

Painting on Silk: Analysis of the Historical Prevailing Necessity of Silk Painting in the Northern Song Dynasty and Its Enlightenment to the Contemporary Times

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Abstract—If art history is compared to a big river, the basic elements such as concepts, materials, events, history, humanities, politics, economy, and communication can be regarded as the tributaries of the big river; they are blended together and make the river vast and long and constantly updated. Painting can be performed on the basis of materials, and the materials have certain regulations for the techniques. The visual presentation of a painting is the result of the combined use of materials and techniques. Coupling the reason for the prevailing of silk painting in the Northern Song Dynasty with the painting materials is of great significance to the research and development of materials in modern and contemporary arts.

Keywords: *silk, painting materials, techniques, visual presentation, painting on silk*

I. INTRODUCTION

The prosperity and development of silk painting in the Northern Song Dynasty has its historical necessity. In order to explore this necessity, a research is made from the production and life of the farming nation to the development of painting art. Advances in the production of silk materials have laid the foundation for the maturity of silk painting.

II. AGRARIAN MYTH

China has been an agricultural country since ancient times, and Chinese civilization was originated along big rivers. For example, Yangshao culture, Longshan culture, Erlitou culture, and Banpo sites are in the Yellow River basins; Majiabang culture, Liangzhu culture, and Hemudu culture are in the Yangtze River basins.

A. Development from collection to intensive cultivation

Prehistoric planting in China began with collection, and the earliest planting industry probably occurred in the Neolithic Age. Since then, China's agriculture entered an extensive development stage. Until the Spring and Autumn and Warring States Periods, with the development and

advancement of farm tools and farming technology, ancient Chinese agriculture entered the stage of intensive cultivation in smallholder economic model with the purpose of increasing the land productivity. The construction of successive water conservancy projects, the introduction of various types of crops, the development of farming techniques and farm tools, as well as the encouragement policies of successive governments have made agriculture the world's leading, stable, and most important economic foundation in ancient China.

B. Cultivation and reading civilization

The geological characteristics of culture along rivers determine the prosperity of agriculture. The stability of agriculture as an economic foundation has given birth to the characteristics of agricultural civilization that uses "cultivation" as a survival model and "reading" as a cultural inheritance method. Ancient Chinese politics, economy, technology, culture, literature, and art are all based on this characteristic. The stability and leadership of the economic foundation and civilization structure make it difficult for dynasties and foreign enemies to break the existing cultural model. Of the Four Great Ancient Civilizations, only China's cultural bloodline has not been severed because of the stability of this cultural model. This directly led to the invention of media and materials for cultural recording and transmission, and the invention of bamboo books, silk books, and paper.

C. Paying equal attention to farming and sericulture

Farming and sericulture have historically been paid equal attention to by ancient people. Sericulture has a very long history in China, and the earliest known silk fabrics in China appeared in the Neolithic Age (more than 2700 BC). Technological progress has made new progress in silk industry. Since Shang Dynasty, different kinds of silk fabrics with different materials and weaving patterns such as figured woven silk material, yarn, and leno had begun to appear. In the Warring States Period, the texture of silk fabrics could be

woven into geometric patterns and animal patterns with richer colors, and silk weaving technology became increasingly improved. During the Han and Tang dynasties, Chinese silk fabrics were exported to Central Asia, West Asia, Africa, and Europe through the "Silk Road", and were generally welcomed by countries along the Road. At this time, silk production entered a period of stable development, new creations in technology appeared, and the decoration reached a high level of art. In addition to weaving flowers, printing, embroidery, hand-painting and other technologies were also applied to silk production. The development of silk weaving industry had prepared for people to choose suitable silk fabrics as materials for writing and drawing. As early as the Yin and Zhou Dynasties, silk had been used as writing materials, bamboo books appeared later, and paper was not invented until the Western Han Dynasty. The earliest painting on silk found in China appeared in the Warring States Period; after that, painting developed constantly with the progress of silk industry. No later than 3000 BC, the ancient Egyptians invented papyrus which was made from straw stems that are abundant in the Nile Delta, and sold it to ancient Greece and Rome for writing and depicting. Its remains have become important data for historical research.

