

The Pre-emergence of Chinese Wood Block Printing— Based on Propagation Medium and Social Transition

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Abstract: The application of wood block printing is an important phase of history in the development of Chinese publishing technology. Following the dissemination of oracle bone, stone, bamboo slips, and silk, paper-based printing is a significant technological advancement and social shift. The evolution of media technology in China has resulted in the gradual development of the habit of reading text due to its evolving of environment in culture. However, the demand and acceptance of copying technology in society is not triggered by a certain event, but the cultivation of the concept of the entire society, which is mainly reflected in the change of institutional consciousness and the demand of grassroots society for cultural transmission. This paper mainly analyzes the changes of propagation medium in China and the interaction with social factors before the advent of wood block printing.

1. Introduction

Society is a cultural environment composed of people. In the history of human society, the ability of information transmission has a great impact on the evolution of civilization. Information can be transmitted through different media such as language, text and images, thus guiding aesthetics to a certain extent, influencing culture and politics, and promoting the development of science and technology. The advent of printing was an important milestone in the history of written communication. Before the invention of printing technology, writing was mainly transmitted by hand. But in the 9th and 15th centuries AD, East and West respectively invented their first printing. However, due to the differences in platemaking and printing processes, unlike the European Gutenberg's movable type printing, Chinese printing originated in the Tang Dynasty is a "wood block printing". Wood block printing is a landmark invention of ancient Chinese science and technology, which has had an important impact on world culture. There are two reasons for the emergence of wood block printing in China, the first is due to the change of propagation medium technology, and the second is the social premise such as the simplification of characters, the downward movement of institutional consciousness, and the increase of needs of grassroots cultural groups. However, the completion of

process conditions and the maturity of social factors were not completed at the same time, but the evolution of different stages.

The extension of people's senses through tools is called media, and the media and its mode of transmission are the conditions that determine the influence of culture. "The extension caused by any new technology will introduce a new scale in the new transactions."^[1] Consequently, the emergence of a new communication medium will incubate 'a brand new social environment' that will profoundly influence people's perception and bring about some changes to society.^[2] Fuxian of the Western Jin Dynasty said in *Paper endowment*: Humans made oracle bone inscriptions instead of rope Chronicles and woven paper instead of bamboo slips. Just as frugality is for suitability, so change is for adaptation. When you pick it up, it unfolds, and when you put it down, it rolls into a scroll.^[3] In this essay, ropes, oracle bone inscriptions, bamboo slips and paper are summarized as the basic form of China's propagation medium, until the communication efficiency of "paper" has become a new scale of wood block printing.

2. Bronze and the "Downward Movement" of Social Power System

The technology that has been traditionally used for writing, including oracle bones, bronzes, bamboo slips and inscriptions to create wood block prints, takes a considerable amount of time to develop. The improvements are primarily driven by people's desires to enhance the original use of their emotions and to improve traditional forms of technology, breaking through the limitations of communication methods. The evolution of propagation medium is mainly reflected in the improvement of the universality of its process technology, the ease of propagation medium, the grassroots nature of communication groups, and the richness of communication forms.

One of the representatives of early Chinese cultural media is bronze ware. Bronze ware is known as the "important instrument of the state", highlighting the social system and cultural order, and is a symbol of theocracy, political power and clan power. Zhang Guangzhi believes that "bronze is politics and power", and nobles at all levels have strict regulations on the types and quantities of ritual objects used, which directly represents the level of nobility. The bronze casting process of the Shang dynasty has become mature, and the process, decoration and shape are all regarded as the grade standard of the bronze casting in the later dynasties because of its exemplary character. The type, quantity, decorative design and inscriptions of bronze media convey information such as patriarchal order relationship and political thought, and often convey the respect of "respecting God and praying for blessings" to ancestors through mysterious and solemn decorative design.^[4] Taotie design is the most distinctive pattern in rich and varied patterns, whose solemn and dignified pattern shows mysterious and lofty artistic characteristics, reflecting the strong atmosphere of the clan requirements, "Carve its claws deeply, highlight its eyes, stir up its scales and cheek hairs, and it will be vigorous."^[5] "Vigorous" is the artistic feeling expressed by the patriarchal class through the media of bronze, which is a calm, steady, sonorous and powerful rhythm meaning.^[6] Despite the limited capacity for writing expression, the patriarchal themes conveyed through bronze ware exhibit a more impeccable social structure, as demonstrated by Confucius' "the etiquette is so colorful."^[7]

