

Water's Roles in China's Woodblock Printing

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Abstract:

Through investigations and surveys of Beijing's Rong Bao Zhai and the Museum of China's Blockprinting at Yangzhou, and based on field literature and archeological documents, this paper conducts a systematic and detailed analysis of the roles that water plays in China's woodblock printing. This paper argues that water influences China's woodprinting in ways direct and indirect, tangible and intangible, and visible and invisible and that it is a critical factor in the success of a woodblock print. Accurate recognition of the roles of water may help us better apply it in China's woodblock printing.

Keywords:

Water, Woodblock Printing, Rong Bao Zhai, Museum of China's Blockprinting at Yangzhou

1. Introduction

China's woodblock printing was the earliest printing technique in the world and it has epoch-making cultural values. Among the studies on the instruments and materials of China's woodblock printing, the main and frequent focus has been on the brushes, ink, paper, woodblocking tools and printing tools. Rarely has water been mentioned, even when techniques and technologies are studied. No study has been conducted on water as an important material, regrettably. In fact, water, as an essential medium of China's block printing, has been consistently used in the processes of plate-making, engraving and printing. It influences original writing/drawing, tracing, and the selection and treatment of the wood for block printing. Water plays a significant and unique role in China's woodblock printing. Therefore, research into water's role in block printing has important implications. The author here presents a systematic review and analysis of water's role in China's woodblock printing.

2. The Role of Water in the Phase of Plate-making

2.1 Impacting original writing/drawing or tracing

Water is essential to the creation and production of traditional Chinese calligraphy and painting. Wang Bomin (1981) mentioned six applications of water in Chinese

painting: preparing the ink with water, dipping the brush in water first before dipping in ink, splashing ink on paper before hitting the ink with watery brush, leaving water marks after a slight contact of the tip of the brush with the paper, splashing the paper with inkless or colored water, and flooding an almost-finished work with a layer of water. He argued that apart from the brush techniques and ink approaches, there is also the water method. [1] Since the same instruments and techniques are used for original writing/drawing and plate-by-plate sketching as in traditional Chinese calligraphy and painting, therefore, the former is also heavily influenced by water, wherein importance is attached to water techniques as well. Here, for original writing/drawing, Yangzhou's woodblock printing, mostly handmade Maotai paper is used, for its water absorption is not as strong as Xuan rice paper, and thus the speed of applying the brush is not given much attention. In Beijing's Rong Bao Zhai, mostly Youchuanlian paper, Yanpi paper and celluloid paper are mostly used for tracing, for an important reason of permeability of water: the first two kinds of paper have very strong impermeability and thus provide a good protection against contamination of the works from tracing, while the celluloid paper has become the most popular material for retracing in woodblock overprint with its great transparency and absolute impermeability.

2.2 Impacting the selection and treatment of the wood for block printing

In woodblock printing, watery paints are to be brushed onto woodplates before the contents are printed onto the paper. Therefore, the wood to be used must feature an even absorption, fine and evenly distributed fibres, hardness of the texture, very small contractibility and high durability for printing. For this reason, usually pear, date, and ovate catalpa wood is chosen, while the wood of pines and cypresses are generally not adopted for this purpose, [2] as it contains too much resin hard to dissolve in water, which leads to an unevenness of the print marks.

When the right wood has been chosen, a series of water-related treatment are in place. First, the wood has to be sawed into plates and soaked in water, heavy weights are to be placed on the top layer, to be soaked for one to two years, or through two summers and one winter at least. After being soaked for one summer and autumn, the soiled water in the pool should be changed before winter for clear water for further soaking, and clear water has to be introduced again before the next summer. At this time, some raw lime needs to be introduced in the pool, and then in autumn or before winter, the wood plates having gone through soaking should be taken out, partition boards should be placed between each layer of the plates for natural airing. During the period of time, they should be turned over for examination regularly, and those at the top layers should be replaced at the bottom layers, in case uneven drying may lead to twisting and deformity. Afterwards, they can be stored in a cool and droughty area in the room for airing. This is to take off the gum and resin within the plates, especially these filtrated after soaking in summer's high temperature; raw lime acts with water to produce calcium hydroxide and to release a large quantity of heat. This raises the pH value of the pool water, which kills the larvae naturally carried by the wooden plates. After this treatment, the plates yield to engraving easily, absorb the ink nicely, and resist pests in a good way. If the wooden planks are required for use urgently, the emergency treatment involves having the planks boiled in a huge pot of lime water for 3 to 4 hours.[3] Such planks would also be good for pest control and carving.