III. PAINTING ON SILK

A. *Silk as the base*

Silk is a generic term of ancient Chinese silk fabrics. Before papermaking technology became mature and popularized, ancient Chinese mostly used this kind of silk fabrics for painting. The development of silk fabric first witnessed the development course of ancient Chinese painting. The silk paintings appeared in the late Zhou Dynasty, the painting of Chu tombs in the Warring States Period, and the silk paintings of the Han tombs found at Mawangdui later on are all drawn on fine monofilament silk; the silk used for painting and calligraphy in the Southern and Northern Dynasties is also monofilament silk; the silk for (Sui Dynasty) Zhan Ziqian's "Going Sightseeing in Spring (游春图)" was also woven from monofilament; the silk for (Tang Dynasty) Zhou Fang's "Lady Waving Fans (挥扇仕女图)" was no longer monofilament, and the warp and weft threads are all woven from multiple filaments, which reflects the development of silk industry and the progress made in corresponding painting skills in Tang Dynasty. From the Five Dynasties to the Southern Song Dynasty, the silk weaving industry had been very developed. In addition to monofilament silk, silk for calligraphy and painting also appeared in the form of double-wire silk. In this kind of double-wire silk, two pieces of warp threads are sorted into one group; there is an interval of one thread between the two groups, and the weft threads are monofilaments. When warp thread interweaves with weft thread, the former may or may not penetrate through the space between two warp threads. This development of the silk weaving industry actually had a great impact on painting, because the finer silk was produced, which is of great significance for the refined expression of paintings from the Five Dynasties to the Song Dynasty. For example, (Five Dynasties) Huang Quan's "Sketching of rare

birds (写生珍禽图)" and (Northern Song Dynasty) Zhao Ji's "Auspicious dragon stone (祥龙石图)" both adopted silk consisted of forty-eight double-wire warp threads, but the weft threads were monofilaments. For ancient Chinese painting, the natural connection of silk to it in its early stages and the evolution in specific techniques such as filling, sketching, coloring, etc. as brought to the painting by the development of the silk industry become the basic basis for shaping Chinese classical painting paradigms and research the evolution of Chinese painting history. The development of silk industry technology directly leads to the advancement of silk materials and painting itself.

B. *Necessary choice*

It was historically necessary for early Chinese painting to select painting on silk; as the carrier of painting, silk together with painting materials created the earliest traditional method of Chinese painting. Even in the Tang and Song dynasties when paper industry became mature, it was difficult to transplant the tradition established on silk materials to paper materials.

The development of silk industry in the Tang and Song dynasties was highly valued by the rulers and aristocracy. Silk fabrics first reflected its practical value in life. This driving effect had greatly promoted the advancement of silk weaving technology; on the other hand, the advancement in technology had also led to appearance of silk more suitable for painting.

For the paintings appeared before and in Song Dynasty, the use of silk and silk fabrics as the bearing material for writing and painting had advantages over paper. Even if the paper industry was relatively developed during the Tang and Song Dynasties, this advantage still existed. First of all, China's silk industry was developed earlier. Compared with the expensive and scarce paper, silk material was more popular. Secondly, silk is more flexible than paper, easy to be shaped and carried, and can withstand folding. Furthermore, silk is more durable and lighter for storage.

IV. DEPENDENCE

If art history is compared to a big river, the basic elements such as concepts, materials, events, history, humanities, politics, economy, and communication can be treated as the branches of the big river; they are blended together and make the river vast and long, and constantly updated. Painting can be performed on the basis of materials, and the materials have certain regular requirements for the techniques. The visual presentation of a painting is the result of combined use of materials and techniques. Just as the splendor of impressionist paintings should be attributed to the appearance of tin tube pigments, the development of early scroll paintings in China has an inseparable relationship with the evolution of silk materials.