In 536 BC, Gongsun Chiao of the State of Zheng was accused by the Jin guoshu of "the people know that there is a path to the throne, but they do not avoid it"^[8] because Gongsun Chiao put the law on a pedestal and publish it to the ordinary people. During the Spring and Autumn Period, the upper class believed that the more secret the criminal law, the better, and the public must not know about it. This is conducive to aristocracy to dispose of ordinary people at will, increasing terror and mystery of autocracy. Although the purpose of putting the law on a pedestal is to spread criminal law to the

people and break through ignorance, in the patriarchal system that emphasizes hierarchy, only a small number of people can possess sacrificial vessels. As the important objects symbolizing the patriarchal order, bronze objects cannot be the media of communication to the basic level of society, so their influence on the people is very limited. Even so, the upper strata of society still feared the restrictions on the privileges of the aristocracy as the media moved down.

Since the beginning of social civilization, jade and bronze ware have been used as the media of patriarchal system to spread institutional information through decoration and writing. As a measuring scale, bronze media distinguish different social forms and become kinetic energy to promote social development.^[9] After the Warring States period, the patriarchal order gradually moved down with the spread of the media, and the princes appointed officials with seals, called "official seals". Seal as a new medium is not only the proof of patriarchal identity, but also drives the change of communication mode. At the beginning of the First Emperor of Qin, the government ordered the world, and a relatively complete unified system was formed during this period. In contrast to the enfeoffment system, the Qin government appointed officials to supervise the implementation of local government orders, the so-called "centralization system", which was further strengthened after the Han Dynasty inherited the Qin system. The official system is the extension of administrative power of central government, and the seal, as the certificate of the administrative power, has become a new medium of communication, and has also become a specific measure of downward dissemination of power management.^[10] Therefore, the change of the will to power through the bronze ware to the seal medium reflects the expansion of patriarchal system to the grassroots society. Rather than using heavy instruments like those found in the Bronze Age, bamboo slips were utilized as the primary means of disseminating government decrees of the upper class. Meanwhile, vivid stone and brick paintings were also incorporated into the dissemination of social consciousness at the grassroots level. The social and cultural environment of the Qin and Han dynasties also changed with the development of media.

3. "Optimization" of Bamboo Slips and Writing and Reading Methods

Oracles, bronzes and jades, which have always been attached to the symbol of patriarchal propagation medium, have complicated production techniques, rare materials, hard and thick texture, and limited dissemination range. As power management becomes more assertive and government affairs are being communicated through different means, the need for media communication carriers has become a necessity.

The characters that existed before the bamboo slips, oracle bones, inscriptions on bronze and pattern tile and others were all made through the process of seal cutting or transfer. The real beginning of writing can be traced back to the Yin and Shang dynasties, and the ink stains of Zhu brushwork excavated from the Yin ruins prove that soft brushes were used at that time.^[11] In addition, thousands of pieces of Houma League book of the Spring and Autumn period have been unearthed in Shanxi, with jade characters written in Zhu ink, from more than ten words to hundreds of words as the oath. The changes in written text and the smooth strokes suggest that writers of the Spring and Autumn period have become masters of their craft, and have started to appreciate the beauty of shape. During the Qin and Han Dynasties, the brush became an objective reflection of the technological transformation of traditional media, and bamboo slips gradually became the main writing medium of the brush.

Bamboo slips and wooden slips are a combination of slips. They are mainly made from natural materials such as bamboo and wood, and are made by polishing, cutting and weaving, etc., in which

a single row of characters is written on a slender piece of bamboo and wood.^[12] The text assumes the communication function of the mainstream society, such as documents and laws, calendars and classics.^[13] As a simple material for writing, slips became the beginning of the revolution of propagation medium in the Qin and Han Dynasties, and the new media also improved the ability of information dissemination. Compared with oracle bone inscriptions, bronze inscriptions and stone inscriptions, the scale and speed of information dissemination in bamboo slips and wooden slips were significantly expanded, and the popularity was improved. This mode of communication is in line with the grand-unification of Qin and Han Dynasties and the development and needs of cultural and educational undertakings.^[14] Before the Qin and Han Dynasties, bamboo slips had been standardized and customized. In the pre-Qin period, the slips were about three feet long and were generally written in legal documents, known as the "three feet method" in history.^[15] During Emperor Wudi's reign, Confucian classics were also prescribed to be written on the long script.^[16] "Lun Heng" record: "two feet and four inches, the language of the sage"^[17] refers to the record of the Confucian classics, the so-called two feet and four inches is the Han Dynasty shape, equivalent to the three feet in ancient times. Function and environment play a role in specifying the length of slips and specification of the appliance. This administrative system is an extension of, and continues to be the continuation, from earlier stages, of this patriarchal consciousness expressed by bronze and jade, through its establishment of dignity as relation to inferiority.