If color register block printing is to be prepared, then apart from the above-mentioned treatment, efforts are to be made to use planks sawed out of the same log,

or one large plank are to be partitioned into several smaller planks for use. This is to avoid any difference in water shrinkage between the planks in their numerous encounters with water, thus increasing the accuracy of chromatic printing. Besides, when each model manuscript is stuck onto the plate, they should face the same directions, and thus different shrinkage is to be prevented due to the differences between horizontal and vertical adoption of wooden plates.

2.3 Impacting the plate setting of the sample manuscript

When setting the plates, the planks should first be washed with a layer of flour paste, which should be moderate in thickness when flour is mixed and pounded in boiling water. The manuscript should be placed on the plate with the side with writings and drawings faced downward, and the model manuscript should be brushed and pasted onto the plates with a plain-ended bristle brush. When the flour paste is dry, the fibres on the back of the manuscript paper should be rubbed off lightly with a water-moistened fingertip, until what is left of the model manuscript is only a layer of very thin paper coated with the ink. At this time, when the ink of the writing or drawing on the manuscript looks clear as if everything were written or drawn on the wooden plates, the engraving phase can now start.

3. Water's Role in the Engraving Phase

3.1 Impacting engraving implements and methods

The first effect of water on engraving methods is manifested in the conical shapes of the profiles of the engraved strokes of characters or drawings, i.e. the lower layers are slightly thicker and the upper layers are slightly thinner. Since it is watery paints that are used in woodblock printing, and the paint is brushwashed onto the surface of the plates in naturally hand-turning moves with a bristle brush, this engraving method highlights the strength of the foundations of the writing and drawing, which are not to be broken easily by the bristle brush. This process saves more effort and brings more ease, and there is less likelihood of water getting trapped in the foundations of the strokes.

When the contents of elaborate style paintings are being engraved, the carved strokes ought to be done in a slim manner. This is because in the printing process, the water saturation of the woodblocks will be fuller and fuller, leading to thicker and thicker strokes and heavier and heavier colors on the prints. For this reason, if the strokes are carved slimmer, there can be better guarantee that the printed strokes can maintain a better approximation to those of the original.

Besides, when the strokes and lines have been carved, a special process is called for: the parts of the woodblocks with no writing or drawing on them should be completely taken out with special tools. In this way, the parts with writings and drawings on the woodblocks are prominent, and when paints are being brushed, they will not soil the paper due to any accumulation of water or contamination of paints in the blank spaces. This step requires the use of a wooden hammer to knock on the handle of the large curved chisel so that the tip of the chisel moves forward and large areas of the blank spaces shall be chipped. Afterwards, a smaller chisel or graver can be used to fine-tune certain sections.

If, upon the completion of the carving, the woodblocks are found to have errors, or if the characters on used woodblocks are obscured due to wear and vermin attacks,

then the woodblocks need to be mended. First, a groove needs to be chiseled out with the sections with errors and damages, and then a wood block the same size of the groove is to be made. This wood block is tightly placed inside the groove, and then the corrections are engraved on the inserted wood block. What is noteworthy is that placement of the wood block in the original engraved woodblock cannot be naturally tight. Their close joining-up will only occur when the block expands again and again with encounters of water.

4. Water's Role in the Printing Phase

4.1. Impacting the selection and treatment of paper for printing

Since watery paints are adopted for Chinese woodblock printing, the paper for printing has to featured by a good absorbing capacity, tenacity and pliability. The paper used for woodblock printing through history has included hemp paper, bamboo paper, fur paper and Kaihua paper. [4]

In woodblock overprinting, a step of moistening the paper is also called for, which means that the printing is done on paper with a certain saturation of moist. The method of moistening often involves fog-like spraying. The quantity of the spray depends on the contents of the painting. It is to be of a small quantity if one requires a dry and strong impression. A larger quantity is called for if one wishes to achieve a moist and smudging effect. When spray is done, there is need to keeping the moisture for the overprint. The moisture should be kept wrapped up with waterproof materials like linoleum, heavier objects should be placed on top. It is then left in this state for approximately half a day, so that the moisture will infiltrate evenly.