A. Tracing from "Going Sightseeing in Spring" to "Autumn Scenery"

The "Going Sightseeing in Spring (游春图)" now collected in the Palace Museum was painted by Zhan Ziqian in the Sui Dynasty. It is the existing earliest scroll painting on silk. This painting is regarded as the beginning of ancient Chinese landscape paintings, mainly because its more mature and perfect artistic language and the reasonable relationship between people and the natural environment are of groundbreaking significance. Before the Tang Dynasty, double-wire silk had not yet appeared, and this painting was also drawn on monofilament silk. Compared with double-wire silk, monofilament silk is not dense enough and thin in texture. There is not too much space for creation in terms of the preparative processing of silk to prepare before painting; so the application of techniques in the process of painting is basically conducted on the basis of the natural shape of the silk. The characteristics of monofilament silk make it difficult to carry repeated painting and underline painting, and the silk surface is not as smooth as later generations of silks. Hence, the painter had to face specific problems and chose an appropriate solution to achieve the expected painting effect. The paintings in the Sui and Tang dynasties were mostly colored; the relatively rough texture of silk determined that the outline and color must be thick; otherwise the rough silk pattern would be difficult to be covered. In the use of colors, it'd be better to choose mineral colors with relatively strong covering capability, such as azurite, turquoise, vermiculite, etc., which can better meet the requirements of silk surface, and also make the picture show a gorgeous and rich effect. On the other hand, the application of mineral color (also known as "stone color") needs to make use of the adhesion of glue. This is different from the characteristics of plant pigments that penetrate into the screen by virtue of moisture. So, for rough silk surface, it is necessary to improve the glue content so that the color is not easy to fall off. In this way, the dryness and wetness of the color itself is relatively established, and it is not easy to cause rich changes in the picture effect through regulating the color intensity. Therefore, in ancient Chinese silk coloring works, for some local picture needs, there might be very thick color to cover other colors or cause strong local effects. The method of "standing powder" belongs to this category. Such material relationship conditions make the picture possess a rich and beautiful effect. Because the painter's service object was usually nobles and members of the imperial house at that time, and the major structure of the picture outlined with ink were often re-checked with gold powder, a brilliant picture effect was formed. In ancient China, this type of landscape painting mainly dominated by mineral colors was generally referred to as "green landscape", and those outlined with golden thread were called "brilliant landscape".

Up to the Tang Dynasty, the production technology of silk material had been improved somewhat. The silk at that time was obviously thicker than before. Tang Hou said in the "Picture Book (画鉴)", "The silk in the Tang and the Five Dynasties was thick". Although there may be some change in silk in this period and more space for making progress in the

painting process flow, the rough texture still determines that the picture coloring effect is limited to some extent. This point can be clearly seen from some representative silk paintings such as Yan Liben's "Chariot (步辇图)", Li Sixun's "Boats and pavilions (江帆楼阁图)", and Li Zhaodao's "Ming Emperor's Visting to Sichuan (明皇幸蜀图)" in the early and middle period of Tang Dynasty. Later character painters Zhang Xuan and Zhou Fang were respectively famous for their works such as "Thumping (捣练图)" and "Ladies with Head-pinned Flowers (簪花仕女图)"; but in their works, the color used had shown some false and real changes, reflecting the effect difference brought by different concentrations of colored water. It is impossible to prove whether Tang silk is all rough silk; but in some paintings about ladies or other works, the silk surface seems to be delicate, which is likely to be related to the "thumping" process of silk used in some types of works at that time. This process is to flattening the silk surface by thumping process so that the silk surface naturally appears dense and flat. As said by Mi Fu in "The history of paintings", "古画至唐初皆生绢。至吴生、周昉、韩干，后来皆以热汤半熟，入粉槌如银板，故作人物精采入笔。今人收唐画，必以绢辨。见纹粗，便云不是唐，非也。(meaning: In terms of silks for paintings of Tang Dynasty were kiginu (i.e., un-processed or few-processed silk); before Wu Daozi, Zhou Fang and Han Gan, the paintings were drawn on kiginu; after them, kiginu might be unglued by hot water and thumped to level it up as flat as silver plate before being used for drawing; at this time, the silk was fine and hence excellent work can be shown on it. Therefore, it is not wise to judge the true or false of Tang paintings based on the rough or fine texture of the silk.¹ There is also a record in Zhao Xihu's "Collection of Elegant Paintings (洞天清录集)": "唐人画，或用捣熟绢为之，然止是生绢，捣令丝褊不碍笔，非如今煮炼加浆也。(Meaning: Tang paintings may be created on thumped silk; if it is created on un-processed silk, the thumped texture should not impede the brush and the silk is not created by current process of cooking, thumping and grouting)".² The two sayings both reflect that the silk for painting in Song Dynasty needs to subject to a strict procedure to make the silk texture finer by filling fine fillers on the basis of cooking and thumping it.