At the beginning of the 2nd century, Cai Lun's improvement of paper technology made paper more affordable and gradually became material for book production and a tool for copying, but bamboo slips still performed the formal function of text dissemination. It was not until 403 AD that Huan Xuan, a powerful minister at the end of the Eastern Jin Dynasty, issued a decree: "There is no paper in ancient times, so the use of bamboo slips is not disrespectful. All bamboo slips used today are replaced by yellow paper."^[18] This gradually stopped the use of bamboo slips, and also meant the end of the bamboo book era.

The wooden tablets and documents evolved from bronze inscriptions and seal inscriptions form a communication medium of the upper-class society, while the stone and brick pictures form a medium of the basic society with images. The image media forms a new environment for communication based on the social rites and music consciousness, and has a wider communication group and influence than the original bronze oracle bone age.

4. The Role of Grass-roots Communication of Painting Art and Images

To the Wei, Jin, Southern and Northern Dynasties, the maturity of calligraphy made artistry and lightness become the primary demand for the process reform of propagation medium. However, the media such as bamboo slips, paper and silk are still in the hands of the noble class, and stone carvings are still used as the main media for grass-roots communication, and the media of the upper and lower classes are clearly differentiated. With the opening of the Silk Road, culture flourished in frequent exchanges, and the society's feeling of art became more and more delicate, and the aesthetic taste changed from the majestic of the Han Dynasty to the gorgeous of the Tang Dynasty. During this period, textile, printing and dyeing, engraving and other process technologies from Persia and Daqin region converged in China and influenced each other in the communication. The overall level of handicraft was improved, and the propagation medium had higher requirements for "convenience", and at the same time, the propagation medium also had more "diversified" process means.

Compared with bamboo and wooden texts, painting has only been a decorative art attached to the mainstream consciousness since the Qin and Han Dynasties. The inclusion of painting in the scope

of moral education and the visualization of obscure texts undoubtedly simplifies the difficulty of reading classics and helps to meet the needs of "political and religious" functions. Images and words complement each other in social media. Images can more actively approach the majority of grassroots social groups to express their interests and hobbies. In the Eastern Han Dynasty, Wang Yanshou's Ode to Fu on Ling Guang Palace of Lu emphasized the role of images in education. "The whole painting depicts heaven and earth, all kinds of plants and creatures in the world, strange and strange things, gods in the mountains and gods in the sea. Drawing shapes and colors, are placed in the picture, ever-changing and different. According to their different topography to describe their different characteristics, twists and turns, and strive to convey their true modality. Loyal ministers like Bigan, filial sons like Shen Sheng, martyrs like Jing Ke, virgins like Ji Jiang, all these wise men and fools, fame and ruin, are depicted. The evil can be a warning to the present, and the good can be an example to the future. "

The forms of folk images are very different from the tastes and the upper class. For example, Han stone statues were produced under the changes in the burial system and customs of the whole society after Emperor Wudi of the Western Han Dynasty. It can be said that the stone statues in the initial stage used folk paintings and carvings to show the changes in the burial customs at that time and to meet people's desires for burial objects and an elaborate funeral after death. Through the research of the material data of the stone statue and the burial system at that time, we can further explore the initial situation of the Han Dynasty stone statue originated from the grassroots of the society and the changes of the social people's ideas that it may reflect.

There are only a few words on the stone, but there are a large number of images, vivid pictures, without preaching, the concept of the time will be widely disseminated with these traditional crafts. With the development of burial customs, especially the content of the tombstone is increasing. Not only the images reflecting the theme of life continue to expand and enrich, but also the content of gods and ghosts superstition is quickly accepted and expressed, and then the ruling class's Confucian Confucianist thought and feudal ethics and morality are also more and more expressed. At the same time, the expression form and function of Han Dynasty stone sculpture art have also been fully developed.^[19]