4.2. Impacting color modulation

Ink cream is generally used in China's woodblock printing. It is made when animal gelatin and plant gum are added into pine soot and these are mixed with water. When the mixing is thorough, the mixture will be sieved and thus ink cream is formed and ready for use. When ink ingot is used, the ink stick should be rubbed first slowly and then more quickly. It should be done first lightly and closely in case ink crumbs result. When the ink ingot has been soaked and softened when encountered with water, more effort will be exerted to the rubbing with a greater velocity, so that the ink liquid will be thick and free of ink crumbs. Moreover, mulberry paper should be used to wrap ink ingots, and the paper is coated with paraffin oil. This should prevent the crumble of ink ingots and any effect on the ingots from changes in the moisture in the atmosphere.

The colored ink used in chromatic printing usually refers to paints for traditional Chinese paintings such as cinnabar, cyanine and rouge paste. They are also to be mixed and toned with water. The colors to be used for toning in woodblock overprinting should be stronger and richer than those of the original, for some of the paints will be residue on the woodblock sheet, so that the colors on the printed sheet shall be consistent with the original after the moist has vaporised.

4.3. Impacting printing implements

Ink is a watery paint, and thus brushes or the like should be used to dip into the ink and then to brush onto the printing plates. The brushing and printing tools for Chinese woodblock printing include the bristle brush, eraser, and writing brush, as well as the ink tray for holding water and also the toning basin.

4.4. Impacting the moisture of the printing environment

During woodblock overprinting, a certain moisture rate in the room should be preserved. It would be ideal to keep a relative moisture rate of 80-90%. [4] Also, the different individual plates should be conducted in environments of identical moisture, in case, due to drastic changes in environmental moisture, a shrinkage or expansion should occur due to changes in moisture between the paper and the printing plates and accuracy of overprinting should be affected.

4.5. Impacting the methods of brushing ink

Before brushing the ink formally, the plates should be moistened first. Clear water can be brushed onto the plate surfaces twice. When the woodblocks have absorbed the water and have been moistened, ink liquid can be brushed onto them for printing. Hence the plate sheets can easily color up and facilitates the printing. This is especially true of impressionistic works. Additional moisture in the printing blocks can give fuller play to the fairy fogginess in the works. What is noteworthy is this. If fine brushworks are being overprinted, then it is not best to brush the plates with water too early, for the moisture shall expand the printing plates and the accuracy of the overprints will be affected.

There are two ways of using the ink on the plates: brushing and dusting. [5] In brushing, paints are picked up with the brush, and they are brushed onto the woodblock plates through the lightness or heaviness of the wrist strength and through the slowness or quickness of movements. The strength of the exertion and the degree of moisture should be closely controlled so that the spaciousness and thickness of the strokes shall be sufficiently demonstrated. Meanwhile, care must be taken to avoid residue of water in recesses; otherwise the printed sheets can be easily soiled during the printing process. In dusting, paints shall be picked up with the painting brush, and the paints shall be lightly swept onto the engraving plates.

In chromatic printing, Viscosity Intaglio is often utilized. Its ink brushing process is like this. First a layer of water shall be brushed on the printing plates. Then one end of the plates is brushed with the first color of paints, and the other end of the plates is brushed with a second color of paints. A space should be left between the two colors. When the two colors run into each other as a result of the flow of the water, paper must be applied to the plates for printing in a timely manner, and so an effect of natural transition of colors shall be achieved.