The Five Dynasties can be seen as a prelude to the rise of Song Dynasty culture. The period from Tang Dynasty to Song Dynasty underwent the great development of the ancient Chinese handicraft manufacturing industry. The new advancement of silk industry greatly improved the material of silk, which got relevant tools and materials well prepared for the arrival of silk scroll painting in the Song Dynasty. Judging from the silk samples found in the Dunhuang stone room and (the Five Dynasties) Zhou Wenju's "Lady Yubuyao (玉步摇仕女图)" which is still intact, the silk used at that time had already been very even. Silk scroll is intrinsically silk material. The high-quality silk was first used by royal nobles; in addition, calligraphy and painting were flourishing in the Song Dynasty. This case objectively

¹ Development of Ancient Chinese Silk-Baidu Library.-Internet Document Resources (<https://wenku.baidu.com>)

² Mi Fu's "History of Painting"

promoted the prosperity and quality improvement of silk manufacturing industry in Song Dynasty. Wen Tong in the Northern Song Dynasty was famous for drawing bamboo. He once sent a letter to Su Shi, saying: "I will use a section of Exi silk to draw a few thousand feet long bamboos (待将一段鹤溪绢, 扫取寒梢万丈长)". The Exi silk mentioned in the poem was produced in Exi of Yanting County in Sichuan. It was a tribute in the Tang Dynasty and was especially applied for paintings in the Song Dynasty. This reflects that the material of silk was deeply loved by literati painters in the Northern Song Dynasty. In fact, the silk of the Song Dynasty cannot be reached by that in other dynasties. The improvement of the quality of silk directly led to the improvement in painting technique and painting language, which is reflected in the visual effect of painting. From Guan Tong, Dong Yuan and Ju Ran in the Five Dynasties to Li Cheng in the early Song Dynasty, the changes in the shades of ink in the picture had become very natural. The pictures are vivid and lively. After the middle of the Northern Song Dynasty, the changes in painting style, subject matter, language and concepts brought about by the development of materials gradually became apparent. Guo Xi's "Early Spring (早春图)" vividly reflects the changes in ink color of silk paintings at that time. The whole painting is basically completed with ink, but the meaning of early spring is reflected appropriately. Appropriate silk materials inspired the painter's desire for expression. During this period, the flower and bird painting circles began to advocate the "sketching" style, represented by Cui Bai and Zhao Chang. Painter observes nature with the spirit of Neo-Confucianists in investigating things and verity, and expresses it in a subtle way. From the perspective of materials, the quality and production process of silk play a decisive role. The ease-of-use of silk materials also enables exploration of subjects that are more close to life and painting languages that are more adaptable to the materials. Wang Shen's "Light Snow in Fishing Village (渔村小雪图)" and Zhao Lingrang's "Clear Summer in Village along Lake (湖庄清夏)" are typical representatives. The green landscape style passed down from (the Sui and Tang dynasties) Zhan Ziqian, Li Sixun, and Li Zhaodao underwent more obvious change in the Song Dynasty due to change in silk material, represented by Wang Ximeng's "The Vast Land (千里江山图)" and Zhao Boju's "Autumn Scenery". Being fine and soft, silk in the Song Dynasty was very suitable for painting. Drawing on this silk, it was no longer as laborious as before as the proportion of glue application in the coloring process was reduced and color transition of the picture appears natural and rich. The change of the lightness and darkness of the color can create a fascinating layer of picture space full of realism. By using this silk, painters had more energy to portray the feeling of details, showing a stronger rationality and objective spirit than the gorgeous paintings in the Sui and Tang Dynasties.