5. The Imperial Examination System Produces the "Accumulation" of Grassroots Cultural Groups

The Zhou Dynasty established a complete system of rites and a system of clan enfeoffment based on blood ties. Despite the reform of the patriarchal system, the political management of these dynasties continued to follow the clan hereditary system. The official administration was still largely focused on the grassroots society, with no involvement in selecting or appointing officials. This was also true for the reformed system of talent selection. Until the Tang Dynasty, the imperial examination system gradually complete, Chen Yinke summarized it as: "The flourishing of the imperial examination in the Tang Dynasty, originated in the Gaozong Emperor, became in the Xuanzong Emperor and reached the peak in the Dezong Emperor."^[20] In the original "hereditary" system, the influence of cultural transmission is limited, but the imperial examination system is social. The imperial examination system created an opportunity for the development of educational consciousness and content, and its influence was no longer limited to a certain social class, but spread to all levels of the whole society. From the perspective of media development, only the huge role of grassroots society can promote and influence the media itself.

The way of selecting officials in the imperial examinations of the Tang Dynasty came from

"Shengtu" and "Xianggong". Through examination and screening, the capital and prefectural and county academies set up education bases for candidates from local areas to central government. ^[21] The imperial examination can lead to fame and recognition, which has a practical advantage in that the middle and lower intellectuals who face challenging circumstances demand education as eschatology to objectively encourage grass-root groups to receive education and popularize culture. The gradual expansion of the participation of the power class of the ordinary people means that the era of grassroots social talents entering the mainstream class has gradually opened. Although the civil service examination system selected ordinary people to enter the central government in this period, it was still a very small number compared to the whole grassroots people. However, the social cognition that reading can change the fate of the people still inspired the middle and lower classes of people, and greatly enhanced the grassroots society's need to accept the dissemination of cultural information.

As a selection system for officials in ancient China, the core value of the imperial examination is still to serve the patriarchal system, and the privileged nature of the system itself has become the main factor affecting social education, resulting in the education system of society being utilitarian, learning to be an official, not practicing. The old students Zhou Jin and Fan Jin in Pu Songling's "The Scholars" are too numerous to enumerate. However, from the perspective of the whole history of the imperial examination, the dissemination of knowledge from political knowledge and then from the grass-roots society was still at the beginning of the Sui and Tang Dynasties. The real force of culture that could lead the civil society to form a surging trend at the upper level was the spread of religion, which began to undercurrent as early as the beginning of Wei and Jin dynasties.

6. The "Rise" of Buddhism Has Aroused the Need for New Media of Communication

Writing is an important form and content of propagation medium. The stone inscription appeared in the Qin Dynasty, while in the Western Han Dynasty it was rare and its shape was uncertain. Stone carving became more prevalent during the Eastern Han Dynasty, with carvings added to both natural and engraved surfaces of stone cliff. Additionally, there were carved classic scriptures, personal merit records from ancient times, temple buildings (including those on tombstones). After Wei and Jin dynasties, the north and the South were divided, the religious atmosphere was dispersed, and the atmosphere of opening caves and making statues was flourishing, which was widely implemented under the influence of the royal family and nobility. The grotto statues were initially used for religious rituals, and later nobles issued support and donations, which generally required huge expenses and a relatively closed environment. However, with the growing prosperity of religion, more and more grassroots believers also have the desire for merit and virtue, so more open and convenient stone tablets are chosen as media to meet the needs of this group.

The statue tablet is a form of religious statue popular in all strata of China after Wei and Jin dynasties. ^[22] The statue tablet combines the shape of stone tablets from the Qin and Han dynasties with the art of the Western regions, carving Buddhist niches on them and inscribing messages such as vows, scriptures, patrons, etc., combining religious ceremonies with merit functions. Because it was built by a group of donors, the number of people recorded varied from a few, dozens, to a hundred, or even hundreds. For example, in the middle and late period of the Northern Wei Dynasty, there were sixty statues of Yizi, one hundred statues of Ru family in the third year of Zhengguang in the Northern Wei Dynasty, and seven hundred statues in the third year of Baoding in the Northern Zhou Dynasty. Statues and monuments have become a common method of spreading faith and an effective way to publicize the consciousness of merit. The statue bears a resemblance to the traditional stone tablet used to record merit, and it is frequently placed in the temple or walkway for religious ceremonies.

This relatively open media, together with other types of monomer or cave shaped semi-open environment of the same period, formed a complete system of religious media. As a result, the spread of Buddhism at the grassroots level developed rapidly.

