “important occasions” and have no substantial influence on villagers’ traditional communication and or interaction style. In Village H, when industries began to emerge vigorously in the late 1970s, fixed phones were introduced into factories as an office tool. Industrial economic growth increased incomes, thus in the 1980s many households already had fixed phones as life necessities. Currently, more than 90% of households in Village H install at least one fixed phone. The common demand of telephone is an inevitable result of industrial economic development. With the widespread of telephone, a new network of social interaction was built up among the villagers and to a large extent shaped people’s way of communications and interactions. Thus, as a private ICTs product, fixed phones entered the Village Y and Village H not only in different paths, but also led to different impacts and consequences. From the aspect of usage, the two villages’ access to fixed phones are basically similar, that is, answering and making telephone calls, and the monthly expenditure are roughly identical as well. Yet, one slightly difference is that fixed phone lines in Village H also provide internet access, which combines the traditional ICTs with the new ones. In this sense, the usage of telephones in village H has more connections to the Information Age.

3.3 Mobile Phone

As a new ICTs product, mobile phone spread to rural areas much faster than fixed phone and its coverage is also broader. According to the data of the National Bureau of Statistics, 4.3 mobile phones were held by every 100 rural households in 2000; by the end of 2004, this number increased to 34.7; and again up to 40 by the end of 2005. An increase of nearly 10 times happened during 5 years. Now mobile phone becomes one of the most important information tools of peasants. Besides the infrastructure construction, the rapid expansion of mobiles mainly bases on two conditions: 1) a sharp drop in mobiles phones price. 2) the decreasing rates. But to the rural China,

these two conditions provide only a possibility for mobiles access to local communities. Whether peasants accept mobile phones still needs a social process. After all, for most peasants, mobiles are an unexpected item in their life course and memorial history. After the market-oriented reform, rural areas have undergone profound changes. Holding mobiles gradually becomes a fashion and social trend. In this background senior villagers' possession and use of mobile phones provide a very good analysis case. For Village Y, the whole village population can be divided into two groups: individuals staying in the village, many of whom are the elderly and children, and individuals working outside the village, many of whom are young people and the middle aged. Thus, in essence, the whole social structure of village is in a split state. The person working outside needs to keep in touch with his or her family members to enjoy the common life, and to make "home" a tangible existence. So the "contactability" anytime and anywhere of mobile phones provides the technical possibility for this spatially split home. In Village Y, the usage of the mobiles by the elderly perfectly reflects this. We can see that many senior villagers have mobile phones, which are usually brought by their children working outside of the village. Although probably the only operation they can master is to answer the phone, this simple action itself is of great significance. Knowing their far away children are safe, the elderly are getting a spiritual and psychological consolation, while the younger working outside who are sure that everything is fine at home feel at ease to work and struggle in the competitive outside world. Now we can know that cell phones as a product of information technology not only reconstruct each other's social relations in the physical space, but also help building and maintaining a shared spiritual world. But Village H presents a different picture. After thirty years' market-oriented reforms, Village H has become a fully industrialized village. Villagers were also among the first group of Chinese to try on cell phones. In the late 1980s, the boom of township enterprises made private entrepreneurs the first group to own "shou ji" (literally "the machine in hand", then known as "da ge da", literally "elder brother big" and "elder" "big" pronounces the same, costs 20 to 30 thousand Yuan each set) and become the pioneer of fashion. At that time, possessing a mobile phone showed a highly respected social status, having a strong symbolic significance. When "da ge da" gradually disappeared and new mobiles became more widespread, the peasant entrepreneurs who had used "da ge da" are now using mobiles. However, at this time, mobile phones are no longer a symbol of social status, but an everyday commodity mainly to meet the needs in work.

3.4 Computer and Internet

Computer, as same as mobile phone, is the product of the trend of times. However, there are two major differences between them: 1) a computer usually is far more expensive than a mobile phone, so the purchase of a computer requires considerable economic capacity. 2) the use of computer requires more education and knowledge. No doubt these two conditions cause the difficulty for the diffusion of computer in rural areas. But the potential demand for computer and the internet in rural China should not be underestimated. According to China Internet Network Information Center (CNNIC), data of 2008 shows that the number of netizen in rural areas has reached 52.62 million, with an annual growth rate of 127.7%, much higher than city's 38.2%. The internet in rural areas is in a period of rapid growth. Children are the