B. Nature and ink

The development of materials and technological progress in the history of art can always bring the artist's great enthusiasm for the exploration of artistic language. This was particularly evident in the painting circle of the Northern

Song Dynasty. As a carrier of painting, silk material has the most direct influence on painting behavior. The effect generated by ink brushing on silk directly affects the construction of painting language. The high-quality silk and the mature cooking, thumping and filling methods make the presentation of ink and color intuitive and controllable. On this basis, a large number of ink paintings with more direct effects emerged. In aspect of the language of painting, the concept of using the change of the wet and dry shades and light and heavy colors of ink to correspond to the natural and obscure nature of natural objects was gradually established. The diverse changes of the nature began to become corresponding to the diverse changes of ink. In this correspondence, the change of ink brushing is not an imitation of the relationship of natural sketches, but a care of the natural heart based impression established on the basis of deep observation. This is one of the important foundations for the establishment of Eastern style aesthetics and is of profound influence on later generations of freehand painters. Therefore, the objective and subjective are fused here. In the era of the Northern Song Dynasty where the objective rational spirit was honored, the subjective will of painter became the descriptor of the objective world, and the establishment of this relationship was based on the characteristics of painting materials. As a result, many painters began to explore the language of portraying objective nature outside the law, such as Liang Kai, Mi Fu, and Mi Youren and his son, as well as the later Shi Ke and Fa Chang.

C. Painting on silk and painting on wall

Many painters emerged in the Northern Song Dynasty, and the height reached by Northern Song paintings was pursued and admired by all dynasties. During the Northern Song Dynasty, highly developed painting techniques were mainly presented on silk and wall. Silk and wall were both used as painting materials and gradually shown similar characteristics. This provided a relatively stable medium foundation for painter's creation. Sometimes, wall painting might also be painted on silk bed as directly mounted on a wall, and the mutual influence had deepened as a result.

First of all, there are many painters in history who, in addition to painting on silk, are also good at wall painting creation, such as Gao Yi, Gao Wenjin, Wang Daozhen, Li Yongji, Li Xiangkun, Monk Yuanai, Wang Duan, Shi Ke, Sun Mengqing, Gao Huaijie, Chen Tan, Wang Yi, etc.

Secondly, most ancient wall paintings in China are "dry murals" where mud or kaolin is used as the main component on the base layer and is thickened and flattened before painting on it. Up to Tang Dynasty, the silk for painting had already been silk leveled by cooking and thumping and other method; up to the Northern Song Dynasty, the processing method used in Tang Dynasty was further developed: the silk back was also filled up with Kaolin slurry and then thumped repeatedly to form a smooth "silver plate" before painting on the silk. This case is well documented in ancient books. For example, the (Northern Song Dynasty) painter Guo Xi was both a landscape painter and an expert of wall painting.

According to historical record, the two painting styles are similar.

But there are also significant differences between the two painting styles. First, the materials are different. Silk surface is more delicate than wall surface, and is smooth and not suitable for creating wrinkle effect by thick ink; wall surface is large and thus needs to be outlined with thick ink and colored heavily. Second, the scenes are different. The silk painting is more suitable for hanging and collecting in the interior space or even private space for a small crowd to enjoy; wall painting is more likely to be hanged in public spaces, such as temples and halls for the public to view.

V. CONCLUSION

First, art must follow the times, and technological progress leads to the development of artistic materials. Second, at present, the combination of materials, techniques, and effects should be in line with the spirit and temperament of the material of silk if paintings on silk are to be used. Paintings on silk should be consistent with the temperament of silk; and silk is flexible and tough and thus can be used as screen or pendant sheet for separating space in modern public art works based on this physical characteristics of silk.

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