4.6. Impacting the print pressing methods

When the paints are brushed onto the plates, rubbing tools could be applied for repeated rubbing and pressing, so that the paints are transferred and printed onto the drawing paper. In the pressing and printing procedure, care must be taken to observe the amount of the moisture and to make adjustments accordingly: when moisture content is sufficient, mere slight rubbing will lead to ideal effects; when moisture content is little, heavier pressing is called for. The speed of the pressing should also be paid attention to: quicker pressing can reduce the flow of paints on top of the plates; slower pressing can render the moisture content in the paints to combine more sufficiently with the paper.

For woodblock overprinting, water must be sprayed onto the paper during the pressing and printing so as to adjust the dryness and wetness of the paper. The amount of the spray is determined by the theme of the drawing as well as the moisture of the

printing environment. For instance, if the theme features a heavily moistured or foggy content, then a larger spray should be conducted so the paper will be more humid. The spray should be done from a height, so that the moisture will descend in a fine mist onto the paper. Since the moisture in the Xuan paper can easily evaporate, normally packing paper can be placed on top of the Xuan paper, to prevent the evaporation as well as to absorb the surplus moisture of the paper.

4.7. Impacting the printing effect

(1) Changes in the ink color

In his Famous Drawings through the Dynasties, Zhang Yanyuan of the Tang Dynasty said, “When ink is adequately work one, all five colors will show”. [6] The key to toning the five kinds of ink lies in the usage of water. The thickness, lightness, dryness, wetness and crispiness of the ink are derived from the adjustment of water. If water application is not appropriate, then it will be hard to achieve the desired effect, like that of the crispy dry autumn breeze, or that of the moisture smooth spring wind. China’s woodblock printing tones the colors in the integration between water and ink, works on changes by the integration of water and paper, builds the artistic atmosphere between the deep and shallow and between the solid and hollow, or replicates books and drawings accurately and vividly.

(2) Vivid charm and rhythm

Xie He of the Southern Qi Dynasty argued for six methods in his Gu Hua Pin Lu (An Appreciation of Olden Drawings), “showing the vividness of the charm and rhythm, applying the painting brush with the right bone strength and beauty of the exertion, presenting the images of the target in the depictions, coloring an object according to the category it belongs, demonstrating overall control in the layout of the drawing, and copying or imitating a model of calligraphy or painting.” [7] The charm and rhythm method is ranked the first in the six methods. This means that the charm and rhythm of a work should be graceful and harmonious, reflecting a metaphysical and refined character that transcends the realistic object and sights. Charm is the creator’s breadth of mind demonstrated in his strength, and also the internal vigor and external dynamics that his breadth of mind endows the works with. Rhythm refers to the physical and emotional harmony of the creator, and also the refinery, tranquility and harmoniousness in the beauty of the outward style and features that are bestowed by the creator. [8] Chinese calligraphers and painters through the dynasties have always used “vividness of charm and rhythm” as the yardstick to evaluate calligraphy and drawings, which is also true of the calligraphic and painted works printed from woodblocks.

The charm and rhythm can be conveyed by the medium of water due to its special characteristics of variability, circularity, plasticity and transparent clarity. They also exist between earth and sky in gas forms, at all times and in all places. Lao Tzu believes that water is an existence which is close to the Tao, the universal truth. [9] Through their understanding and application of water, people infuse an inner vigor and outer dynamics into the works of woodblock printing, endow the works with a tranquil, harmonious, refined and graceful styles and features, and convey the mental and emotional state of their own.

5. Conclusions

Admittedly, the role of water in China's woodblock printing has never been given sufficient attention, unlike paper, ink and printing instruments. Yet, water has existed in China's woodblock printing in ways direct and indirect, tangible and intangible, and visible and invisible, and it has quietly but surely influenced the processes of platemaking, woodblock engraving, and printing. It is always a significant factor in determining the success of a work from woodblock printing. From a study of the water in China's woodblock print, we seem to be able to see the philosophical notion of "harmony between humanity and nature and accommodation of nature" of the Chinese nation. China's woodblock printing is a valuable world heritage, having played an irreplaceable role in the dissemination of world cultures and in the progress of the Chinese civilization. An appreciation of the role of water in it all facilitates our deeper understanding and research into China's woodblock printing, and helps us apply it better in the woodblock printing.

Conflicts of Interest

The author declares that there is no conflict of interest regarding the publication of this article.

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