From the Southern and Northern Dynasties to the Sui and Tang Dynasties, the spread of religious and cultural thoughts has established a broad foundation of society under the influence of various forces such as politics, religion and culture. Since Emperor Wencheng of Wei created the "Five Grottoes of Tanyao", the successive dynasties worship and promote Buddhism, and the society has formed a huge religious group. "We are here to examine the number of monks and temples in each dynasty: there were 236,200 monks, 3685 temples in the Sui Dynasty, and there were 126,100 monks and nuns and 5,358 monasteries in the reign of Emperor Xuanzong; Emperor Wudi had 260,500 monks....."^[23] It can be seen that the scale of the development of Buddhism in the past dynasties is huge. A large number of religious groups will inevitably form an audience conducive to media communication.

The dissemination of Buddhist teachings is realized through the preaching of Buddhist classics, and the translation of Buddhist classics is the prerequisite for the widespread dissemination of Buddhist classics. Through the translation of Buddhist classics in the late Han Dynasty, the Eastern Jin Dynasty, the Southern and Northern Dynasties, and the Sui and Tang Dynasties, the theoretical system of religious classics was established, which laid the theoretical foundation for the popularization of Buddhist thoughts and the dissemination of Buddhist teachings. But relying only on obscure scriptures and tough practice, it is difficult to strive for more followers. Compared with the esoteric doctrines, the lucid stories of the Buddhist scriptures, such as the preaching of the Buddha, itself, and metaphor, are more popular with the grassroots. In addition to displaying the power of the divine powers, they also help the masses get rid of their suffering through the blessing methods such as incantations and prayers. The book of Suishu records: "Buddhist sutras are dozens of times more popular than Confucian sutras", which shows the enthusiasm of grassroots believers for Buddhism.

In addition to chanting, giving is also an effective way to accumulate merit. Rich people can build temples, pagodas and engrave sutras. Those with little wealth may write and copy sutra. The reproduction of Buddhist classics was the main form of communication in the Southern and Northern Dynasties. The Buddhist sutra writing and government sutra writing and hand-copying sutra are far from to meet the needs of society. After the northern and southern Dynasties, Sui-Tang Dynasty gradually matured, and Sui-Tang Dynasty has become a system.^[24] In the Calligraphy Manual of Xuanhe Era, it is recorded that the high character of the scholar who studies and governs classics is "When writing sutras, thousands of words carry out the same law and do not violate the line."^[25] Due to the limitation of the contents of the Buddhist classics, the length of the writing of the sutra is increasing, and the norms of the writing are gradually formed. The long scroll of the Southern and Northern Dynasties limited the size of the paper, the way of adhesion, especially the appearance of the paper with black silk screen and lines, and the layout of the text, established the standard for the basic style of wood block printing.

7. Conclusion

When a certain kind of media appears in an era, the society can expand the content of information promotion or social activities corresponding to it. Therefore, meaningful information is not only the communication content from each era, but also the communication mode and communication ability of that era and the social impact it produces.^[26] By the middle of the Tang Dynasty, with the transformation and maturity of various traditional crafts required for printing, as well as the

foundation of social groups and cultural concepts, wood block printing quietly occurred at this stage.

Oracle bones, bronze inscriptions, slips and silks, and inscriptions in traditional crafts were the means of disseminating information to the consciousness of upper-class society in early China. Information content was obtained through manual transcription and seal cutting, etc. This mode of communication under a specific order of culture order was limited to the hierarchical society, which was a powerful tool to maintain patriarchal order and also became an obstacle to the development of other media. As the scale of social and cultural communication continued to expand in Han and Tang Dynasties, and the level of media communication extended to the grassroots society, the limitations of traditional media became more prominent in the face of communication needs. Breaking through the limited replication efficiency has become the primary requirement of the process change of the communication medium, and has also become a necessary prerequisite for the emergence of wood block printing.

If we understand "content" from the role of the communication medium, the "content" of any media is always another medium, that is, the so-called "media is the message", the content and the carrier are inseparable, have a strong correlation and extensibility, and have a profound impact on the media itself. "Speech is the content of the text, and the text is the same as the content of printing", the communication medium will produce new standards of application and modes of use in social practice through the extension and reform of the process, and this standard and mode is also determined by the "content" of the media.^[27] Therefore, from the perspective of the evolution of the media, just as the oracle bone is the content of the stone, then the stone is the content of the bamboo slips, and the bamboo slips are the content of the scrolls, and the scrolls are loaded into the engraved media. The connotation of the traditional media is integrated into the new media, and the new process of media also absorbs the basis of the traditional technology and constantly changes. Until the wood block printing combined and developed the traditional craft means of writing and reading in China, it opened a new era of cultural communication.

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