future of the nation, and computers are considered as the bridge to the future. Therefore, by analyzing the behavior and consequence of children using computers, we can effectively understand people's needs and cognitive of computer and the internet. In Village Y, the computer is truly a rare item. The villagers hardly have private computers. Schools have no computer courses for kids. Kids who want to use computers have no choice but to go to "net bar". In the opinion of adults, kids are "playing" computers in net bar only for fun. Indulging in playing internet games could seriously influence children's school performances. Several crimes in the net bars of the town made parents even more anxious. Local government shut down the only two net bars in the town. Hence according to villagers, "going to net bar" means delinquent. While villagers see the internet as a real monster, they also recognize that it is very important for the future development of their children. There is a completely different picture in village H. In H, nearly half of the households have a computer, and even primary schools provide various computer programs. Consequently, the possibility of children going to net bars is much lower. Although children using computers at home may also be indulged in games and affect their school performances, the negative impact of internet will be much less under the instruction of parents. Moreover, computer courses in school may teach children how to tell useful information from the useless ones, how to set up a blog to display themselves and make friends, and how to not waste time and energy on it. All of the above greatly develop and enrich the inner world of children. Meanwhile, it should be noted that, although the computers have been relatively widely penetrated into households and enterprises in Village H, on the whole, the role of computer for villagers is still entertainment-oriented, such as listening music, watching movies and operas, playing games, reading news, online shopping, etc. Their functions in industrial production are still limited.

4 Conclusion and Discussion

In this paper, we have discussed the digital divide formed in the practice of occupying and using ICTs between the traditional village Y and industrialized village H by case-comparison method. We also analyzed the practical patterns and socio-cultural significance of the digital divide under different social structures.

As we can see from above, the villagers not only show a vast divide upon the occupying and using televisions, fixed phones, mobile phones, and computers, but also display a great diversity in their cognition and notion of these ICTs. Moreover, the divide formed in the process of occupying and using demonstrates a "mutual reproduction" effect. The earlier one owns these ICTs, the deeper these ICTs will penetrate his or her life. And the deeper these ICTs penetrate one's life, the stronger demand of these ICTs this individual will develop. The traditional ICTs, such as TV and fixed phones, are the results of the Second Industrial Revolution, and the new ICTs, including mobile phones and computers, are the products of the Third Information Technology Revolution. Before the Reform, TV and fixed phones had been more or less introduced into rural areas. At that time, TV played an important role in peasant life as one of personal belongings, while fixed phones mainly existed as one of public authority items, so we can see the earliest telephones were usually located in the offices of villager committees in Village Y and H. After the market-oriented reforms,

village Y still maintains the original, but gradually hollowed social structure of a traditional rural community; Village H turns the farmland into industrial use, forming a modern industrial structure. The great transformation of social structure will inevitably reshape peasants' production and consumption needs. Following globalization, mobiles and computers entered China and then penetrate in and expand to rural areas by the government-led and market-assisted impetus of "National Informationization Project". In Village Y and H we can see that mobiles entered rural areas through different ways and played different social and cultural roles. In Village Y, there is hardly any demand of computer, while in village H its "quasi-urbanization" life style creates most demand of computer. Therefore, when entering and penetrating the specific society, the ICTs must be redefined and reconstructed by local culture.

Also we should see, in essence, the digital divide which Village Y and H demonstrated reflects a basic feature of the social structure of contemporary China, namely, the cleavage of social structure. As a well-known sociologist Sun Liping said: from the 1990s, China began to step into a "cleavage society" [5]. The substance of a cleavage society is the co-existence of structural components from pre-industrial, industrialized, and post-industrial societies which lack functioning connections between each other at the same time. And one of the major components of the "cleavage" is the divide in the urban-rural dual structure. From our study on the digital divide in rural areas, we can see this characteristic of cleavage also exists within rural China. In a sense, traditional and industrialized villages represent two sharply different social structures, namely traditional and modern social structure, so the digital divide between them substantially illustrates the significances of traditional-modern dichotomy. However, this traditional-modern relationship is not the diametrical divide, but mutually entangled closely.

At last, what can we do to bridge this digital divide between the two villages? From the state of occupying and using of the four kinds of ICTs, no doubt that mobile phone hold the most important position in both villages, being most closely integrated into their everyday life and production. More importantly, compared to other three types of ICTs, villagers are interested in and receptive to cell phones regardless of their education, knowledge, or conception, and cognition. In addition, as the mobile phone has had a widespread coverage, speedy infiltration, and high recognition in rural areas, together with its networking functions, it may become the first carrier of the integration of the future information technology and an effective agent weapon helps bridging the digital divide.

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